

Compilation of Changes to the CPC Scheme Between 2025.08 and 2026.01

Presentation Details

- Entries for new symbols and headings: *Black text in italics*
- Entries for existing symbols and headings
- text insertions: *Green text in italics*
- text deletions: ~~Red strikethrough text with grey background~~
- Entries for deleted symbols and headings: ~~Black strikethrough text~~
- In cases when the originating project cannot be found, "Unknown" is given for the Project information.
 - Projects ending in "-F" indicate finalisation after reclassification was completed.

Project: MP12837 (A01B)

- M A01B** **SOIL WORKING IN AGRICULTURE OR FORESTRY; PARTS, DETAILS, OR ACCESSORIES OF AGRICULTURAL MACHINES OR IMPLEMENTS, IN GENERAL** (making or covering furrows or holes for sowing, planting, or manuring [A01C 5/00](#); *mowers convertible to soil working apparatus or capable of soil working A01D 42/04; mowers combined with soil working implements A01D 43/12*; soil working for engineering purposes [E01](#), [E02](#), [E21](#); ~~{measuring areas for agricultural purposes G01B}~~)
- WARNINGS**
1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
- | | | |
|----------------------------|------------|-----------------------------|
| A01B 69/04 | covered by | A01B 69/008 |
| A01B 69/06 | covered by | A01B 69/005 |
| A01B 69/08 | covered by | A01B 69/006 |
2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}
- M A01B 1/00** **Hand tools (edge trimmers for lawns [A01G 3/06](#) ~~{; machines for working soil A01B 35/00; making hand tools B21D}~~)**
- M A01B 1/02 • Spades; Shovels ~~{(hand-operated dredgers E02F 3/02)}~~
- M A01B 1/06 • Hoes; Hand cultivators ~~{(rakes A01D 7/00; forks A01D 9/00; picks B25D)}~~
- M A01B 1/22 • Attaching the blades or the like to handles ~~{handles for tools, or their attachment, in general B25G}~~; Interchangeable or adjustable blades
- U A01B 3/00** **Ploughs with fixed plough-shares**
- M A01B 3/64 • Cable ploughs; Indicating or signalling devices for cable plough systems ~~{(vehicles towed by cable B60D)}~~
- M A01B 3/74 • Use of electric power for propelling ploughs ~~{for rotary cultivators or the like (electric current collectors B60L 5/00)}~~
- M A01B 5/00** **Ploughs with rolling non-driven tools, e.g. discs ~~(with rotary driven tools A01B 9/00)~~**
- M A01B 13/00** **Ploughs or like machines for special purposes (for drainage [E02B 11/02](#)) ~~{; Ditch diggers, trench ploughs, forestry ploughs, ploughs for land or marsh reclamation (machines for aerating meadows A01B 45/02; making furrows A01C 5/00; dredging machines in general E02F)}~~**
- M A01B 13/02 • for making or working ridges, e.g. with symmetrically arranged mouldboards ~~{; e.g. ridging plough}~~
- U A01B 13/04 • for working in vineyards, orchards, or the like

M	A01B 13/06	<ul style="list-style-type: none"> • Arrangements for preventing damage to the vines, or the like {, e.g. hydraulic (machines specially adapted for working in vineyards A01B 39/16)}
U	A01B 15/00	Elements, tools, or details of ploughs
U	A01B 15/02	<ul style="list-style-type: none"> • Plough blades; Fixing the blades
M	A01B 15/04	<ul style="list-style-type: none"> • Shares {(making ploughshares by rolling B21H)}
M	A01B 15/12	<ul style="list-style-type: none"> • Beams; Handles (handles for tools or their attachment in general B25G)
M	A01B 15/16	<ul style="list-style-type: none"> • Discs (bearings therefor A01B 71/04); Scrapers for cleaning discs; Sharpening attachments (sharpening in general B24)
M	A01B 17/00	Ploughs with special additional arrangements, e.g. means for putting manure under the soil, clod-crushers (A01B 49/00 takes precedence); {Means for breaking the subsoil}
M	A01B 19/00	Harrows with non-rotating tools {(harrows for working in vineyards A01B 39/16)}
M	A01B 21/00	Harrows with rotary non-driven tools (tilling implements with rotary driven tools A01B 33/00)
U	A01B 23/00	Elements, tools, or details of harrows
M	A01B 23/06	<ul style="list-style-type: none"> • Discs (A01B 15/16 takes precedence; bearings therefor A01B 71/04); Scrapers for cleaning discs; Sharpening attachments; {Lubrication of bearings} (sharpening in general B24)
M	A01B 25/00	Harrows with special additional arrangements, e.g. means for distributing fertilisers; Harrows for special purposes (A01B 39/00 takes precedence ; fertiliser distributors A01C 15/00)
M	A01B 29/00	Rollers {(rollers for roads E01C)}
M	A01B 31/00	Drags {graders for field cultivators (graders in general E02F)}
U	A01B 33/00	Tilling implements with rotary driven tools {, e.g. in combination with fertiliser distributors or seeders, with grubbing chains, with sloping axles, with driven discs}
M	A01B 33/16	<ul style="list-style-type: none"> • with special additional arrangements (A01B 49/00 takes precedence; for sowing or fertilising A01B 49/06)
M	A01B 35/00	Other machines for working soil {not specially adapted for working soil on which crops are growing}(A01B 37/00, A01B 39/00, A01B 77/00 take precedence ; hand tools A01B 1/00)
U	A01B 35/20	<ul style="list-style-type: none"> • Tools; Details
M	A01B 35/30	<ul style="list-style-type: none"> • Undercarriages (A01B 23/04 takes precedence)
M	A01B 39/00	Other machinesMachines specially adapted for working soil on which crops are growing
U	A01B 39/12	<ul style="list-style-type: none"> • for special purposes {, e.g. for special culture}
M	A01B 39/16	<ul style="list-style-type: none"> • for working in vineyards, orchards, or the like {; Arrangements for preventing damage to vines (ploughs adapted for working in vineyards A01B 13/06)}
U	A01B 39/20	<ul style="list-style-type: none"> • Tools; Details
M	A01B 39/24	<ul style="list-style-type: none"> • Undercarriages (A01B 23/04 takes precedence)
M	A01B 39/28	<ul style="list-style-type: none"> • with special additional arrangements (A01B 49/00 takes precedence)

M	A01B 51/00 - A01B 79/00 A01B 75/00	Parts, details or accessories of agricultural machines or implements, in general (seat constructions A47C; wheels B60B; shelters for drivers B60J; seats specially adapted for vehicles B60N 2/00; wheel scrapers B60S 1/68)
M	A01B 51/00	Undercarriages specially adapted for mounting- on various kinds of agricultural tools or apparatus (general vehicle aspects, see the relevant subclass of class B60 or B62)
M	A01B 59/00	Devices specially adapted for connection between animals or tractors and agricultural machines or implements (A01B 63/00 takes precedence; vehicle connections in general B60D; draught assemblies for animal drawn vehicles, in general B62C 5/00)
U	A01B 59/06	• for machines mounted on tractors
M	A01B 59/065	• {for ploughs or like implements (A01B 59/061 and subgroups take take precedence)}
M	A01B 59/066	• {of the type comprising at least two lower arms and one upper arm generally arranged in a triangle (, e.g. three-point hitches) }
M	A01B 61/00	Devices for, or parts of, agricultural machines or implements for preventing overstrain (preventing overstrain in vehicle connections, in general B60D; preventing overstrain in couplings per se F16D)
M	A01B 63/00	Lifting or adjusting devices or arrangements for agricultural machines or implements (lifting mechanisms for the cutter-bar of a mower A01D 34/24 ; adjusting devices for the cutter-bar of a mower A01D 34/28 ; constructional features of lifting devices per se B66F)
U	A01B 63/02	• for implements mounted on tractors
U	A01B 63/10	• • operated by hydraulic or pneumatic means
M	A01B 63/118	• • • Mounting implements on power-lift linkages (A01B 59/043 takes precedence ; preventing or limiting side-play of implements A01B 59/041 ; preventing overstrain A01B 61/00)
M	A01B 67/00	Devices for controlling the tractor motor by resistance of tools (preventing overstrain A01B 61/00)
M	A01B 69/00	Steering of agricultural machines or implements; Guiding agricultural machines or implements on a desired track
<p>NOTE</p> <p>In this group it is obligatory to classify subject-matter in the first appropriate place. It is however allowed to apply multiple classification where considered useful for search</p>		
M	A01B 71/00	Construction or arrangement of setting or adjusting mechanisms, of implement or tool drive or of power take-off; Means for protecting parts against dust, or the like; Adapting machine elements to or for agricultural purposes ((adjusting mechanisms in general G05G))
M	A01B 71/04	• Bearings of rotating parts, e.g. for soil-working discs ((discs A01B 15/16; A01B 23/06); bearings in general F16C)
M	A01B 71/06	• Special adaptations of coupling means between power take-off and transmission shaft to the implement or machine (couplings for transmitting rotation F16D)
M	A01B 71/08	• Means for protecting against dust, or the like, or for cleaning agricultural implements (A01B 15/16; A01B 19/10 and A01B 23/06 take precedence ; discs for ploughs A01B 15/16; lifting or cleaning apparatus for harrows A01B 19/10; discs for harrows A01B 23/06 ; screening of rotary driven tilling tools A01B 33/12 ; screening of rotary parts in general F16P 1/00)

- M A01B 73/00** Means or arrangements to facilitate transportation of agricultural machines or implements, e.g. folding frames to reduce overall width (arrangements of lifting devices for soil working implements [A01B 63/00](#); ~~carriers for harvesters or mowers A01D 75/002; arrangements or carriers for haymakers A01D 78/1007, A01D 80/005; }~~ vehicles adapted for load transportation or to transport, to carry or to comprise special loads or objects B60P; motor vehicles, trailers B62D)
- M A01B 77/00** Machines for lifting and treating soil ~~(biocides, pest repellants or attractants, plant growth regulators A01N 25/00 – A01N 65/00; fertilisers C05; soil-conditioning or soil-stabilising materials C09K 17/00)~~

Project: MP12803 (A01J)

- M A01J** **MANUFACTURE OF DAIRY PRODUCTS** ~~(for chemical matters, see subclass A23C)~~
- NOTES
1. This subclass covers mechanical aspects of dairy product manufacturing, e.g. apparatus for the mechanical treatment of milk or cream for making butter or cheese.
2. This subclass does not cover chemical aspects of dairy product manufacturing, which include apparatus for chemical processes such as concentration, evaporation or drying, and which are covered by subclass A23C.
- WARNING
- {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}
- M A01J 1/00 - A01J 9/00** **Milking** ~~(milking stations A01K 1/12)~~
- M A01J 27/00** After-treatment of cheese; Coating ~~the~~**of** cheese
- M A01J 27/02** ~~Coating the cheese, e.g. with paraffin wax~~ **Devices for coating of cheese**

Project: MP12716 (A01N)

- U A01N 29/00** Biocides, pest repellants or attractants, or plant growth regulators containing halogenated hydrocarbons
- NOTE
- {In this group, C-Sets are used for classification. The detailed information about the C-Sets construction and the associated syntax rules is found in the Definitions of [A01N](#).}
- U A01N 29/10** • Halogen attached to an aliphatic side chain of an aromatic ring system
- M A01N 29/12** • • 1,1-Di- or 1,1,1-~~tri~~**halo-tri-halo**-2-aryl-ethane or -ethene or derivatives thereof, e.g. DDT

Project: MP12731 (A01P)

- M A01P** **BIOCIDAL, PEST REPELLANT, PEST ATTRACTANT OR PLANT GROWTH REGULATORY ACTIVITY OF CHEMICAL COMPOUNDS OR PREPARATIONS**
- NOTES
1. This subclass is for secondary classification in the sense of paragraph 107bis of the Guide to the IPC. Therefore, the classification symbols of this subclass are not listed first when assigned to patent documents. Secondary

classification symbols may be assigned for either invention information or additional information, as appropriate.

~~1.~~ ~~2.~~ This subclass covers biocidal, pest repellent, pest attractant or plant growth regulatory activity of chemical compounds or preparations already classified as such in subclasses [A01N](#) or [C12N](#), or in classes [C01](#), [C07](#) or [C08](#).

~~2.~~ ~~3.~~ Attention is drawn to the notes following the title of subclass [A01N](#), which are also applicable to this subclass.

~~3. In this subclass, activity is classified in all appropriate places.~~

4. Attention is drawn to cases where the subject of the invention concerns only biocidal, pest repellent, pest attractant or plant growth regulatory activity of chemical compounds or preparations, and the chemical structure, compound, mixture or composition of this subject of the invention is known. In such cases, classification is made in both subclass [A01N](#) and subclass [A01P](#) as invention information. In addition, if the chemical structure, compound, mixture or composition or any individual ingredient of a mixture or composition is considered to represent information of interest for search, it may also be classified as additional information.

~~5. The classification symbols of this subclass are not listed first when assigned to patent documents.~~

Project: RP12366-C (A23B)

C A23B 2/00

Preservation of foods or foodstuffs, in general

NOTE

This group covers processes or apparatus for the preservation of foods or foodstuffs, in general, i.e. where the nature of the product is not relevant or not specified.

WARNING

Group [A23B 2/00](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) ~~and~~ [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/001

- {Details of apparatus, e.g. pressure feed valves or for transport, or loading or unloading manipulation}

WARNING

Group [A23B 2/001](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) ~~and~~ [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/003

- {Control or safety devices for sterilisation or pasteurisation systems}

WARNING

Group [A23B 2/003](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) ~~and~~ [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/05

- by heating using irradiation or electric treatment (drying or kilning [A23B 2/90](#))

WARNING

Group [A23B 2/05](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) ~~and~~ [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/055
- {with infrared rays}
- WARNING
- Group [A23B 2/055](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/08
- using microwaves or dielectric heating
- WARNING
- Group [A23B 2/08](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/10
- by treatment with pressure variation, shock, acceleration or shear stress
- WARNING
- Group [A23B 2/10](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/103
- {using sub- or super-atmospheric pressures, or pressure variations transmitted by a liquid or gas}
- WARNING
- Group [A23B 2/103](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/20
- by heating materials in packages which are progressively transported, continuously or stepwise, through the apparatus
- WARNING
- Group [A23B 2/20](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/203
- {with packages moving on the spot while being transported}
- WARNING
- Group [A23B 2/203](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/205
- {with packages on a drum with horizontal axis (with packages moving on the spot while being transported [A23B 2/203](#))}
- WARNING
- Group [A23B 2/205](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/2055
- • • {transported in a hydrostatic chamber}
- WARNING
- Group [A23B 2/2055](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/22
- • with packages on endless chain or band conveyors {(with packages moving on the spot while being transported [A23B 2/203](#))}
- WARNING
- Group [A23B 2/22](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/225
- • • {transported in a hydrostatic chamber}
- WARNING
- Group [A23B 2/225](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/25
- • with packages transported along a helical path {(with packages moving on the spot while being transported [A23B 2/203](#))}
- WARNING
- Group [A23B 2/25](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/255
- • • {transported in a hydrostatic chamber}
- WARNING
- Group [A23B 2/255](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/28
- • with packages on a revolving platform {(with packages moving on the spot while being transported [A23B 2/203](#))}
- WARNING
- Group [A23B 2/28](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/285
- • • {transported in a hydrostatic chamber}
- WARNING
- Group [A23B 2/285](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/30
- by heating materials in packages which are not progressively transported through the apparatus
- WARNING
Group [A23B 2/30](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/33
- • with packages in intercommunicating chambers through which the heating medium is circulated
- WARNING
Group [A23B 2/33](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/37
- • with packages moving on the spot
- WARNING
Group [A23B 2/37](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/40
- by heating loose unpacked materials
- WARNING
Group [A23B 2/40](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/405
- • {in solid state}
- WARNING
Group [A23B 2/405](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/42
- • while they are progressively transported through the apparatus
- WARNING
Group [A23B 2/42](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/425
- • • {in solid state}
- WARNING
Group [A23B 2/425](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/44
- • • with transport along plates
- WARNING
Group [A23B 2/44](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/445 • • • {in solid state}
WARNING
Group [A23B 2/445](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/46 • • • with transport through tubes
WARNING
Group [A23B 2/46](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/465 • • • {in solid state}
WARNING
Group [A23B 2/465](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/48 • • with the materials in spray form
WARNING
Group [A23B 2/48](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/485 • • • {in solid state}
WARNING
Group [A23B 2/485](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/50 • by irradiation without heating
WARNING
Group [A23B 2/50](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/503 • • {with corpuscular or ionising radiation, i.e. X, alpha, beta or omega radiation}
WARNING
Group [A23B 2/503](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/505
- {with corona irradiation}
- WARNING
- Group [A23B 2/505](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/53
- with ultraviolet light
- WARNING
- Group [A23B 2/53](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/57
- by treatment with ultrasonic waves
- WARNING
- Group [A23B 2/57](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/60
- by treatment with electric currents without heating effect
- WARNING
- Group [A23B 2/60](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/605
- {by electrolysis}
- WARNING
- Group [A23B 2/605](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/70
- by treatment with chemicals
- WARNING
- Group [A23B 2/70](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/704
- in the form of gases, e.g. fumigation; Compositions or apparatus therefor
- WARNING
- Group [A23B 2/704](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/7045
- {Details of apparatus for generating or regenerating gases}
- WARNING
- Group [A23B 2/7045](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/708

- • in a controlled atmosphere, e.g. partial vacuum, comprising only CO₂, N₂, O₂ or H₂O

WARNING

Group [A23B 2/708](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/712

- • • in which an absorbent is placed or used (packages for foodstuffs with provision for absorbing fluids [B65D 81/26](#))

WARNING

Group [A23B 2/712](#) is impacted by reclassification into groups

[A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/717

- • • • Oxygen absorbent

WARNING

Group [A23B 2/717](#) is impacted by reclassification into groups

[A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/721

- • in a controlled atmosphere comprising other gases in addition to CO₂, N₂, O₂ or H₂O

WARNING

Group [A23B 2/721](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/725

- • in the form of liquids or solids

WARNING

Group [A23B 2/725](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/729

- • Organic compounds; Microorganisms; Enzymes

NOTE

In groups [A23B 2/733](#) - [A23B 2/779](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

WARNING

Group [A23B 2/729](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/7295 . . . {Antibiotics}
- WARNING
Group [A23B 2/7295](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/733 . . . Compounds of undetermined constitution obtained from animals or plants
- WARNING
Group [A23B 2/733](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/742 . . . Organic compounds containing oxygen
- WARNING
Group [A23B 2/742](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/746 with singly-bound oxygen
- WARNING
Group [A23B 2/746](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/75 with doubly-bound oxygen
- WARNING
Group [A23B 2/75](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/754 containing carboxyl groups
- WARNING
Group [A23B 2/754](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/758 Carboxylic acid esters
- WARNING
Group [A23B 2/758](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/762 . . . Organic compounds containing nitrogen
WARNING
Group [A23B 2/762](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/767 . . . Organic compounds containing sulfur
WARNING
Group [A23B 2/767](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/771 . . . Organic compounds containing hetero rings
WARNING
Group [A23B 2/771](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/775 . . . Organic compounds containing phosphorus
WARNING
Group [A23B 2/775](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/779 . . . Sugars; Derivatives thereof
WARNING
Group [A23B 2/779](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/783 . . . Microorganisms; Enzymes
WARNING
Group [A23B 2/783](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/788 . . . Inorganic compounds
WARNING
Group [A23B 2/788](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/792 . . . Apparatus for preserving using liquids
WARNING
Group [A23B 2/792](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/796

- • Apparatus for preserving using solids

WARNING

Group [A23B 2/796](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/80

- Freezing; Subsequent thawing; Cooling

WARNING

Group [A23B 2/80](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/803

- • {Materials being transported through or in the apparatus, with or without shaping, e.g. in the form of powders, granules or flakes}

WARNING

Group [A23B 2/803](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/8033

- • {with packages or with shaping in the form of blocks or portions}

WARNING

Group [A23B 2/8033](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/805

- • {Materials not being transported through or in the apparatus with or without shaping, e.g. in the form of powders, granules or flakes}

WARNING

Group [A23B 2/805](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/8055

- • {with packages or with shaping in the form of blocks or portions}

WARNING

Group [A23B 2/8055](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/82

- • Thawing subsequent to freezing

WARNING

Group [A23B 2/82](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 2/85
- with addition of {or treatment with} chemicals
- WARNING
Group [A23B 2/85](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/88
- with direct contact between the food and the chemical, e.g. liquid N₂ at cryogenic temperature
- WARNING
Group [A23B 2/88](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/90
- by drying or kilning; Subsequent reconstitution
- WARNING
Group [A23B 2/90](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/905
- {Fractionated crystallisation}
- WARNING
Group [A23B 2/905](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/91
- with addition of chemicals before or during drying
- WARNING
Group [A23B 2/91](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/92
- Freeze drying
- WARNING
Group [A23B 2/92](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/93
- Spray drying
- WARNING
Group [A23B 2/93](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 2/94
- Thin-layer drying, drum drying or roller drying
- WARNING
Group [A23B 2/94](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/945

- • {Drum- or roller-drying}

WARNING

Group [A23B 2/945](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/95

- • Fluidised-bed drying

WARNING

Group [A23B 2/95](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/96

- • Foam drying

WARNING

Group [A23B 2/96](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 2/97

- • using irradiation or electric treatment, e.g. ultrasonic waves

WARNING

Group [A23B 2/97](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 7/00

Preservation of fruit or vegetables; Chemical ripening of fruit or vegetables

WARNING

Group [A23B 7/00](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 7/005

- Preserving by heating

WARNING

Group [A23B 7/005](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 7/0053

- • {by direct or indirect contact with heating gases or liquids}

WARNING

Group [A23B 7/0053](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/0056
- • • {with packages}
- WARNING
- Group [A23B 7/0056](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/01
- • by irradiation or electric treatment
- WARNING
- Group [A23B 7/01](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/012
- • • {with packages}
- WARNING
- Group [A23B 7/012](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/015
- Preserving by irradiation or electric treatment without heating effect
- WARNING
- Group [A23B 7/015](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/02
- Dehydrating; Subsequent reconstitution (dried cooked potatoes [A23L 19/12](#))
- WARNING
- Group [A23B 7/02](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/0205
- • {by contact of the material with fluids, e.g. drying gas or extracting liquids}
- WARNING
- Group [A23B 7/0205](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/021
- • {Foam drying}
- WARNING
- Group [A23B 7/021](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/0215
- • {Post-treatment of dried fruits or vegetables}
- WARNING
- Group [A23B 7/0215](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) ~~and~~, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/022
 - with addition of chemicals {before or during drying, e.g. semi-moist products} ([A23B 7/024](#) - [A23B 7/028](#) take precedence)

WARNING

Group [A23B 7/022](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/024
 - Freeze-drying {, i.e. cryodesiccation or lyophilisation}

WARNING

Group [A23B 7/024](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/026
 - Spray-drying

WARNING

Group [A23B 7/026](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/028
 - Thin layer-, drum- or roller-drying {or by contact with a hot surface}

WARNING

Group [A23B 7/028](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/04
 - Freezing; Subsequent thawing; Cooling

WARNING

Group [A23B 7/04](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/0408
 - {Materials being transported through or in the apparatus with or without shaping, e.g. in the form of powders, granules or flakes ([A23B 7/05](#) takes precedence; moving on the spot only [A23B 7/0425](#))}

WARNING

Group [A23B 7/0408](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/0416
 - {with packages or with shaping in the form of blocks or portions}

WARNING

Group [A23B 7/0416](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/0425
- {Materials not being transported through or in the apparatus, with or without shaping, e.g. in the form of powders, granules or flakes ([A23B 7/05](#) takes precedence)}
- WARNING
- Group [A23B 7/0425](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/0433
- • {with packages or with shaping in the form of blocks or portions}
- WARNING
- Group [A23B 7/0433](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/0441
- {Treatment other than blanching preparatory to freezing}
- WARNING
- Group [A23B 7/0441](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/045
- Thawing subsequent to freezing
- WARNING
- Group [A23B 7/045](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/05
- • with addition of chemicals {or treatment with chemicals other than cryogenics, before or during cooling, e.g. in the form of an ice coating or frozen block}
- WARNING
- Group [A23B 7/05](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/055
- • • with direct contact between the food and the chemical, e.g. liquid N₂, at cryogenic temperature
- WARNING
- Group [A23B 7/055](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/06
- Blanching (machines therefor [A23N 12/00](#))
- WARNING
- Group [A23B 7/06](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/08
- Preserving with sugars (marmalade, jam or fruit jellies [A23L 21/10](#))
- WARNING
Group [A23B 7/08](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/085
- {in a solution of sugar}
- WARNING
Group [A23B 7/085](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/10
- Preserving with acids; Acid fermentation
- WARNING
Group [A23B 7/10](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/14
- Preserving or ripening with chemicals not covered by group [A23B 7/08](#) or [A23B 7/10](#)
- WARNING
Group [A23B 7/14](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/144
- {in the form of gases, e.g. fumigation; Compositions or apparatus therefor}
- WARNING
Group [A23B 7/144](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/148
- {in a controlled atmosphere, e.g. partial vacuum, comprising only CO₂, N₂, O₂ or H₂O}
- WARNING
Group [A23B 7/148](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/152
- {in a controlled atmosphere comprising other gases in addition to CO₂, N₂, O₂ or H₂O {; Elimination of such other gases}}
- WARNING
Group [A23B 7/152](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 7/153
- • in the form of liquids or solids
- WARNING
- Group [A23B 7/153](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/154
- • • Organic compounds; Microorganisms; Enzymes
- WARNING
- Group [A23B 7/154](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/155
- • • Microorganisms; Enzymes {; Antibiotics}
- WARNING
- Group [A23B 7/155](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/157
- • • Inorganic compounds
- WARNING
- Group [A23B 7/157](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/158
- • • Apparatus for preserving using liquids
- WARNING
- Group [A23B 7/158](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/159
- • • Apparatus for preserving using solids
- WARNING
- Group [A23B 7/159](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 7/16
- Coating with a protective layer; Compositions or apparatus therefor ([A23B 7/08](#) takes precedence)
- WARNING
- Group [A23B 7/16](#) is impacted by reclassification into groups [A23B 80/00](#), [A23B 85/00](#) and [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 9/00** **Preservation of edible seeds, e.g. cereals (preservation of pulses A23B 75/00)**
WARNING
 Group [A23B 9/00](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/005** • {Processes or apparatus using pressure variation or mechanical force, e.g. shock, acceleration, shear stress or contortion}
WARNING
 Group [A23B 9/005](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/02** • Preserving by heating
WARNING
 Group [A23B 9/02](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/025** • • {with use of gases}
WARNING
 Group [A23B 9/025](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/04** • • by irradiation or electric treatment
WARNING
 Group [A23B 9/04](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/06** • Preserving by irradiation or electric treatment without heating effect
WARNING
 Group [A23B 9/06](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/08** • Drying; Subsequent reconstitution
WARNING
 Group [A23B 9/08](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.

- C A23B 9/10
- Freezing; Subsequent thawing; Cooling
- WARNING
Group [A23B 9/10](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/12
- Thawing subsequent to freezing
- WARNING
Group [A23B 9/12](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/14
- Coating with a protective layer; Compositions or apparatus therefor
- WARNING
Group [A23B 9/14](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/16
- Preserving with chemicals
- WARNING
Group [A23B 9/16](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/18
- in the form of gases, e.g. fumigation; Compositions or apparatus therefor
- WARNING
Group [A23B 9/18](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/20
- in a controlled atmosphere, e.g. partial vacuum, comprising only CO₂, N₂, O₂ or H₂O
- WARNING
Group [A23B 9/20](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/22
- in a controlled atmosphere comprising other gases in addition to CO₂, N₂, O₂ or H₂O
- WARNING
Group [A23B 9/22](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#). All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 9/24
- in the form of liquids or solids
- WARNING
Group [A23B 9/24](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 9/26

- • • Organic compounds; Microorganisms; Enzymes

WARNING

Group [A23B 9/26](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 9/28

- • • Microorganisms; Enzymes {; Antibiotics}

WARNING

Group [A23B 9/28](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 9/30

- • • Inorganic compounds

WARNING

Group [A23B 9/30](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 9/32

- • • Apparatus for preserving using liquids

WARNING

Group [A23B 9/32](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

C A23B 9/34

- • • Apparatus for preserving using solids

WARNING

Group [A23B 9/34](#) is impacted by reclassification into groups [A23B 75/00](#), [A23B 80/00](#), [A23B 85/00](#) and, [A23B 85/10](#), [A23B 90/00](#) and [A23B 90/10](#).

All groups listed in this Warning should be considered in order to perform a complete search.

T A23B 20/00

Preservation of edible oils or fatsWARNING

~~Group~~ Groups [A23B 20/00](#) is, [A23B 20/10](#) and [A23B 20/30](#) are incomplete pending reclassification of documents from groups [A23D 7/00](#) and [A23D 9/00](#). Groups ~~All A23D 7/00; groups A23D 9/00 and~~ listed in [A23B 20/00](#) this Warning should be considered in order to perform a complete search.

T A23B 20/10

- Preservation of edible oil or fat compositions containing an aqueous phase, e.g. margarines

T A23B 20/30

- Preservation of other edible oils or fats, e.g. shortenings or cooking oils

- U A23B 70/00** Preservation of non-alcoholic beverages (preservation of beverages from legumes [A23B 75/10](#); preservation of beverages containing tea, tea substitutes or herbal tea [A23B 85/10](#); preservation of beverages containing coffee or coffee substitutes [A23B 90/10](#))
- WARNING
Group [A23B 70/00](#) is impacted by reclassification into groups [A23B 70/20](#), [A23B 75/10](#), [A23B 85/10](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- C A23B 70/10** • by addition of preservatives
- WARNING
*Group [A23B 70/10](#) is impacted by reclassification into groups [A23B 70/20](#), [A23B 75/10](#), [A23B 85/10](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.*
- M A23B 70/20** • by cooling
- WARNING
Group [A23B 70/20](#) is incomplete pending reclassification of documents from ~~group~~ groups [A23B 70/00](#), [A23B 70/10](#), [A23B 70/30](#), [A23B 70/35](#) and [A23B 70/50](#).
~~Groups~~All ~~A23B 70/00~~ and groups listed ~~A23B 70/20~~ in this Warning should be considered in order to perform a complete search.
- C A23B 70/30** • by heating
- WARNING
*Group [A23B 70/30](#) is impacted by reclassification into groups [A23B 70/20](#), [A23B 75/10](#), [A23B 85/10](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.*
- C A23B 70/35** • • by irradiation or electric treatment
- WARNING
*Group [A23B 70/35](#) is impacted by reclassification into groups [A23B 70/20](#), [A23B 75/10](#), [A23B 85/10](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.*
- C A23B 70/50** • by irradiation or electric treatment, without heating
- WARNING
*Group [A23B 70/50](#) is impacted by reclassification into groups [A23B 70/20](#), [A23B 75/10](#), [A23B 85/10](#) and [A23B 90/10](#).
All groups listed in this Warning should be considered in order to perform a complete search.*
- U A23B 85/00** Preservation of tea, tea substitutes or herbal tea
- WARNING
Group [A23B 85/00](#) is incomplete pending reclassification of documents from groups [A23B 2/00](#) - [A23B 2/53](#), [A23B 2/57](#), [A23B 2/60](#) - [A23B 2/605](#), [A23B 2/70](#) - [A23B 2/97](#), [A23B 7/00](#) - [A23B 7/16](#), [A23B 9/00](#) - [A23B 9/34](#) and [A23F 3/00](#) - [A23F 3/426](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- M A23B 85/10
- Preservation of beverages containing tea, tea substitutes or herbal tea
- WARNING
- Group [A23B 85/10](#) is incomplete pending reclassification of documents from ~~group~~groups [A23B 2/00](#) - [A23B 2/53](#), [A23B 2/57](#), [A23B 2/60](#) - [A23B 2/605](#), [A23B 2/70](#) - [A23B 2/97](#), [A23B 7/00](#) - [A23B 7/16](#), [A23B 9/00](#) - [A23B 9/34](#), [A23B 70/00](#), [A23B 70/10](#), [A23B 70/30](#), [A23B 70/35](#), [A23B 70/50](#) and [A23F 3/00](#) - [A23F 3/426](#).
- Groups ~~All A23B 70/00 and~~groups listed [A23B 85/10](#) in this Warning should be considered in order to perform a complete search.

- U A23B 90/00
- Preservation of coffee or coffee substitutes**
- WARNING
- Group [A23B 90/00](#) is incomplete pending reclassification of documents from groups [A23B 2/00](#) - [A23B 2/53](#), [A23B 2/57](#), [A23B 2/60](#) - [A23B 2/605](#), [A23B 2/70](#) - [A23B 2/97](#), [A23B 7/00](#) - [A23B 7/16](#), [A23B 9/00](#) - [A23B 9/34](#) and [A23F 5/00](#) - [A23F 5/505](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- M A23B 90/10
- Preservation of beverages containing coffee or coffee substitutes
- WARNING
- Group [A23B 90/10](#) is incomplete pending reclassification of documents from ~~group~~groups [A23B 2/00](#) - [A23B 2/53](#), [A23B 2/57](#), [A23B 2/60](#) - [A23B 2/605](#), [A23B 2/70](#) - [A23B 2/97](#), [A23B 7/00](#) - [A23B 7/16](#), [A23B 9/00](#) - [A23B 9/34](#), [A23B 70/00](#), [A23B 70/10](#), [A23B 70/30](#), [A23B 70/35](#), [A23B 70/50](#) and [A23F 5/00](#) - [A23F 5/505](#).
- Groups ~~All A23B 70/00 and~~groups listed [A23B 90/10](#) in this Warning should be considered in order to perform a complete search.

Project: MP12803 (A23C)

- M A23C
- DAIRY PRODUCTS, e.g. MILK, BUTTER OR CHEESE; MILK OR CHEESE SUBSTITUTES; ~~MAKING OR TREATMENT~~PREPARATION THEREOF (preservation thereof [A23B 11/00](#))**
- NOTE
- This subclass covers:
- the chemical aspects of making dairy products;
 - the apparatus used for performing techniques provided for therein, e.g. for concentration, evaporation, ~~drying or sterilisation~~ or [drying](#), unless such apparatus is specifically provided for in another subclass, e.g. in subclass [A01J](#) for treatment of milk or cream for manufacture of butter or cheese.

Project: RP12367-C (A23C)

- M A23C 7/00
- Other dairy technology (preservation of milk or dairy products [A23B 11/00](#))**
- WARNING
- Group ~~A23C 7/00 is impacted by reclassification into group A23B 11/00.~~
Groups ~~A23C 7/00 and A23B 11/00 should be considered in order to perform a complete search.~~

M A23C 9/00 Milk preparations; Milk powder or milk powder preparations (mixtures of whey with milk products or milk components [A23C 21/06](#); preservation of milk or milk preparations [A23B 11/10](#))

WARNING

Group A23C 9/00 is impacted by reclassification into group A23B 11/10.
Groups A23C 9/00 and A23B 11/10 should be considered in order to perform a complete search.

M A23C 13/00 Cream; Cream preparations (preservation of cream or cream preparations [A23B 11/30](#); ice-cream [A23G 9/00](#)); Making thereof

WARNING

Group A23C 13/00 is impacted by reclassification into group A23B 11/30.
Groups A23C 13/00 and A23B 11/30 should be considered in order to perform a complete search.

M A23C 15/00 Butter; Butter preparations; Making thereof (preservation of butter or butter preparations [A23B 11/40](#); butter substitutes [A23D](#))

WARNING

Group A23C 15/00 is impacted by reclassification into group A23B 11/40.
Groups A23C 15/00 and A23B 11/40 should be considered in order to perform a complete search.

Project: MP12803, RP12367-C (A23C)

M A23C 19/00 Cheese; Cheese preparations; Making thereof (cheese substitutes [A23C 20/00](#); preservation of cheese or cheese preparations [A23B 11/60](#))

WARNING

Group A23C 19/00 is impacted by reclassification into group A23B 11/60.
Groups A23C 19/00 and A23B 11/60 should be considered in order to perform a complete search.

Project: MP12803 (A23C)

- M A23C 19/14 • Treating cheese after having reached its definite form, e.g. ripening; *or* smoking
- M A23C 19/16 • • Covering the cheese surface, e.g. with *paraffin-wax* *wax coating compositions*

Project: RP12368-C (A23D)

C A23D 7/00 Edible oil or fat compositions containing an aqueous phase, e.g. margarines (preservation of edible oil compositions containing aqueous phase [A23B 20/10](#))

WARNING

Group [A23D 7/00](#) is impacted by reclassification into *group* *groups* [A23B 20/00](#) and [A23B 20/10](#).
Groups [A23D 7/00](#) and, [A23B 20/00](#) and [A23B 20/10](#) should be considered in order to perform a complete search.

C A23D 9/00 Other edible oils or fats, e.g. shortenings or cooking oils (preservation of other edible oils [A23B 20/30](#))

WARNING

Group [A23D 9/00](#) is impacted by reclassification into *group* *groups* [A23B 20/00](#) and [A23B 20/30](#).

Groups [A23D 9/00](#) and, [A23B 20/00](#) and [A23B 20/30](#) should be considered in order to perform a complete search.

Project: RP12381-C (A23F)

C A23F 3/00

Tea; Tea substitutes; Preparations thereof (preservation of tea, tea substitutes or herbal tea [A23B 85/00](#))

WARNING

Groups [A23F 3/00](#) - [A23F 3/426](#) are impacted by reclassification into [groupgroups A23B 85/00 and A23B 85/10.](#)

All groups listed should be considered in order to perform a complete search.

- C A23F 3/06
 - Treating tea before extraction (reducing or removing alkaloid content [A23F 3/36](#)); Preparations produced thereby (tea extract preparations [A23F 3/16](#))
- C A23F 3/08
 - • Oxidation; Fermentation
- C A23F 3/10
 - • • Fermentation with addition of microorganisms or enzymes
- C A23F 3/12
 - • Rolling or shredding tea leaves
- C A23F 3/14
 - • Tea preparations, e.g. using additives (flavouring [A23F 3/40](#))
- C A23F 3/16
 - Tea extraction; Tea extracts; Treating tea extract; Making instant tea
- C A23F 3/163
 - • {Liquid or semi-liquid tea extract preparations, e.g. gels or liquid extracts in solid capsules}
- C A23F 3/166
 - • {Addition of, or treatment with, enzymes or microorganisms}
- C A23F 3/18
 - • Extraction of water soluble tea constituents ({[A23F 3/166](#) takes precedence; } isolation of tea flavour or tea oil [A23F 3/42](#))
- C A23F 3/20
 - • Removing unwanted substances ({[A23F 3/166](#) takes precedence; } reducing or removing alkaloid content [A23F 3/38](#))
- C A23F 3/205
 - • • {Using flocculating or adsorbing agents}
- C A23F 3/22
 - • Drying or concentrating tea extract ({[A23F 3/166](#) takes precedence})
- C A23F 3/225
 - • • {by evaporation, e.g. drying in thin layers, foam drying ([A23F 3/26](#) and [A23F 3/28](#) take precedence)}
- C A23F 3/24
 - • • by freezing out the water
- C A23F 3/26
 - • • by lyophilisation
- C A23F 3/28
 - • • by spraying into a gas stream
- C A23F 3/30
 - • Further treatment of dried tea extract; Preparations produced thereby, e.g. instant tea ({[A23F 3/166](#) takes precedence; } flavouring [A23F 3/40](#))
- C A23F 3/32
 - • • Agglomerating, flaking or tableting {or granulating}
- C A23F 3/34
 - Tea substitutes, e.g. maté; Extracts or infusions thereof
- C A23F 3/36
 - Reducing or removing alkaloid content; Preparations produced thereby; Extracts or infusions thereof
- C A23F 3/363
 - • {by addition of alkaloid neutralising or complexing agents ([A23F 3/166](#) takes precedence)}
- C A23F 3/366
 - • {by extraction of the leaves with selective solvents}
- C A23F 3/38
 - • Reducing or removing alkaloid content from tea extract
- C A23F 3/385
 - • • {using flocculating, precipitating, adsorbing or complex-forming agents, or ion-exchangers}
- C A23F 3/40
 - Tea flavour; Tea oil; Flavouring of tea or tea extract (synthetic tea flavours [A23L 27/20](#))
- C A23F 3/405
 - • {Flavouring with flavours other than natural tea flavour or tea oil}

- C A23F 3/42 • • Isolation {or recuperation} of tea flavour or tea oil
- C A23F 3/423 • • • {by solvent extraction; Tea flavour from tea oil}
- C A23F 3/426 • • • {by distillation, e.g. stripping leaves; Recovering volatile gases (flavour from tea oil [A23F 3/423](#))}

- C A23F 5/00 Coffee; Coffee substitutes; Preparations thereof (preservation of coffee or coffee substitutes [A23B 90/00](#))**
- WARNING**
- Groups [A23F 5/00](#) - [A23F 5/505](#) are impacted by reclassification into **groupgroups [A23B 90/00](#) and [A23B 90/10](#).**
- All groups listed should be considered in order to perform a complete search.

- C A23F 5/02 • Treating green coffee; Preparations produced thereby (roasting [A23F 5/04](#); removing unwanted substances [A23F 5/16](#); reducing or removing alkaloid content [A23F 5/20](#); extraction [A23F 5/24](#))
- C A23F 5/04 • Methods of roasting coffee (machines therefor [A23N 12/00](#))
- C A23F 5/043 • • {in the presence of inert particles}
- C A23F 5/046 • • {with agitation or transportation of the beans by gases; Fluidised-bed roasting or fluidised-bed cooling after roasting ([A23F 5/043](#) takes precedence)}
- C A23F 5/06 • • of roasting extracted coffee {; Caramelisation of coffee extract}
- C A23F 5/08 • Methods of grinding coffee (coffee mills [A47J 42/00](#))
- C A23F 5/10 • Treating roasted coffee; Preparations produced thereby (removing unwanted substances [A23F 5/16](#); reducing or removing alkaloid content [A23F 5/20](#); coffee extraction, making instant coffee [A23F 5/24](#))
- C A23F 5/105 • • {Treating in vacuum or with inert or noble gases; Storing in gaseous atmosphere; Packaging}
- C A23F 5/12 • • Agglomerating, flaking or tableting (of coffee extract or instant coffee [A23F 5/38](#))
- C A23F 5/125 • • • {Tablets or other similar solid forms}
- C A23F 5/14 • • using additives, e.g. milk or sugar; Coating (flavouring [A23F 5/46](#))
- C A23F 5/145 • • • {Coating whole beans with a layer}
- C A23F 5/16 • Removing unwanted substances (reducing or removing alkaloid content [A23F 5/20](#))
- C A23F 5/163 • • {using enzymes or microorganisms}
- C A23F 5/166 • • {by extraction of the beans, ground or not, with selective solvents other than water or aqueous bean extracts, including supercritical gases}
- C A23F 5/18 • • from coffee extract {([A23F 5/163](#) takes precedence)}
- C A23F 5/185 • • • {using flocculating, precipitating, adsorbing or complex-forming agents, or ion-exchangers}
- C A23F 5/20 • Reducing or removing alkaloid content; Preparations produced thereby; Extracts or infusions thereof
- C A23F 5/202 • • {by addition of alkaloid neutralising or complexing agents}
- C A23F 5/204 • • {using enzymes or microorganisms}
- C A23F 5/206 • • {by extraction of the beans with selective solvents other than water or aqueous bean extracts, including supercritical gases}
- C A23F 5/208 • • {by extraction of the beans with water, aqueous solutions without organic or inorganic solvents or aqueous coffee extract}
- C A23F 5/22 • • Reducing or removing alkaloid content from coffee extract
- C A23F 5/223 • • • {using flocculating, precipitating, adsorbing or complex-forming agents, or ion-exchangers}

- C A23F 5/226 • • • {by extraction with selective solvents}
- C A23F 5/24 • Extraction of coffee (isolation of coffee flavour or coffee oil [A23F 5/48](#)); Coffee extracts (with reduced alkaloid content [A23F 5/20](#)); Making instant coffee (methods of roasting extracted coffee [A23F 5/06](#))
- C A23F 5/243 • • {Liquid, semi-liquid or non-dried semi-solid coffee extract preparations; Coffee gels; Liquid coffee in solid capsules ([A23F 5/246](#) takes precedence)}
- C A23F 5/246 • • {Addition of, or treatment with, enzymes or microorganisms ([A23F 5/163](#) and [A23F 5/204](#) take precedence)}
- C A23F 5/26 • • Extraction of water soluble constituents {([A23F 5/246](#) takes precedence)}
- C A23F 5/262 • • • {the extraction liquid flowing through a stationary bed of solid substances, e.g. in percolation columns}
- C A23F 5/265 • • • {the solid substances being transported through the apparatus during the extraction cycle}
- C A23F 5/267 • • • {using additives, specific extraction media or specific coffee blends}
- C A23F 5/28 • • Drying or concentrating coffee extract {([A23F 5/246](#) takes precedence)}
- C A23F 5/285 • • • {by evaporation, e.g. drying in thin layers or foam drying ([A23F 5/32](#), [A23F 5/34](#) take precedence)}
- C A23F 5/30 • • • by freezing out the water
- C A23F 5/32 • • • by lyophilisation
- C A23F 5/34 • • • by spraying into a gas stream
- C A23F 5/36 • • Further treatment of dried coffee extract; Preparations produced thereby, e.g. instant coffee {([A23F 5/246](#) takes precedence; } removing unwanted substances [A23F 5/18](#); flavouring [A23F 5/46](#))}
- C A23F 5/38 • • • Agglomerating, flaking or tableting {or granulating}
- C A23F 5/385 • • • • {Tablets or other similar solid forms}
- C A23F 5/40 • • • using organic additives, e.g. milk, sugar
- C A23F 5/405 • • • • {comprising ground coffee or ground coffee substitute particles}
- C A23F 5/42 • • • using inorganic additives
- C A23F 5/44 • Coffee substitutes
- C A23F 5/46 • Coffee flavour; Coffee oil; Flavouring of coffee or coffee extract (synthetic coffee flavours [A23L 27/28](#))
- C A23F 5/465 • • {Flavouring with flavours other than natural coffee flavour or coffee oil}
- C A23F 5/48 • • Isolation {or recuperation} of coffee flavour or coffee oil
- C A23F 5/483 • • • {by solvent extraction of the beans, ground or not}
- C A23F 5/486 • • • {by distillation from beans that are ground or not ground, e.g. stripping; Recovering volatile gases, e.g. roaster or grinder gases}
- C A23F 5/50 • • • from coffee extract
- C A23F 5/505 • • • • {by distillation, e.g. stripping the extract; Recovering volatile gases, e.g. during concentration}

Project: RP12829 (A23L)**C A23L 15/00 Egg products; Preparation or treatment thereof****WARNING**

Group [A23L 15/00](#) is impacted by reclassification into group [A23L 15/10](#). Groups [A23L 15/00](#) and [A23L 15/10](#) should be considered in order to perform a complete search.

T A23L 15/10

- Egg ~~rolls~~ *products with specific shapes or structures, e.g. rolled*

WARNING

Group A23L 15/10 is incomplete pending reclassification of documents from group A23L 15/00.

Groups A23L 15/00 and A23L 15/10 should be considered in order to perform a complete search.

Project: MP12758 (A24D)

M A24D

**CIGARS; CIGARETTES; TOBACCO SMOKE FILTERS; MOUTHPIECES
~~FOR~~ ~~OF~~ CIGARS OR CIGARETTES; MANUFACTURE OF TOBACCO SMOKE
 FILTERS OR MOUTHPIECES**

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme:

U A24D 1/00

Cigars; Cigarettes

M A24D 1/002

- {with additives, e.g. for flavouring ~~(preparing tobacco, e.g. flavouring, A24B)~~}

U A24D 1/02

- with special covers

M A24D 1/022

- {Papers for roll-your-own cigarettes ~~(paper in general D21H)~~}

M A24D 1/04

- with mouthpieces or filter-tips ~~(mouthpieces, filter-tips per se A24D 3/00)~~

M A24D 1/042

- {with mouthpieces ([A24D 1/047](#) takes precedence; ~~mouthpieces per se A24D 3/18~~)}

M A24D 1/08

- with lighting means ~~(pyrophoric compositions C06C 15/00; lighters per se F23Q)~~

M A24D 1/16

- Bands for cigars or cigarettes ~~(machines for applying bands B65C)~~

M A24D 3/00

Tobacco smoke filters, e.g. filter- tips, ~~or~~ filtering inserts; Filters specially adapted for simulated smoking devices; Mouthpieces ~~for~~ ~~of~~ cigars or cigarettes ~~(for pipes, for cigar or cigarette holders A24F 7/00)~~

M A24D 3/02

- Manufacture of tobacco smoke filters ~~(manufacture of paper or cellulosic materials for filters D21)~~

U A24D 3/06

- Use of materials for tobacco smoke filters

M A24D 3/061

- {containing additives entrapped within capsules, sponge-like material or the like, for further release upon smoking ~~(constructional aspects of the filter A24D 3/048)~~}

M A24D 3/18

- Mouthpieces ~~for~~ ~~of~~ cigars or cigarettes; Manufacture thereof ([A24D 3/02](#) takes precedence; making tipping materials for, or attaching them to mouthpieces of, cigars or cigarettes A24C 5/56; producing cigar or cigarette holders from plastics or from substances in a plastic state B29D 23/14; manufacture from metal; ~~see the relevant subclasses of Section B~~ *manufacture of tobacco smoke filters [A24D 3/02](#)*)

Project: MP12758 (A24F)

U A24F 7/00

Mouthpieces for pipes; Mouthpieces for cigar or cigarette holders

M A24F 7/04

- with smoke filters ~~(filters therefor A24D 3/00)~~

U A24F 13/00

Appliances for smoking cigars or cigarettes

M A24F 13/02

- Cigar or cigarette holders (mouthpieces [A24F 7/00](#); *producing tubular cigar or cigarette holders from plastics or from substances in a plastic state [B29D 23/14](#)*)

Project: MP12838 (A41B)

M A41B 9/00 Undergarments (corsets [A41C 1/00](#); ~~brassières A41C 3/00~~; *brassieres A41C 3/00*)

Project: MP12838 (A41C)

U A41C 3/00 Brassieres

M A41C 3/06 • Strapless brassieres, ~~{i.e. without shoulder straps}~~

Project: MP12834 (A47F)

U A47F 3/00 Show cases or show cabinets

M A47F 3/02 • with dispensing arrangements (~~{A47F 1/04 takes precedence; for cigars or cigarettes A24F 15/04; for cigarette papers A24F 17/00; for hand towels or toilet paper A47K A47K 10/24; for photographic paper G03B; }~~ } coin-free [G07F](#))

Project: MP12834 (A47H)

M A47H 23/00 Curtains; Draperies (~~shower curtain arrangements A47K 3/38~~ *arrangements for shower curtains A47K 3/38*)

Project: MP12834 (A47K)

M A47K **SANITARY EQUIPMENT** ~~NOT OTHERWISE PROVIDED FOR (connecting to water supply or waste pipe, sinks E03C; water-closets E03D); ACCESSORIES THEREFOR, e.g. TOILET ACCESSORIES (cosmetic equipment A45D)~~

WARNING

{In this subclass, non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

M A47K 1/00 **Wash-stands; Appurtenances therefor** ~~(devices for washing the hair or scalp A45D 19/00; basins used in manual washing or cleaning of crockery, table-ware, cooking-ware, or the like A47L 17/02; with appurtenances for curative purposes A61H)~~

M A47K 1/02 • Portable toilet tables; Wash cabinets or stands ~~(for automobiles B60R; for railway cars B61D; for ships B63B; for aircraft B64D; connected to waste pipe E03C)~~

M A47K 1/12 • Wash-basins attachable to sinks; Collapsible washing stands attachable to sinks ~~(supports attachable to sinks in general A47J 47/20)~~

M A47K 3/00 **Baths; Douches Showers; Appurtenances therefor** ~~(for curative purposes A61H, A61M, e.g. bathing devices for special therapeutic or hygienic purposes A61H 33/00; {spray heads B05B; devices for suspending or supporting the supply pipe or supply hose of a shower bath E03C 1/06; heated bath-tubs F24H 1/0072})~~

M A47K 3/001 • {Accessories for baths, not provided for in other subgroups of group [A47K 3/00](#) ~~(bath lifting devices for sick persons and invalids A61G 7/10)~~; Insertions, e.g. for babies; Tubs suspended or inserted in baths; Security or alarm devices; Protecting linings or coverings; Devices for cleaning or disinfecting baths; Bath insulation}

M A47K 3/02 • Baths ~~(heatable F24H~~ *combined with showers A47K 3/20*)

M A47K 3/022 • • specially adapted for particular use, e.g. for washing the feet, for bathing in sitting position (~~{doors to get in and out of baths more easily A47K 3/006}~~; collapsible baths *specially adapted for particular use A47K 3/062*)

M	A47K 3/03	• • attachable to other baths, sinks, wash-basins, or the like {; mounting frames therefor} (collapsible baths <i>attachable to other basins or the like</i> A47K 3/07)
M	A47K 3/04	• • Built-in baths {{A47K 3/16 takes precedence}}
M	A47K 3/08	• • Cabinet baths (collapsible shower bath cabinets A47K 3/32)
M	A47K 3/10	• Wave-producers or the like {, e.g. with devices for admitting gas, e.g. air, in the bath-water (baths with gas-containing liquids A61H 33/02; for swimming-pools E04H 4/0006)}
M	A47K 3/12	• Separate seats or body supports (seats for chairs A47C 7/02 {; invalid lifting devices mounted on or in combination with a bathtub A61G 7/1003})
M	A47K 3/14	• Replaceable separating walls for baths (sinks with separating walls E03C 1/18)
M	A47K 3/26	• Bidets without upward spraying means (bidets with upward spraying means A61H 35/00, E03D 9/08)
M	A47K 3/28	• Showers {or bathing douches} (combined with baths A47K 3/20; nozzles, spray heads or other outlets B05B 1/00 {; means for suspending or supporting the supply pipe or supply hose E03C 1/06})
M	A47K 3/38	• • Curtain arrangements <i>Arrangements for curtains</i> (curtains, curtain-suspension devices A47H)
M	A47K 4/00	Combinations of baths, <i>douches</i> <i>showers</i>, sinks, wash-basins, closets, or urinals, not covered by a single other group of this subclass {{such combinations when connected to water supply or waste pipe E03C 1/01}}
M	A47K 5/00	Holders or dispensers for soap, toothpaste, or the like (specially adapted for shaving soap or cosmetics A45D 33/00 -- A45D 40/00)
M	A47K 5/02	• Soap boxes or receptables <i>receptacles</i> (soap-cake holders having fixing devices such as clamps, pins, magnets, A47K 5/05)
U	A47K 5/04	• Other soap-cake holders
M	A47K 5/05	• • having fixing devices for cakes of soap, e.g. clamps, pins, magnets {{(soap-cakes provided with supports to avoid melting C11D)}}
U	A47K 5/06	• Dispensers for soap
U	A47K 5/12	• • for liquid or pasty soap
M	A47K 5/1211	• • • {using pressure on soap, e.g. with piston (A47K 5/1201 takes precedence; <i>by squeezing</i> A47K 5/122; <i>using squeeze bottles or the like</i> A47K 5/122)}
M	A47K 5/14	• Foam or lather making devices (for shaving A45D 27/02)
M	A47K 5/16	• • with mechanical drive (food mixers A47J 43/04)
M	A47K 5/18	• for both soap and toothpaste or the like; in combination with holders for drinking glasses, toothbrushes, or the like {; Toothpaste dispensers; Dental care centers (soap dispensers <i>per se</i> A47K 5/06; dispensers using pliable containers with auxiliary devices for expelling contents B65D 35/28) }
M	A47K 7/00	Body washing or cleaning implements (bathing devices for special therapeutic or hygienic purposes A61H 33/00; baths for specific parts of the body A61H 35/00)
M	A47K 7/02	• Bathing sponges, brushes, gloves, or similar cleaning or rubbing implements (brushes in general A46B; sponges for domestic cleaning A47L 13/16; specially for massage A61H 7/00)
U	A47K 10/00	Body-drying implements; Toilet paper; Holders therefor
M	A47K 10/02	• Towels (made of paper A47K 10/16; woven fabrics D03D; non-woven fabrics D04H <i>paper towels</i> A47K 10/16)
M	A47K 10/16	• Paper towels; Toilet paper; Holders therefor (dispensers A47K 10/32)
M	A47K 10/18	• • Holders; Receptacles {{(with dispensers A47K 10/32)}}

M	A47K 10/22	<ul style="list-style-type: none"> • • • for rolled-up webs {drawing-off paper from a roll in general B65H}
M	A47K 10/24	<ul style="list-style-type: none"> • Towel dispensers {, e.g. for piled-up or folded textile towels}; Toilet paper dispensers {sheet or web dispensers in general B65H {; paper dispensers for publicity purposes G09F 21/22, G09F 23/10}}; Dispensers for piled-up or folded textile towels provided or not with devices for taking-up soiled towels as far as not mechanically driven
M	A47K 10/26	<ul style="list-style-type: none"> • • Mechanically-driven towel dispensers {e.g. with storing devices for soiled towels} (A47K 10/28 takes precedence; for paper towels <i>or toilet-paper from a web A47K 10/34; for paper towels or toilet paper from a store of single sheets, e.g. stacked, A47K 10/44</i>)
U	A47K 10/32	<ul style="list-style-type: none"> • • Dispensers for paper towels or toilet paper
U	A47K 10/34	<ul style="list-style-type: none"> • • • dispensing from a web, e.g. with mechanical dispensing means
M	A47K 10/38	<ul style="list-style-type: none"> • • • • the web being rolled up {with or without tearing edge -up (A47K 10/36 and A47K 10/46 take precedence)}
M	A47K 10/48	<ul style="list-style-type: none"> • Drying by means of hot air {hair-drying devices A45D 20/00; curative hot-air baths A61H 33/06; electric heating elements H05B}
M	A47K 11/00	<p>Closets without flushing {closets with recirculation of bowl-cleaning fluid E03D 5/016}; Urinals without flushing {for vehicles in general B60R; closets for railway-cars B61D; for ships B63B; for aircraft B64D; urinals with flushing arrangements E03D 13/00}; Chamber pots; Chairs with toilet conveniences or specially adapted for use with toilets</p>
M	A47K 11/06	<ul style="list-style-type: none"> • Chamber-pots {(bed pans or other sanitary devices for bed-ridden persons A61G 9/00)}; Throw-away urinals for non-bedridden persons; Chamber-pots for children, also with signalling means, e.g. with a music box, or the like
M	A47K 11/08	<ul style="list-style-type: none"> • Night cabinets or tables with closets or bidet equipment {bedside cabinets per se A47B 79/00}
M	A47K 11/10	<ul style="list-style-type: none"> • Hand tools for cleaning the toilet bowl {, seat or cover, e.g. toilet brushes {cleaning devices without flushing A47K 17/00; mechanical devices for cleaning toilet-bowls E03D}}
M	A47K 11/12	<ul style="list-style-type: none"> • Urinals without flushing {(portable urinating-aids A61F 5/4556); urinals for bed-ridden persons A61G 9/00}
M	A47K 13/00	<p>Seats or covers for all kinds of closets {(dog or cat toilets adapted to fit on conventional toilets A01K 1/0121)}</p>
M	A47K 13/10	<ul style="list-style-type: none"> • Devices for raising and lowering, {e.g. tilting or lifting mechanisms} {(thereby controlling flushing valves E03D 5/04)}; {Collapsible or rotating seats or covers}
U	A47K 13/14	<ul style="list-style-type: none"> • Protecting covers for closet seats
U	A47K 13/18	<ul style="list-style-type: none"> • • of paper {or plastic} webs {(A47K 13/145 takes precedence)}
M	A47K 13/22	<ul style="list-style-type: none"> • • • rolled-up {; {Dispensers therefor} (A47K 13/20 takes precedence)
M	A47K 13/24	<ul style="list-style-type: none"> • Parts or details not covered in, or of interest apart from, groups A47K 13/02 - A47K 13/22, {e.g. devices imparting a swinging or vibrating motion to the seats}
M	A47K 13/26	<ul style="list-style-type: none"> • • Mounting devices for seats or covers {(hinges A47K 13/12)}
M	A47K 13/28	<ul style="list-style-type: none"> • • Adjustably-mounted seats or covers {(for auxiliary or portable seats A47K 13/06)}
U	A47K 13/30	<ul style="list-style-type: none"> • • Seats having provisions for heating, deodorising or the like {, e.g. ventilating, noise-damping or cleaning devices}
M	A47K 13/302	<ul style="list-style-type: none"> • • • {Seats with cleaning devices {apparatus for cleaning toilet bowls or whole toilets E03D 9/002}}

- M A47K 17/00** Other ~~equipment {; e.g. separate apparatus for deodorising, disinfecting or cleaning devices without flushing for toilet bowls, seats or covers~~ **sanitary equipment not covered by the other groups of this subclass {; Holders for toilet brushes} {~~(portable urinating aids A61F 5/4556;)~~ devices for receiving spittle A61J 19/00 {; disinfecting apparatus for medical, surgical or hygienic purposes A61L; cleaning devices with flushing for toilet bowls, seats or covers E03D 9/00; for emptying or cleaning chamber-pots, bed pans, bed urinals or the like E03D 11/025}}**
- M A47K 17/02** • Body supports, other than seats, for closets, e.g. handles, back-rests, foot-rests; Accessories for closets, e.g. reading tables ~~{(devices for lifting patients or disabled persons A61G 7/10)}~~

Project: RP12830 (A61C)

- U A61C 1/00** Dental machines for boring or cutting {; General features of dental machines or apparatus, e.g. hand-piece design}
- U A61C 1/0061** • {Air and water supply systems; Valves specially adapted therefor ([A61C 1/052](#) takes precedence; rinsing or air-blowing devices [A61C 17/02](#))}
- M A61C 1/0076** • {Sterilising operating fluids or fluid supply elements such as supply lines, filters ~~(sterilisation of liquid substances in general A61L 2/18)}~~

Project: MP12823 (A61C)

- U A61C 1/02** • characterised by the drive of the dental tools
- M A61C 1/07** • • with vibratory drive, e.g. ultrasonic **waves**
- U A61C 17/00** Devices for cleaning, polishing, rinsing or drying teeth, teeth cavities or prostheses (instruments acting like a sandblast machine [A61C 3/025](#); tooth polishing discs or holders therefor [A61C 3/06](#); devices for cleaning between the teeth [A61C 15/00](#)); Saliva removers; Dental appliances for receiving spittle
- NOTE
Cleaning of prostheses using ultrasonic techniques similar to those used for natural teeth is classified in this group. Other ultrasonic cleaning of prostheses is classified in group [B08B 3/12](#)
- U A61C 17/16** • Power-driven cleaning or polishing devices
- M A61C 17/20** • • using ~~ultrasonics~~ **ultrasonic waves**

Project: RP12830 (A61C)

- U A61C 19/00** Dental auxiliary appliances (dental chairs or accessories therefor, working stands whether or not combined with chairs [A61G 15/00](#))
- M A61C 19/002** • {Cleaning devices specially adapted for dental instruments ~~(disinfecting A61L 2/00; cleaning in general B08B)~~}

Project: MP12838 (A61D)

- M A61D 3/00** **Appliances** **Arrangements** for supporting or fettering animals for **operative** **veterinary** purposes ~~(fettering in slaughter houses A22B 1/00)~~

Project: MP12838 (A61F)

- U A61F 2/00** Filters implantable into blood vessels; Prostheses, i.e. artificial substitutes or replacements for parts of the body; Appliances for connecting them with the body; Devices providing patency to, or preventing collapsing of, tubular structures of the body, e.g. stents (dental prostheses [A61C 13/00](#); artificial kidneys [A61M 1/14](#); artificial hearts [A61M 60/00](#))

- M A61F 2/82
- Devices providing patency to, or preventing collapsing of, tubular structures of the body, e.g. stents (stent-grafts for tubular structures of the body other than blood vessels [A61F 2/04](#); stent-grafts for blood vessels [A61F 2/07](#); ~~dilators A61M 29/00~~)

Project: MP12823 (A61H)

- M A61H
- PHYSICAL THERAPY APPARATUS, e.g. DEVICES FOR LOCATING OR STIMULATING REFLEX POINTS IN THE BODY; ARTIFICIAL RESPIRATION; MASSAGE; BATHING DEVICES FOR SPECIAL THERAPEUTIC OR HYGIENIC PURPOSES OR SPECIFIC PARTS OF THE BODY (electrotherapy, magnetotherapy, radiation therapy; ~~or~~ ultrasound therapy [A61N](#))**

NOTE

In this subclass, the following expression is used with the meaning indicated:

- "physical therapy" covers the treatment of disease or disability by means, e.g. mechanical means, as opposed to drugs or surgery. It includes, by way of example, massage, whirlpool baths or devices for exercising a passive body member.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP11676 (A61K)

- U A61K 9/00
- Medicinal preparations characterised by special physical form {(nuclear magnetic resonance contrast preparations or magnetic resonance imaging contrast preparations [A61K 49/18](#); preparations containing radioactive substances [A61K 51/12](#))}**

NOTE

Among the one-dot groups of [A61K 9/00](#), classification is not made in the last appropriate place.

[A61K 9/00](#) is subdivided according to the following concepts:

- the drug release technique ([A61K 9/0002](#) and subgroups),
- the site of application ([A61K 9/0012](#) and subgroups), and
- the physical form ([A61K 9/0087](#) - [A61K 9/7023](#)).

Where relevant, documents are classified in more than one of these subdivisions.

- U A61K 9/0002
- {Galenical forms characterised by the drug release technique; Application systems commanded by energy}
- M A61K 9/0009
- {involving or responsive to electricity, magnetism or acoustic waves; Galenical aspects of sonophoresis, iontophoresis, electroporation or electroosmosis ~~(microelectromechanical systems A61K 9/0097)~~}
- U A61K 9/0012
- {Galenical forms characterised by the site of application}
- U A61K 9/0019
- {Injectable compositions; Intramuscular, intravenous, arterial, subcutaneous administration; Compositions to be administered through the skin in an invasive manner (non-active ingredients are additionally classified in [A61K 47/00](#))}
- M A61K 9/0021
- • {Intradermal administration, e.g. through microneedle arrays; ~~or~~ needleless injectors ~~(mechanical aspects A61M)~~}
- U A61K 9/0048
- • {Eye, e.g. artificial tears}
- M A61K 9/0051
- • • {Ocular inserts; ~~ocular~~ ~~or~~ implants}
- M A61K 9/0053
- • {Mouth and digestive tract, i.e. intraoral and peroral administration ~~(rectal administration A61K 9/0031)~~}

- U A61K 9/0087 • {Galenical forms not covered by [A61K 9/02](#) - [A61K 9/7023](#)}
- M A61K 9/0097 • • ~~{Micromachined devices; Microelectromechanical}~~ *{Medicinal compositions released by microdevices, e.g. microelectromechanical systems [MEMS], microdevices comprising chips or microdevices on silicon}*; ~~Devices obtained by lithographic treatment of silicon; Devices comprising chips (intra-dermal microneedle arrays A61K 9/0021; MEMS in general B81B 7/02)}~~
- M A61K 9/10 • Dispersions; Emulsions ~~{(A61K 9/06 takes precedence; composition of dispersions, emulsions A61K 47/00)}~~
- U A61K 9/20 • Pills, tablets, {discs, rods ([A61K 9/0004](#), [A61K 9/0007](#), [A61K 9/0056](#), [A61K 9/0065](#) take precedence; for reconstitution of a drink [A61K 9/0095](#))}
- M A61K 9/2095 • • {Tabletting processes}; ~~Dosage units made by direct compression of powders or specially processed granules, by eliminating solvents, by melt-extrusion, by injection molding, by 3D printing (mechanical aspects A61J 3/00)}~~
- U A61K 9/48 • Preparations in capsules, e.g. of gelatin, of chocolate {([A61K 9/0004](#) takes precedence; bite capsules [A61K 9/0056](#))}
- U A61K 9/50 • • Microcapsules {having a gas, liquid or semi-solid filling; Solid microparticles or pellets surrounded by a distinct coating layer, e.g. coated microspheres, coated drug crystals ([A61K 9/2081](#) takes precedence; particles with a single coating comprising drug [A61K 9/167](#))}
- U A61K 9/5005 • • • {Wall or coating material}
- U A61K 9/5063 • • • • {Compounds of unknown constitution, e.g. material from plants or animals (oils, fats, waxes, shellac [A61K 9/5015](#))}
- M A61K 9/5068 • • • • • {Cell membranes or bacterial membranes enclosing drugs (~~with additional exogenous lipids A61K 9/127; virus envelopes A61K 9/5184~~ *liposomes with additional exogenous lipids A61K 9/127*)}
- U A61K 9/51 • • • Nanocapsules; {Nanoparticles; (nanotubes [A61K 9/0092](#); polymeric micelles [A61K 9/1075](#); polymersomes [A61K 9/1273](#); pure drug nanoparticles [A61K 9/14](#); drug nanoparticles with adsorbed surface modifiers [A61K 9/141](#); conjugates, e.g. between drug and non-active nanoparticles, [A61K 47/50](#); preparations for *in vivo* diagnosis [A61K 49/00](#); with radioactive substances [A61K 51/00](#))}
- U A61K 9/5107 • • • • {Excipients; Inactive ingredients}
- U A61K 9/5176 • • • • • {Compounds of unknown constitution, e.g. material from plants or animals (oils, fats, waxes, shellac [A61K 9/5123](#))}
- M A61K 9/5184 • • • • • • {Virus capsids or envelopes enclosing drugs (~~with additional exogenous lipids A61K 9/127; bacterial membranes A61K 9/5068~~ *liposomes with additional exogenous lipids A61K 9/127*)}

Project: MP12717 (A61K)

- U A61K 47/00 **Medicinal preparations characterised by the non-active ingredients used, e.g. carriers or inert additives; Targeting or modifying agents chemically bound to the active ingredient**
- U A61K 47/50 • the non-active ingredient being chemically bound to the active ingredient, e.g. polymer-drug conjugates
- U A61K 47/51 • • the non-active ingredient being a modifying agent
- U A61K 47/54 • • • the modifying agent being an organic compound
- M A61K 47/55 • • • • the modifying agent being also a pharmacologically or therapeutically active agent, i.e. the entire conjugate being a codrug; ~~i.e. a dimer, oligomer or polymer of pharmacologically or therapeutically active compounds~~

Project: MP12823 (A61K)

- M A61K 49/22 • Echographic preparations; ~~Ultrasound~~ *Ultrasonic* imaging preparations ~~{; Optoacoustic imaging preparations}~~

Project: MP12731 (A61K)

- M A61K 2800/00 Properties of cosmetic compositions or active ingredients thereof or formulation aids used therein and process related aspects

NOTE

~~This subclass is a secondary classification, e.g. obligatory supplementary classification when~~ *The indexing symbols of this group are for obligatory secondary classification of subject-matter* already classified in group [A61K 8/00](#) or subclass [A61Q](#).

Project: RP12830 (A61L)

- M A61L 2/00 ~~Methods or apparatus for disinfecting or sterilising~~ *Disinfection or sterilisation of* materials or objects ~~other than foodstuffs or contact lenses, in general; Accessories therefor (for contact lenses A61L 12/00; atomisers for disinfecting agents A61M; sterilisation of packages or package contents in association with packaging B65B 55/00; treatment of water, waste water, sewage or sludge C02F; disinfecting paper D21H 21/36; disinfecting devices for water closets E03D; articles having provision for disinfection, see the relevant subclasses for these articles, e.g. H04R 1/12)~~

NOTE

In this group, it is desirable to add the indexing codes of group [A61L 2103/00](#).

- D A61L 2/0005 • {for pharmaceuticals, biologicals or living parts}
<administratively transferred to [A61L 2103/05](#) ADD>
- D A61L 2/0011 • • {using physical methods}
<administratively transferred to [A61L 2/02](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0017 • • • {Filtration}
<administratively transferred to [A61L 2/022](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0023 • • • {Heat}
<administratively transferred to [A61L 2/04](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0029 • • • {Radiation}
<administratively transferred to [A61L 2/08](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0035 • • • • {Gamma radiation}
<administratively transferred to [A61L 2/081](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0041 • • • • {X-rays}
<administratively transferred to [A61L 2/082](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0047 • • • • {Ultraviolet radiation}
<administratively transferred to [A61L 2/10](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0052 • • • • {Visible light}
<administratively transferred to [A61L 2/084](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0058 • • • • {Infrared radiation}
<administratively transferred to [A61L 2/085](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0064 • • • • {Microwaves}
<administratively transferred to [A61L 2/12](#) and [A61L 2103/05](#) ADD>

- D A61L 2/007
 - . . . {Particle radiation, e.g. electron-beam, alpha or beta radiation}
 - <administratively transferred to [A61L 2/087](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0076
 - . . . {using a photocatalyst or photosensitiser}
 - <administratively transferred to [A61L 2/088](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0082
 - . {using chemical substances}
 - <administratively transferred to [A61L 2/16](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0088
 - . . . {Liquid substances}
 - <administratively transferred to [A61L 2/18](#) and [A61L 2103/05](#) ADD>
- D A61L 2/0094
 - . . . {Gaseous substances}
 - <administratively transferred to [A61L 2/20](#) and [A61L 2103/05](#) ADD>
- T A61L 2/02
 - . using physical ~~phenomena~~processes
- T A61L 2/022
 - . . {Filtration}
- M A61L 2/025
 - . . UltrasonicsUltrasonic waves
- U A61L 2/03
 - . Electric current
- M A61L 2/035
 - . . {Electrolysis}
- T A61L 2/04
 - . . Heat (~~A61L 2/08 takes precedence~~radiation [A61L 2/08](#))
- U A61L 2/08
 - . Radiation
- T A61L 2/081
 - . . . {Gamma radiation}
- T A61L 2/082
 - . . . {X-rays}
- T A61L 2/084
 - . . . {Visible light}
- T A61L 2/085
 - . . . {Infrared radiation}
- T A61L 2/087
 - . . . {Particle radiation, e.g. electron-beam, alpha or beta radiation}
- T A61L 2/088
 - . . . {using a photocatalyst or photosensitiser}using photocatalysts or photosensitisers
- C A61L 2/10
 - . . . Ultraviolet [UV] radiation

WARNING

Group [A61L 2/10](#) is impacted by reclassification into groups [A61L 2/101](#), [A61L 2/102](#), [A61L 2/104](#) and [A61L 2/108](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N A61L 2/101
 - Ultraviolet A [UVA]
 - WARNING
Group [A61L 2/101](#) is incomplete pending reclassification of documents from group [A61L 2/10](#).
Groups [A61L 2/10](#) and [A61L 2/101](#) should be considered in order to perform a complete search.
- N A61L 2/102
 - Ultraviolet B [UVB]
 - WARNING
Group [A61L 2/102](#) is incomplete pending reclassification of documents from group [A61L 2/10](#).
Groups [A61L 2/10](#) and [A61L 2/102](#) should be considered in order to perform a complete search.
- N A61L 2/104
 - Ultraviolet C [UVC]
 - WARNING
Group [A61L 2/104](#) is incomplete pending reclassification of documents from group [A61L 2/10](#).

Groups [A61L 2/10](#) and [A61L 2/104](#) should be considered in order to perform a complete search.

N A61L 2/108

- • • Multiple UV ranges in combination

WARNING

Group [A61L 2/108](#) is incomplete pending reclassification of documents from group [A61L 2/10](#).

Groups [A61L 2/10](#) and [A61L 2/108](#) should be considered in order to perform a complete search.

U A61L 2/16

- using chemical substances

T A61L 2/18

- • Liquid substances ~~{or solutions comprising solids or dissolved gases}~~

M A61L 2/183

- • • {Ozone dissolved in a liquid}

M A61L 2/186

- • • {Peroxide solutions}

U A61L 2/20

- • Gaseous substances, e.g. vapours

M A61L 2/202

- • • {Ozone}

M A61L 2/204

- • • {Formaldehyde}

M A61L 2/206

- • • {Ethylene oxide}

M A61L 2/208

- • • {Hydrogen peroxide}

M A61L 2/22

- • Phase substances, e.g. smokes, ~~aerosols {or sprayed or atomised substances}~~ or aerosols

M A61L 2/23

- • Solid ~~substances~~ materials, e.g. granules, powders, blocks, or tablets

M A61L 2/26

- Accessories ~~{or devices or components used for biocidal treatment}~~

M A61L 2/28

- • Devices for testing the effectiveness or completeness of sterilisation or disinfection, e.g. indicators which change colour ~~{apparatus involving enzymes or microorganisms C12M 1/34; methods involving enzymes or microorganisms C12Q 1/00}~~

Project: MP12823 (A61L)

U A61L 12/00

Methods or apparatus for disinfecting or sterilising contact lenses; Accessories therefor

M A61L 12/02

- using physical phenomena, e.g. electricity, ~~ultrasonics~~ ultrasound or ultrafiltration

Project: RP12830 (A61L)

M A61L 2101/00 -
A61L 2101/00

~~Indexing scheme associated with groups A61L2/00 - A61L12/00, relating to the chemical composition of the materials used in disinfecting, sterilizing or deodorizing.~~ Indexing scheme associated with groups [A61L 2/00](#) - [A61L 12/00](#), relating to the chemical composition of the materials used.

N A61L 2103/00 -
A61L 2103/00

Indexing scheme associated with group [A61L 2/00](#), relating to materials or objects being the target of disinfection or sterilisation.

Q A61L 2103/00

Materials or objects being the target of disinfection or sterilisation

WARNING

Group [A61L 2103/00](#) is incomplete pending reclassification of documents from group [A61L 2103/05](#). Group [A61L 2103/00](#) is also impacted by reclassification into groups [A61L 2103/10](#), [A61L 2103/15](#) - [A61L 2103/20](#), [A61L 2103/25](#), [A61L 2103/30](#), [A61L 2103/35](#), [A61L 2103/40](#), [A61L 2103/45](#), [A61L 2103/55](#), [A61L 2103/60](#), [A61L 2103/65](#), [A61L 2103/70](#), [A61L 2103/80](#), [A61L 2103/85](#) and [A61L 2103/90](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- Q A61L 2103/05
- Living organisms or biological materials
- WARNING
 Group [A61L 2103/05](#) is impacted by reclassification into groups [A61L 2103/00](#), [A61L 2103/06](#) - [A61L 2103/07](#), [A61L 2103/09](#), [A61L 2103/10](#), [A61L 2103/20](#), [A61L 2103/35](#), [A61L 2103/65](#) and [A61L 2103/85](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N A61L 2103/06
- • The human body
- WARNING
 Groups [A61L 2103/06](#) and [A61L 2103/07](#) are incomplete pending reclassification of documents from group [A61L 2103/05](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N A61L 2103/07
- • • Hands
- N A61L 2103/09
- • Blood or products thereof
- WARNING
 Group [A61L 2103/09](#) is incomplete pending reclassification of documents from group [A61L 2103/05](#).
 Groups [A61L 2103/05](#) and [A61L 2103/09](#) should be considered in order to perform a complete search.
- N A61L 2103/10
- Medicinal preparations other than biologicals
- WARNING
 Group [A61L 2103/10](#) is incomplete pending reclassification of documents from groups [A61L 2103/00](#) and [A61L 2103/05](#).
 Groups [A61L 2103/00](#), [A61L 2103/05](#) and [A61L 2103/10](#) should be considered in order to perform a complete search.
- N A61L 2103/15
- Laboratory, medical or dentistry appliances, e.g. catheters or sharps
- WARNING
 Group [A61L 2103/15](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).
 Groups [A61L 2103/00](#) and [A61L 2103/15](#) should be considered in order to perform a complete search.
- N A61L 2103/20
- • Containers, e.g. vials or flasks
- WARNING
 Group [A61L 2103/20](#) is incomplete pending reclassification of documents from groups [A61L 2103/00](#), [A61L 2103/05](#) and [A61L 2103/23](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- Q A61L 2103/23
- {Containers other than laboratory or medical, e.g. bottles or mail}
- WARNING
 Group [A61L 2103/23](#) is impacted by reclassification into group [A61L 2103/20](#).
 Groups [A61L 2103/23](#) and [A61L 2103/20](#) should be considered in order to perform a complete search.
- N A61L 2103/25
- Personal electronic items, e.g. mobile phones
- WARNING
 Group [A61L 2103/25](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).

Groups [A61L 2103/00](#) and [A61L 2103/25](#) should be considered in order to perform a complete search.

N A61L 2103/30

- Tableware or kitchen utensils

WARNING

Group [A61L 2103/30](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).

Groups [A61L 2103/00](#) and [A61L 2103/30](#) should be considered in order to perform a complete search.

N A61L 2103/35

- Baby products, e.g. pacifiers or feeding bottles

WARNING

Group [A61L 2103/35](#) is incomplete pending reclassification of documents from groups [A61L 2103/00](#) and [A61L 2103/05](#).

Groups [A61L 2103/00](#), [A61L 2103/05](#) and [A61L 2103/35](#) should be considered in order to perform a complete search.

N A61L 2103/40

- Furniture, e.g. seats, tables or beds

WARNING

Group [A61L 2103/40](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).

Groups [A61L 2103/00](#) and [A61L 2103/40](#) should be considered in order to perform a complete search.

N A61L 2103/45

- Toiletry or cosmetic articles

WARNING

Group [A61L 2103/45](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).

Groups [A61L 2103/00](#) and [A61L 2103/45](#) should be considered in order to perform a complete search.

N A61L 2103/50

- Textiles, e.g. bedwear or towels

N A61L 2103/55

- Footwear

WARNING

Group [A61L 2103/55](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).

Groups [A61L 2103/00](#) and [A61L 2103/55](#) should be considered in order to perform a complete search.

N A61L 2103/60

- Cards or paper money

WARNING

Group [A61L 2103/60](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).

Groups [A61L 2103/00](#) and [A61L 2103/60](#) should be considered in order to perform a complete search.

N A61L 2103/65

- Personal protective equipment, e.g. facial masks

WARNING

Group [A61L 2103/65](#) is incomplete pending reclassification of documents from groups [A61L 2103/00](#) and [A61L 2103/05](#).

Groups [A61L 2103/00](#), [A61L 2103/05](#) and [A61L 2103/65](#) should be considered in order to perform a complete search.

- N A61L 2103/70
- Trolleys, e.g. supermarket trolleys
- WARNING
Group [A61L 2103/70](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).
Groups [A61L 2103/00](#) and [A61L 2103/70](#) should be considered in order to perform a complete search.
- Q A61L 2103/75
- Room floors or walls
- WARNING
Group [A61L 2103/75](#) is impacted by reclassification into groups [A61L 2103/80](#), [A61L 2103/95](#) and [A61L 2103/97](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N A61L 2103/80
- Gates, doors or parts thereof, e.g. handles
- WARNING
Group [A61L 2103/80](#) is incomplete pending reclassification of documents from groups [A61L 2103/00](#) and [A61L 2103/75](#).
Groups [A61L 2103/00](#), [A61L 2103/75](#) and [A61L 2103/80](#) should be considered in order to perform a complete search.
- N A61L 2103/85
- Animal houses
- WARNING
Group [A61L 2103/85](#) is incomplete pending reclassification of documents from groups [A61L 2103/00](#) and [A61L 2103/05](#).
Groups [A61L 2103/00](#), [A61L 2103/05](#) and [A61L 2103/85](#) should be considered in order to perform a complete search.
- N A61L 2103/90
- Temporarily isolated areas, e.g. mobile tents
- WARNING
Group [A61L 2103/90](#) is incomplete pending reclassification of documents from group [A61L 2103/00](#).
Groups [A61L 2103/00](#) and [A61L 2103/90](#) should be considered in order to perform a complete search.
- N A61L 2103/95
- Vehicles, e.g. cars or aeroplanes
- WARNING
Groups [A61L 2103/95](#) and [A61L 2103/97](#) are incomplete pending reclassification of documents from group [A61L 2103/75](#).
Groups [A61L 2103/75](#), [A61L 2103/95](#) and [A61L 2103/97](#) should be considered in order to perform a complete search.
- N A61L 2103/97
- • Passenger compartments of vehicles
- U A61L 2202/00**
- Aspects relating to methods or apparatus for disinfecting or sterilising materials or objects**
- D A61L 2202/20
- Targets to be treated
- <administratively transferred to [A61L 2103/00](#) ADD>
- D A61L 2202/21
- • Pharmaceuticals, e.g. medicaments, artificial body parts
- <administratively transferred to [A61L 2103/05](#) ADD>
- D A61L 2202/22
- • Blood or products thereof
- <administratively transferred to [A61L 2103/09](#) ADD>

- D A61L 2202/23
 - Containers, e.g. vials, bottles, syringes, mail
 - <administratively transferred to [A61L 2103/23](#) ADD>
- D A61L 2202/24
 - Medical instruments, e.g. endoscopes, catheters, sharps
 - <administratively transferred to [A61L 2103/15](#) ADD>
- D A61L 2202/25
 - Rooms in buildings, passenger compartments
 - <administratively transferred to [A61L 2103/75](#) ADD>
- D A61L 2202/26
 - Textiles, e.g. towels, beds, cloths
 - <administratively transferred to [A61L 2103/50](#) ADD>

Project: MP12708 (A61M)

- U A61M 16/00 **Devices for influencing the respiratory system of patients by gas treatment, e.g. ventilators (iron lungs [A61H 31/02](#)); Tracheal tubes**
- U A61M 16/20
 - Valves specially adapted to medical respiratory devices
- U A61M 16/201
 - {Controlled valves}
- M A61M 16/207
 - {Membrane valves with pneumatic amplification stage, i.e. having ~~master and slave~~*leader and follower* membranes}

Project: MP12838 (A61M)

- M A61M 29/00 **Dilators with or without means for introducing media, e.g. remedies (~~instruments for performing visual medical inspections of cavities or tubes of the body~~ [A61B 1/00](#))**

Project: RP12830 (A61M)

- U A61M 39/00 **Tubes, tube connectors, tube couplings, valves, access sites or the like, specially adapted for medical use (for respiratory devices, e.g. tracheal tubes [A61M 16/00](#); artificial heart valves [A61F 2/24](#))**
- WARNING
Not complete, see [A61J 1/14](#)
- U A61M 39/10
 - Tube connectors; Tube couplings {([A61M 39/02](#) takes precedence; connecting needles to syringes or hubs [A61M 5/34](#); connecting catheter tubes to hubs [A61M 25/0014](#))}
- M A61M 39/16
 - having provision for disinfection or sterilisation {([A61M 39/143](#) takes precedence; ~~methods or apparatus for disinfection or sterilisation~~ [A61L 2/00](#))}

Project: MP12823 (A61M)

- U A61M 60/00 **Blood pumps; Devices for mechanical circulatory actuation; Balloon pumps for circulatory assistance (heart stimulation [A61H 31/00](#); heart stimulators for electrotherapy [A61N 1/362](#))**
- NOTE
In this main group, it is obligatory to classify all aspects of location, type, medical purpose, driving details, control details, and constructional details other than driving details that are represented in groups [A61M 60/10](#), [A61M 60/20](#), [A61M 60/30](#), [A61M 60/40](#), [A61M 60/50](#) and [A61M 60/80](#). This obligation extends to information that would normally only be considered as additional information.
- U A61M 60/80
 - Constructional details other than related to driving
- U A61M 60/802
 - of non-positive displacement blood pumps
- U A61M 60/81
 - Pump housings

- M A61M 60/816 • • • Sensors arranged on or in the housing, e.g. ~~ultrasound~~*ultrasonic* flow sensors

Project: Unknown (A61M)

- U A61M 2205/00 **General characteristics of the apparatus**
- U A61M 2205/35 • Communication
- U A61M 2205/3576 • • with non implanted data transmission devices, e.g. using external transmitter or receiver
- M A61M 2205/3584 • • • using modem, internet or ~~bluetooth~~*Bluetooth®*

Project: MP12823 (A61N)

- U A61N 7/00 **Ultrasound therapy (lithotripsy A61B 17/22, A61B 17/225; massage using supersonic vibration A61H 23/00 {; using ultrasound for introducing media into the body A61M 37/0092})**
- M A61N 7/02 • Localised ultrasound hyperthermia ~~{(hyperthermia in general A61F 7/00)}~~

Project: MP12731 (A61P)

- M A61P **SPECIFIC THERAPEUTIC ACTIVITY OF CHEMICAL COMPOUNDS OR MEDICINAL PREPARATIONS**

NOTES

1. This subclass is for secondary classification in the sense of paragraph 107bis of the Guide to the IPC. Therefore, the classification symbols of this subclass are not listed first when assigned to patent documents. Secondary classification symbols may be assigned for either invention information or additional information, as appropriate.

~~1.~~ 2. This subclass covers therapeutic activity of chemical compounds or medicinal preparations already classified as such in subclasses A61K or C12N, or in classes C01, C07 or C08.

~~2.~~ 3. In this subclass, the term "drugs" ~~includes~~*covers* chemical compounds or compositions with therapeutic activity.

~~3. In this subclass, therapeutic activity is classified in all appropriate places (to the extent of all the different therapeutic activities stated in the claims and also significantly disclosed as examples in the disclosure).~~

4. Attention is drawn to cases where the subject of the invention concerns only specific therapeutic activity of chemical compounds or medical preparations, and the chemical structure, compound, mixture or composition of this subject of the invention is known. In such cases, classification is made in both subclass A61K and subclass A61P as invention information. In addition, if the chemical structure, compound, mixture or composition or any individual ingredient of a mixture or composition is considered to represent information of interest for search, it may also be classified as additional information. ~~{There is no classification in C01, C07, C08, C12N as additional information in CPC if the chemical structure, compound, mixture or composition or any individual ingredient of a mixture or composition is known and classification is made in both subclass A61K and subclass A61P as invention information.}~~

~~5. The classification symbols of this subclass are not listed first when assigned to patent documents.~~

Project: MP12731 (A61Q)**M A61Q SPECIFIC USE OF COSMETICS OR SIMILAR TOILETRY PREPARATIONS****NOTES**

1. This subclass is for secondary classification in the sense of paragraph 107bis of the Guide to the IPC. Therefore, the classification symbols of this subclass are not listed first when assigned to patent documents. Secondary classification symbols may be assigned for either invention information or additional information, as appropriate.

~~1-2.~~ This subclass covers the use of cosmetics or similar toiletry preparations already classified as such in main group [A61K 8/00](#), in subclasses [C11D](#) or [C12N](#), or in classes [C01](#), [C07](#) or [C08](#).

~~2-3.~~ When classifying in this subclass, classification is also made in subclass [A61P](#) if the preparation is stated to have therapeutic activity.

~~3. In this subclass, the use of cosmetics or similar toiletry preparations is classified in all appropriate places.~~

4. Attention is drawn to cases where the subject of the invention concerns only the specific use of cosmetics or toiletry preparations, and the chemical structure, compound, mixture or composition of this subject of the invention is known. In such cases, classification is made in main group [A61K 8/00](#) or in subclass [C11D](#), and also in subclass [A61Q](#) as invention information. In addition, if the chemical structure, compound, mixture or composition or any individual ingredient of a mixture or composition is considered to represent information of interest for search, it may also be classified as additional information.

~~5. The classification symbols of this subclass are not listed first when assigned to patent documents.~~

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12828 (A63B)**U A63B 24/00 Electric or electronic controls for exercising apparatus of preceding groups; {Controlling or monitoring of exercises, sportive games, training or athletic performances}**

M A63B 24/0075 • {Means for generating exercise ~~programs~~*programmes* or schemes, e.g. computerized virtual trainer, e.g. using expert databases}

Project: MP12832 (A63F)**M A63F CARD, BOARD, OR ROULETTE GAMES; INDOOR GAMES USING SMALL MOVING PLAYING BODIES; VIDEO GAMES; GAMES NOT OTHERWISE PROVIDED FOR****WARNING**

{In this subclass, non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

M A63F 1/00 Card games ~~(aspects of games using an electronically generated display having two or more dimensions showing representations related to the game A63F 13/00; card games played on a gaming machine G07F 17/32)~~

M A63F 1/02 • Cards; Special shapes of cards ~~(card-printing methods B41K, B41M)~~

M A63F 1/06 • Card ~~games~~*game* appurtenances

M A63F 1/18 • ~~Score computers~~*Scoring or registering devices*; ~~Miscellaneous indicators~~*Indicators* ~~(time-testing devices G07C A63F 1/16 takes precedence)~~

M	A63F 3/00	Board games; Raffle games {racing games, traffic games, or obstacle games characterised by figures moved by action of the players A63F 9/14}
M	A63F 3/06	<ul style="list-style-type: none"> • Lottos or bingo games; Systems, apparatus or devices for checking such games {(small boxes with balls used for generating random numbers A63F 7/048; lottery apparatus G07C 15/00; lottery gaming stations; online lottery or bingo G07F 17/329; printing processes for lottery tickets B41M 3/005)}
M	A63F 3/08	<ul style="list-style-type: none"> • Raffle games that can be played by a fairly large number of people {(A63F 3/0625, A63F 3/065 take precedence; lottery apparatus G07C 15/00; lottery gaming stations; online lottery or bingo G07F 17/329)}
M	A63F 5/00	Roulette games {aspects of games using an electronically generated display having two or more dimensions showing representations related to the game A63F 13/00}
M	A63F 7/00	Indoor games using small moving playing bodies, e.g. balls, discs or blocks (board games, or raffle games A63F 3/00; roulette games A63F 5/00; miniature bowling games A63D 3/00; bagatelle or similar games A63D 13/00; billiards, or pocket billiards A63D 15/00)
M	A63F 7/02	<ul style="list-style-type: none"> • using falling playing bodies or playing bodies running on an inclined surface, e.g. pinball games {(bagatelle or similar games A63D 13/00)}
M	A63F 7/06	<ul style="list-style-type: none"> • Games simulating outdoor ball games, e.g. hockey {or football (if physically beneficial for the human body A63B 67/00)} <i>table games physically beneficial for the human body, modelled on outdoor sports, e.g. table tennis, A63B 67/04}</i>
M	A63F 7/07	<ul style="list-style-type: none"> • in which the playing bodies contact, or are supported by, the playing surface continuously, e.g. using air-cushion support {(A63F 7/0604 - A63F 7/0696 take precedence)}
M	A63F 7/20	<ul style="list-style-type: none"> • in which the playing bodies are projected through the air {(A63F 7/0604 - A63F 7/0696 take precedence)}
U	A63F 7/22	<ul style="list-style-type: none"> • Accessories; Details
M	A63F 7/24	<ul style="list-style-type: none"> • Devices controlled by the player to project or roll-off the playing bodies (arrangement of such devices in table alleys, miniature bowling-alleys or bowling games <i>A63D 3/02</i>; in bagatelle or billiards A63D 13/00, A63D 15/00; <i>billiard cues A63D 15/08</i>)
M	A63F 7/28	<ul style="list-style-type: none"> • using gravity {, i.e. apparatus for rolling off the ball, e.g. a slope, ramp or slant}
M	A63F 7/36	<ul style="list-style-type: none"> • Constructional details not covered by groups <i>A63F 7/24 - A63F 7/34</i> {, i.e. constructional details of rolling boards, rims or play tables}, e.g. frame, <i>e.g. frames</i>, game boards, guide tracks
M	A63F 7/38	<ul style="list-style-type: none"> • Playing surfaces movable during play {, i.e. games played on a non-stationary surface, e.g. the ball intended to be in permanent motion (balls to be shaken or rolled in small boxes A63F 7/04; eccentric weights put into orbital motion by nutating movement of the user A63B 21/0608)}
M	A63F 7/40	<ul style="list-style-type: none"> • Balls or other moving playing bodies, e.g. pinballs or discs {used instead of balls}, <i>discs</i>
M	A63F 9/00	Games not otherwise provided for {aspects of games using an electronically generated display having two or more dimensions showing representations related to the game A63F 13/00 {; miscellaneous sporting games A63B 67/00}}

- M A63F 9/02
 - Shooting or hurling games ~~(throwing implements for sports or recreational use A63B 65/00; throwing or projecting toys per se A63H 33/18; {gun simulators F41A 33/00, e.g. light or radiation-emitting guns F41A 33/02; practice apparatus for gun-aiming F41G 3/26, e.g. using a light-emitting device F41G 3/2616}; targets, target ranges, bullet catchers F41J, {photo-electric hit-detector systems F41J 5/02})~~
- M A63F 9/04
 - Dice ~~(dice tops A63F 5/04 {D});~~ Dice-boxes; Mechanical dice-throwing devices ~~{{casino or betting games played on boards A63F 3/00157}}~~
- U A63F 9/06
 - Patience; Other games for self-amusement

Project: MP12840 (A63F)

- M A63F 9/10
 - Two-dimensional [2D] jig-saw puzzles
- M A63F 9/12
 - Three-dimensional [3D] jig-saw puzzles

Project: MP12832 (A63F)

- M A63F 9/14
 - Racing games, traffic games, or obstacle games characterised by figures moved by action of the players ~~(racing) games using dice A63F 3/00)~~
- M A63F 9/24
 - ~~{Electric games;}~~ Games using electronic circuits not otherwise provided for ~~{{video games A63F 13/00; computerized gaming systems G07F 17/32}}~~

M A63F 11/00 Game accessories of general use {, e.g. score counters, boxes}NOTE

Game accessories specially adapted for a particular type of game are classified in one of the groups [A63F 1/00](#) - [A63F 9/00](#) covering the particular game

- M A63F 13/00
 - Video games, i.e. games using an electronically generated display having two or more dimensions ~~{{gaming systems which provide a financial reward G07F 17/32}}~~
- U A63F 13/20
 - Input arrangements for video game devices
- U A63F 13/21
 - characterised by their sensors, purposes or types
- M A63F 13/213
 - comprising photodetecting means, e.g. cameras, photodiodes or infrared cells ([A63F 13/219](#); [A63F 13/655](#) take takes precedence)
- U A63F 13/25
 - Output arrangements for video game devices
- M A63F 13/28
 - responding to control signals received from the game device for affecting ambient conditions, e.g. for vibrating players' seats, activating scent dispensers or affecting temperature or light ~~(controlling the output signals based on the game progress A63F 13/50)~~
- U A63F 13/50
 - Controlling the output signals based on the game progress
- U A63F 13/53
 - involving additional visual information provided to the game scene, e.g. by overlay to simulate a head-up display [HUD] or displaying a laser sight in a shooting game
- U A63F 13/537
 - using indicators, e.g. showing the condition of a game character on screen
- M A63F 13/5378
 - for displaying an additional top view, e.g. radar screens or maps ~~(using two or more virtual cameras concurrently A63F 13/5252)~~
- U A63F 13/70
 - Game security or game management aspects
- U A63F 13/79
 - involving player-related data, e.g. identities, accounts, preferences or play histories
- M A63F 13/798
 - for assessing skills or for ranking players, e.g. for generating a hall of fame ~~(computing the game score A63F 13/46)~~
- U A63F 13/80
 - Special adaptations for executing a specific game genre or game mode

- M A63F 13/833 • • Hand-to-hand fighting, e.g. martial arts competition-~~(A63F 13/837 takes precedence)~~

Project: Unknown (A63F)

- U A63F 2300/00 Features of games using an electronically generated display having two or more dimensions, e.g. on a television screen, showing representations related to the game
- U A63F 2300/10 • characterized by input arrangements for converting player-generated signals into game device control signals
- U A63F 2300/1025 • • details of the interface with the game device, e.g. USB version detection
- M A63F 2300/1031 • • • using a wireless connection, e.g. Bluetooth®, infrared connections
- U A63F 2300/40 • characterised by details of platform network
- U A63F 2300/404 • • characterized by a local network connection
- M A63F 2300/405 • • • being a wireless ad hoc network, e.g. Bluetooth®, Wi-Fi, ~~Pico-net®~~, *piconet*

Project: MP12835 (A63G)

- M A63G MERRY-GO-ROUNDS; SWINGS; ROCKING-HORSES; CHUTES; SWITCHBACKS; SIMILAR DEVICES FOR PUBLIC AMUSEMENT
- WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
- M A63G 9/00 - A63G 19/00 Swings (as nursery furniture A47D 13/10); *See-saws*; Rocking horses (rocking chairs as nursery furniture A47D 13/10); Other toy animals for riding
- M A63G 23/00 Rotating or rocking pots ~~{, e.g. by moving the whole body (rotating or rocking exercising for training agility or coordination of movements A63B 22/14, A63B 22/16, A63B 22/18)}~~
- M A63G 29/00 Rolling drums turning somersaults with or without rolling seats ~~{{hoop exercising apparatus driven by the user A63B 19/00}}~~
- M A63G 31/00 - A63G 33/00 Miscellaneous *Other* apparatus for public amusement
- M A63G 31/00 Amusement arrangements ~~{{hoop exercising apparatus driven by the user A63B 19/00}}~~
- U A63G 31/02 • with moving substructures
- M A63G 31/12 • • with inflatable and movable substructures ~~(connection of valves to inflatable elastic bodies B60C 29/00)~~

Project: MP12836 (A63K)

- M A63K RACING; RIDING SPORTS; EQUIPMENT OR ACCESSORIES THEREFOR ~~(stop watches G04F 7/06; timing G07C 1/22; indicating arrangements for variable information by selection or combination of individual elements G09F 9/00)~~
- WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
- M A63K 3/00 Equipment or accessories for racing or riding sports ~~{{training or exercising equipment for animals A01K 15/02}}~~

Project: MP12823 (B01D)

- U B01D 51/00 **Auxiliary pretreatment of gases or vapours to be cleaned (preventing dust fires [A62C](#); pretreatment specially adapted for magnetic or electrostatic separation [B03C](#))**
- U B01D 51/02 • Amassing the particles, e.g. by flocculation {(amassing by electric fields [B03C 3/0175](#))}
- U B01D 51/06 • • by varying the pressure of the gas or vapour
- M B01D 51/08 • • • by sound or **ultrasonics***ultrasound*

Project: MP12716 (B01D)

- U B01D 71/00 **Semi-permeable membranes for separation processes or apparatus characterised by the material; Manufacturing processes specially adapted therefor**

NOTES

1. In this group, if the material is a composition it is classified according to the constituent present in the highest proportion; see Note before group [B01D 61/00](#). {This constituent is classified according to the last place rule.} If there is more than one constituent present in equal highest proportions, then each of these constituents is classified according to the last place rule.
2. Manufacturing processes, if considered of interest, are also classified in group [B01D 67/00](#).

- U B01D 71/06 • Organic material
- U B01D 71/30 • • Polyalkenyl halides
- U B01D 71/32 • • • containing fluorine atoms
- M B01D 71/36 • • • • **Polytetrafluoroethene***Polytetrafluoroethylene*

Project: MP12840 (B01J)

- M B01J 29/00 **Catalysts comprising molecular sieves {(molecular sieves per se [C01B](#))}**

NOTES

1. In this group, the following term is used with the meaning indicated:
 - "zeolites" means:
 - i. crystalline aluminosilicates with base-exchange and molecular sieve properties, having three dimensional *[3D]*, microporous lattice framework structure of tetrahedral oxide units;
 - ii. compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron.
2. If metals are introduced into the framework of the molecular sieve already in the synthesis stage, [B01J 29/86](#) - [B01J 29/89](#) take precedence.
3. Mixtures of molecular sieves are classified in [B01J 29/005](#) or [B01J 29/80](#) and receive indexing codes chosen from groups [B01J 29/03](#) - [B01J 29/89](#) to identify the individual constituents of these mixtures

WARNING

Group [B01J 29/00](#) is incomplete pending reclassification of documents from group [B01J 35/00](#).

Groups [B01J 35/00](#) and [B01J 29/00](#) should be considered in order to perform a complete search.

- U B01J 35/00 Catalysts, in general, characterised by their form or physical properties**
WARNING
 Group [B01J 35/00](#) is impacted by reclassification into groups [B01J 35/20](#), [B01J 35/70-B01J 35/77](#), [B01J 35/80](#) and [B01J 2235/00 - B01J 2235/30](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- U B01J 35/50** • characterised by their shape or configuration
WARNING
 Group [B01J 35/50](#) is impacted by reclassification into groups [B01J 35/34](#) - [B01J 35/38](#), [B01J 35/50/5](#), [B01J 35/54](#), [B01J 35/55](#) and [B01J 2235/00 - B01J 2235/30](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- M B01J 35/56** • • Foraminous structures having flow-through passages or channels, e.g. grids or three-dimensional [\[3D\]](#) monoliths
WARNING
 Group [B01J 35/56](#) is impacted by reclassification into group [B01J 35/57](#).
 Groups [B01J 35/56](#) and [B01J 35/57](#) should be considered in order to perform a complete search.
- U B01J 35/70** • characterised by their crystalline properties, e.g. semi-crystalline (catalysts comprising carbon [B01J 21/18](#); molecular sieves [B01J 29/00](#))
WARNING
 Groups [B01J 35/70](#) and [B01J 35/77](#) are incomplete pending reclassification of documents from groups [B01J 35/00](#), [B01J 35/30](#) and [B01J 35/31](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- M B01J 35/73** • • having a two-dimensional [\[2D\]](#) layered crystalline structure, e.g. layered double hydroxide [LDH]
WARNING
 Group [B01J 35/73](#) is incomplete pending reclassification of documents from groups [B01J 35/00](#), [B01J 35/30](#), [B01J 35/31](#) and [B01J 35/393](#).
 All groups listed in this Warning should be considered in order to perform a complete search.

Project: MP11959 (B01L)

- M B01L CHEMICAL OR PHYSICAL LABORATORY APPARATUS FOR GENERAL USE**
NOTE
 This subclass covers only laboratory apparatus which is either applicable solely to laboratory purposes or which, by reason of its simple construction and adaptability, is such as would not be suitable for industrial use.
- WARNING
 1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
~~B01L 3/14~~ covered by [B01L 3/50](#)
2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

U	B01L 1/00	Enclosures; Chambers (provided with manipulation devices or glove boxes B25J 21/00)
U	B01L 1/02	• Air-pressure chambers; Air-locks therefor
M	B01L 1/025	• • {Environmental chambers (incubators for culturing cells C12M 41/14; test chambers to test weather resistance G01N 17/002)}
U	B01L 3/00	Containers or dishes for laboratory use, e.g. laboratory glassware; Droppers
		<u>NOTE</u>
		Petri dishes for enzymology or microbiology are classified in group C12M 1/22 .
U	B01L 3/02	• Burettes; Pipettes
U	B01L 3/021	• • {Pipettes, i.e. with only one conduit for withdrawing and redistributing liquids}
M	B01L 3/0217	• • • {of the plunger pump type (medical syringes A61M)}
M	B01L 3/0241	• • {Drop counters; Drop formers (making arrays for combinatorial libraries B01J 19/0046; automation of dispensing for analysis G01N 35/10)}
U	B01L 3/0244	• • • {using pins}
M	B01L 3/0255	• • • • { characterized <i>characterised</i> by the form or material of the pin tip}
M	B01L 3/0289	• • {Apparatus for withdrawing or distributing predetermined quantities of fluid (B01L 3/02 takes precedence; sample taking G01N 1/00; sample taking within automatic analysers G01N 35/00; volume measuring in general G01F)}
U	B01L 3/50	• {Containers for the purpose of retaining a material to be analysed, e.g. test tubes (devices for taking samples of blood A61B 5/15)}
M	B01L 3/502	• • {with fluid transport, e.g. in multi-compartment structures (centrifugal-type cuvettes G01N 21/07; analysis by separation into components G01N 30/00; automatic analysers G01N 35/00)}
M	B01L 3/5021	• • • {Test tubes specially adapted for centrifugation purposes (centrifuges B04B 5/04)}
M	B01L 3/5027	• • • {by integrated microfluidic structures, i.e. dimensions of channels and chambers are such that surface tension forces are important, e.g. lab-on-a-chip (B01L 3/5023 takes precedence; micromixers B01F 33/30; microreactors for synthesis B01J 19/0093; microcapillary devices in general B81B 1/00)}
M	B01L 3/502707	• • • • {characterised by the manufacture of the container or its components (by shaping or joining plastic parts B29C 59/00, B29C 65/00; by laminating B32B 37/00; manufacture of microstructural devices in general B81C)}
M	B01L 3/50273	• • • • {characterised by the means or forces applied to move the fluids (micropumps F04B 19/006; of the membrane type F04B 43/043)}
M	B01L 3/502738	• • • • {characterised by integrated valves (microvalves F16K 99/0001 <i>throttle valves in microfluidic sample containers B01L 3/502746</i>)}
M	B01L 3/502746	• • • • {characterised by the means for controlling flow resistance, e.g. flow controllers, baffles <i>or throttle valves</i> (B01L 3/502738 takes precedence)}
M	B01L 3/502753	• • • • {characterised by bulk separation arrangements on lab-on-a-chip devices, e.g. for filtration or centrifugation (separation in general B01D; microapparatus for analysis using electrophoresis G01N 27/44791; sample preparation G01N 1/28)}
M	B01L 3/502761	• • • • {specially adapted for handling suspended solids or molecules independently from the bulk fluid flow, e.g. for trapping or sorting beads; <i>for or</i> physically stretching molecules (investigating characteristics of particles G01N 15/00)}
U	B01L 3/502769	• • • • {characterised by multiphase flow arrangements}

M	B01L 3/502784	<ul style="list-style-type: none"> • • • • {specially adapted for droplet or plug flow, e.g. digital microfluidics (automatic analysis using a stream of discrete samples in a tube system G01N 35/08)}
M	B01L 3/505	<ul style="list-style-type: none"> • • {flexible containers not provided for above <i>Flexible containers without fluid transport within</i>}
M	B01L 3/508	<ul style="list-style-type: none"> • • {rigid containers not provided for above <i>Rigid containers without fluid transport within</i>}
U	B01L 3/5082	<ul style="list-style-type: none"> • • • {Test tubes <i>per se</i>}
M	B01L 3/50825	<ul style="list-style-type: none"> • • • • {Closing or opening means, corks, bungs (closures for containers B65D; means for removing stoppers B67B 7/02)}
U	B01L 3/5085	<ul style="list-style-type: none"> • • • {for multiple samples, e.g. microtitration plates}
M	B01L 3/50851	<ul style="list-style-type: none"> • • • • {specially adapted for heating or cooling samples (laboratory heating apparatus B01L 7/00; incubators C12M)}
M	B01L 3/50853	<ul style="list-style-type: none"> • • • • {with covers or lids <i>(closures for test tubes B01L 3/50825)</i>}
M	B01L 3/52	<ul style="list-style-type: none"> • {Containers specially adapted for storing or dispensing a reagent (<i>B01L 3/02</i> takes precedence; containers for medical or pharmaceutical purposes A61J 1/00; containers in general B65D; storing or dispensing test elements <i>G01N 33/4875</i>; automated reagent dispensing <i>G01N 35/1002</i>)}
M	B01L 3/54	<ul style="list-style-type: none"> • {Labware with identification means (identification of carriers, materials or components in automatic analysers G01N 35/00732)}
U	B01L 3/56	<ul style="list-style-type: none"> • {Labware specially adapted for transferring fluids}
M	B01L 3/561	<ul style="list-style-type: none"> • • {Tubes; Conduits (in general F16L)}
M	B01L 3/563	<ul style="list-style-type: none"> • • {Joints or fittings (in general F16L); Separable fluid transfer means to transfer fluids between at least two containers, e.g. connectors}
M	B01L 3/565	<ul style="list-style-type: none"> • • {Seals (in general F16L)}
M	B01L 3/567	<ul style="list-style-type: none"> • • {Valves, taps or stop-cocks (in combination with burettes B01L 3/0203; in general F16K)}
U	B01L 7/00	Heating or cooling apparatus (autoclaves <i>B01J 3/04</i>); Heat insulating devices
M	B01L 7/52	<ul style="list-style-type: none"> • {with provision for submitting samples to a predetermined sequence of different temperatures, e.g. for treating nucleic acid samples (amplification or hybridisation processes per se C12Q 1/68; controlling sequential reactions for synthesis B01J 19/0046)}
U	B01L 9/00	Supporting devices; Holding devices
M	B01L 9/50	<ul style="list-style-type: none"> • {Clamping means, <i>e.g.</i> tongs (in general F16B 2/06)}
M	B01L 9/54	<ul style="list-style-type: none"> • {Supports specially adapted for pipettes and burettes (automated pipetting stations G01N 35/10)}

Project: Unknown (B01L)

U	B01L 2300/00	Additional constructional details
U	B01L 2300/02	<ul style="list-style-type: none"> • Identification, exchange or storage of information
M	B01L 2300/023	<ul style="list-style-type: none"> • • Sending and receiving of information, e.g. using <i>bluetooth Bluetooth®</i>

Project: MP12823 (B02C)

U	B02C 19/00	Other disintegrating devices or methods (for grain <i>B02C 9/00</i>)
M	B02C 19/18	<ul style="list-style-type: none"> • Use of auxiliary physical effects, e.g. <i>ultrasonics; ultrasonic waves or</i> irradiation, for disintegrating

Project: MP12828 (B04B)

- M B04B 13/00 Control arrangements specially designed for centrifuges;
~~Programme~~**Program** control of centrifuges (control arrangements for feed, charge, or discharge [B04B 11/00](#))

Project: MP12708 (B05B)

- U B05B 12/00 Arrangements for controlling delivery; Arrangements for controlling the spray area
- U B05B 12/14 • for supplying a selected one of a plurality of liquids or other fluent materials {or several in selected proportions} to a {spray apparatus, e.g. to a} single spray outlet
- U B05B 12/1418 • {for supplying several liquids or other fluent materials in selected proportions to a single spray outlet (controlling ratio of two or more flows of fluid [G05D 11/02](#))}
- M B05B 12/1445 • • {pumping means for the liquids or other fluent materials being mechanically linked, e.g. ~~master and slave~~**leader-follower** pumps}

Project: MP12828 (B21B)

- U B21B 37/00 Control devices or methods specially adapted for metal-rolling mills or the work produced thereby (methods or devices for measuring specially adapted for metal-rolling mills [B21B 38/00](#))
- U B21B 37/16 • Control of thickness, width, diameter or other transverse dimensions ([B21B 37/58](#) takes precedence)
- M B21B 37/24 • • Automatic variation of thickness according to a predetermined ~~programme~~**program**

Project: MP12828 (B21D)

- U B21D 7/00 Bending rods, profiles, or tubes ([B21D 11/02](#) - [B21D 11/18](#) take precedence; using mandrels or the like [B21D 9/00](#))
- M B21D 7/12 • with ~~programme~~**program** control

Project: MP12810 (B21F)

- M B21F WORKING OR PROCESSING OF METAL WIRE (~~{reducing diameter by} rolling of metal B21B; rolling of metal wire B21B 1/16~~; by drawing, auxiliary operations used in connection with metal-working without essentially removing material [B21C](#); ~~bundling articles B65B 13/00~~)

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme:

- M B21F 5/00 Upsetting wire ~~{or pressing operations affecting the wire cross-section}(in the manufacture of nails or pins B21G 3/12)~~
- M B21F 9/00 Straining wire ~~{straining prestressing wires for concrete E04G 21/12; connections or attachments adapted for straining F16G 11/00; {bundling machines or tools B65B 13/00}}~~
- M B21F 11/00 Cutting wire ~~(hand cutting tools B26B)~~

M	B21F 15/00	Connecting wire to wire or other metallic material or objects; Connecting parts by means of wire (tools for both straining and connecting B21F 9/00 B21F 9/02 ; jacketing or reinforcing B21F 17/00 ; manufacture of wire network B21F 27/00 ; in making bands B21F 43/00 ; bundling machines or tools B65B 13/00; for semiconductors H01L 24/85)
U	B21F 15/02	• wire with wire
M	B21F 15/06	• • with additional connecting elements or material {{(B21F 27/08 takes precedence)}}
M	B21F 15/08	• • • making use of soldering or welding {{(B21F 27/10 takes precedence)}}
M	B21F 17/00	Jacketing or reinforcing articles with wire (by winding B65H 54/00; B65H 81/00; by braiding D04C)
M	B21F 19/00	Metallic coating of wire (by extruding B21C 23/24 ; by soldering or welding, e.g. cladding or plating, B23K ; by other non-mechanical means C23; electroplating C25D)
M	B21F 23/00	Feeding wire in wire-working machines or apparatus (applicable also to feeding rods or strips B21D 43/00)
M	B21F 27/00	Making wire network, i.e. wire nets (meshed-ring network B21F 31/00; making meshed-ring network from wire B21F 31/00 ; in making bands B21F 43/00 ; using looms D03D)
U	B21F 27/08	• with additional connecting elements or material at crossings
M	B21F 27/10	• • with soldered or welded crossings {{(resistance spot welding machines for manufacturing of metallic grids or mats B23K 11/008)}}
M	B21F 29/00	Making fencing or like material made partly of wire (B21F 25/00 ; B21F 27/00 take takes precedence)
M	B21F 35/00	Making springs from wire (by coiling wire B21F 3/00; making resilient rings B21F 37/02)
M	B21F 35/006	• {Double - twist coil springs}
M	B21F 37/00	Manufacture of rings from wire (in chain-making B21L; making of tyre beads B29D 30/48)
M	B21F 43/00	Making bands, e.g. bracelets, or from wire (making chains B21L; using looms D03D)
M	B21F 45/00	Wire-working in the manufacture of other particular articles (of pins, needles, nails, hairpins B21G ; of chains B21L ; for semiconductor devices H01L 24/42)
M	B21F 45/008	• {of medical instruments, e.g. stents; or corneal rings (medical science A61) }
U	B21F 45/16	• of devices for fastening or securing purposes
M	B21F 45/20	• • of spring spring hooks; of spring safety hooks

Project: MP12823 (B23B)

M	B23B 37/00	Boring by making use of ultrasonic energy vibrations of ultrasonic frequency (essentially using abrasive material B24B, e.g. B24B 1/04 working materials by subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency, B24B 1/04)
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Project: MP12828 (B23B)

U	B23B 39/00	General-purpose boring or drilling machines or devices; Sets of boring and/or drilling machines
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- U B23B 39/04 • Co-ordinate boring or drilling machines; Machines for making holes without previous marking
- M B23B 39/08 • • Devices for ~~programme~~program control
- U B23B 39/16 • Drilling machines with a plurality of working-spindles; Drilling automatons
- M B23B 39/24 • • designed for ~~programme~~program control

Project: MP12828 (B23H)

- U B23H 7/00 **Processes or apparatus applicable to both electrical discharge machining and electrochemical machining**
- U B23H 7/14 • Electric circuits specially adapted therefor, e.g. power supply {(B23H 3/02 takes precedence)}
- M B23H 7/20 • • for ~~programme~~program control, e.g. adaptive ~~(programme-control systems in general G05B 19/00)~~

Project: MP12804 (B23K)

- M B23K **SOLDERING OR UNSOLDERING; WELDING; CLADDING OR PLATING BY SOLDERING OR WELDING; CUTTING BY APPLYING HEAT LOCALLY, e.g. FLAME CUTTING; WORKING BY LASER BEAM ~~(making metal-coated products by extruding metal B21C 23/22; building up linings or coverings by casting B22D 19/08; casting by dipping B22D 23/04; manufacture of composite layers by sintering metal powder B22F 7/00; arrangements on machine tools for copying or controlling B23Q; covering metals or covering materials with metals, not otherwise provided for G23C; burners F23D)~~**

NOTES

1. This subclass covers also electric circuits specially adapted for the purposes covered by the title of the subclass.
2. In this subclass, the following term is used with the meaning indicated:
 - "soldering" means uniting metals using solder and applying heat without melting either of the parts to be united

WARNING

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

B23K 35/04 - B23K 35/20	covered by	B23K 35/0205 - B23K 35/0294
B23K 35/363	covered by	B23K 35/3601 - B23K 35/3618

~~2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.~~

- M B23K 1/00 **Soldering, e.g. brazing, or unsoldering (B23K 3/00 takes precedence; ~~characterised only by the use of special materials or media B23K 35/00; dip or wave soldering in the manufacture of printed circuits H05K 3/34~~)**
- U B23K 1/0008 • {specially adapted for particular articles or work}
- M B23K 1/0012 • • {Brazing *of* heat exchangers}
- M B23K 1/0016 • • {~~Brazing~~Soldering of electronic components}
- U B23K 1/005 • Soldering by means of radiant energy
- M B23K 1/0053 • • {soldering by means of ~~I.R.~~infrared [IR]}
- M B23K 1/0056 • • {soldering by means of beams, e.g. lasers, ~~E.B.~~electron beams [EB]}
- M B23K 1/14 • specially adapted for soldering seams ~~(making tubes involving operations other than soldering B21C)~~

- M B23K 1/20
- Preliminary treatment of work or areas to be soldered, e.g. in respect of a galvanic coating ~~(preparation of surfaces in particular ways, see the relevant classes for the treatments or the materials treated, e.g. C04B, C23C)~~
- M B23K 3/00**
- Tools, devices, or special appurtenances for soldering, e.g. brazing, or unsoldering, not specially adapted for particular methods ~~(materials used for soldering B23K 35/00)~~**
- U B23K 3/02
- Soldering irons; Bits
- U B23K 3/03
- • electrically heated
- M B23K 3/0376
- • • {comprising carbon heating elements or electrodes ([B23K 3/0384](#) and, [B23K 3/0392](#) take precedence)}
- M B23K 3/04
- Heating appliances ~~(soldering lamps or blowpipes F23D; electric heating in general H05B)~~
- M B23K 3/08
- Auxiliary devices therefor ~~(cleaning pipes or tubes or systems of pipes or tubes, e.g. before soldering, B08B 9/02)~~
- U B23K 5/00**
- Gas flame welding**
- M B23K 5/003
- {the welding zone being shielded against the influence of the surrounding atmosphere ~~(selection of media B23K 35/38)~~}
- M B23K 5/02
- Seam welding ~~(making tubes involving operations other than welding B21C)~~
- M B23K 5/023
- • {of horizontal seams in assembling vertical plates, a welding unit being adapted to travel along the upper horizontal edge of the plates}
- M B23K 5/04
- • using additional profiled strips or {the} like of welding metal along seam edges
- U B23K 5/22
- Auxiliary equipment, e.g. backings, guides
- M B23K 5/24
- • Arrangements for supporting torches ~~(not restricted to flame welding B23K 37/02)~~
- M B23K 7/00**
- Cutting, scarfing, or desurfacing by applying flames ~~((thermal deburring B23D 79/005))~~**
- M B23K 7/002
- {Machines, apparatus, or equipment for cutting plane workpieces, e.g. plates}
- M B23K 7/003
- • {Machines, apparatus, or equipment for cutting long articles, e.g. cast stands, plates, in parts of predetermined length}
- M B23K 7/005
- {Machines, apparatus, or equipment specially adapted for cutting curved workpieces, ~~e.g. tubes~~}
- U B23K 7/006
- • {for tubes}
- M B23K 7/06
- Machines, apparatus, or equipment specially designed for scarfing or desurfacing
- M B23K 7/08
- by applying additional compounds or means favouring the cutting, scarfing, or desurfacing procedure
- M B23K 7/10
- Auxiliary devices, e.g. for guiding or supporting the torch ~~(guiding means applicable to other metal-working machines B23Q)~~
- M B23K 7/102
- • {for controlling the ~~spacial~~ *spatial* relationship between the workpieces and the gas torch}
- M B23K 9/00**
- Arc welding or cutting ~~(electro-slag welding B23K 25/00; welding transformers H01F; welding generators H02K)~~**

Project: MP12840 (B23K)

- U B23K 9/02
- Seam welding; Backing means; Inserts
- M B23K 9/032
- • for three-dimensional *[3D]* seams

Project: MP12804 (B23K)

M	B23K 9/038	• • using moulding means (not restricted to arc welding B23K 37/06)
U	B23K 9/06	• Arrangements or circuits for starting the arc, e.g. by generating ignition voltage, or for stabilising the arc
U	B23K 9/067	• • Starting the arc
U	B23K 9/0672	• • • {without direct contact between electrodes}
M	B23K 9/0673	• • • • {Ionisation of the arc gap by means of a tension with a step front (pulses or high frequency tensions) pulsed or high-frequency voltages }
M	B23K 9/0675	• • • • {Ionization of the arc gap by means of radiation or particle bombardment bombardment }
M	B23K 9/08	• Arrangements or circuits for magnetic control of the arc {(stabilising of the arc position by magnetic means B23K 9/0737)}
U	B23K 9/09	• Arrangements or circuits for arc welding with pulsed current or voltage
U	B23K 9/091	• • {characterised by the circuits}
M	B23K 9/093	• • • {the frequency of the pulses produced being modulatable modulable }
U	B23K 9/10	• Other electric circuits therefor; Protective circuits; Remote controls
U	B23K 9/1006	• • {Power supply}
U	B23K 9/1012	• • • {characterised by parts of the process}
M	B23K 9/1018	• • • • {Improvements of the cos (phi) power factor of arc welding installations}
M	B23K 9/1025	• • • • {Means for suppressing or reducing DC components in AC direct-current [DC] components in alternating-current [AC] arc welding installations}
U	B23K 9/12	• Automatic feeding or moving of electrodes or work for spot or seam welding or cutting
M	B23K 9/127	• • Means for tracking lines during arc welding or cutting (copying in general B23Q 35/00)
M	B23K 9/16	• making use of shielding gas {(selection of media B23K 35/38)}
U	B23K 9/173	• • and of a consumable electrode
U	B23K 9/20	• Stud welding
M	B23K 9/201	• • {of the extremity of a small piece on a great or large basis}
M	B23K 9/202	• • • {by means of portable equipment, e.g. stud - welding gun}
M	B23K 9/207	• • {Features related to studs (welding studs per se B23K 35/0288)} }
M	B23K 9/24	• Features related to electrodes (form or composition of electrodes B23K 35/00)
M	B23K 9/28	• • Supporting devices for electrodes (not restricted to arc welding or cutting B23K 37/02)
M	B23K 9/287	• • • {Supporting devices for electrode holders (not restricted to arc welding B23K 37/02)} }
U	B23K 9/29	• • • Supporting devices adapted for making use of shielding means
U	B23K 9/291	• • • • {the shielding means being a gas}
M	B23K 9/293	• • • • • {using consumable electrode-rod electrodes }
M	B23K 9/295	• • • • • {using consumable electrode-wire electrodes }
M	B23K 9/32	• Accessories (earthing connections H01R)
M	B23K 9/321	• • {Protecting means (protecting means in general F16P 1/06)} }
M	B23K 9/322	• • • {Head protecting means (masks, shields or hoods for weldersp A61F 9/06)} }
M	B23K 9/323	• • {Combined coupling means, e.g. gas, electricity, water or the like (electrical only H01R)} }
M	B23K 9/327	• • {Means for transporting supplies (carriages in general B23K 37/02)} }

U	B23K 10/00	Welding or cutting by means of a plasma
M	B23K 10/003	• {Scarfig, desurfacing or deburring (by applying flames B23K 7/06) }
M	B23K 10/006	• {Control circuits therefor (circuits for plasma torches H05H 1/36) }
M	B23K 11/0006	• {the welding zone being shielded against the influence of the surrounding atmosphere (selection of media B23K 35/38) }
M	B23K 11/0013	• {welding for reasons purposes other than joining, e.g. build-up welding}
U	B23K 11/002	• {specially adapted for particular articles or work}
M	B23K 11/004	• • {Welding of a small piece to a great large or broad piece}
U	B23K 11/0046	• • • {the extremity of a small piece being welded to a base, e.g. cooling studs or fins to tubes or plates}
M	B23K 11/0053	• • • • {Stud welding, i.e. resistive (with an arc B23K 9/20) }
M	B23K 11/0093	• • {Welding of honeycomb sandwich structures (brazing of honeycomb sandwich structure B23K 1/0014) }
U	B23K 11/08	• Seam welding not restricted to one of the preceding subgroups
U	B23K 11/082	• • {of three-dimensional seams}
M	B23K 11/084	• • • {of helicoïdal helicoidal seams}
U	B23K 11/24	• Electric supply or control circuits therefor
U	B23K 11/241	• • {Electric supplies (B23K 11/248 takes precedence)}
M	B23K 11/245	• • • {using a stepping counter in synchronism with the welding pulses (electromagnetic counters G06M) }
U	B23K 11/25	• • Monitoring devices
M	B23K 11/251	• • • {using analog analogue means}
M	B23K 11/30	• Features relating to electrodes (form or composition of electrodes B23K 35/00)
M	B23K 11/31	• • Electrode holders {and actuating devices therefor} (not restricted to resistance welding or severing by resistance heating B23K 37/02)
U	B23K 13/00	Welding by high-frequency current heating
M	B23K 13/04	• by conduction heating (B23K 13/02 takes precedence)
M	B23K 13/06	• characterised by the shielding of the welding zone against influence of the surrounding atmosphere (selection of media B23K 35/38)

Project: Unknown (B23K)

M	B23K 15/00 - B23K 2103/00 B23K 37/00	<u>Other welding or cutting; Working by laser beam</u>
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Project: MP12804 (B23K)

M	B23K 15/00	Electron-beam welding or cutting (electron- or ion- beam tubes H01J 37/00)
M	B23K 15/0006	• {specially adapted for particular articles or work }
M	B23K 15/0013	• {Positioning or observing workpieces, e.g. with respect to the impact; Aligning, aiming or focusing electronbeams electron beams}
M	B23K 15/002	• {Devices involving relative movement between electronbeam electron beam and workpiece}
U	B23K 15/0046	• {Welding}
M	B23K 15/0086	• • {welding for purposes other than joining, e.g. built build-up welding}
U	B23K 20/00	Non-electric welding by applying impact or other pressure, with or without the application of heat, e.g. cladding or plating

- M B23K 20/008 · {**combining** pressure ~~combined~~ with radiant energy}
- M B23K 20/02 · by means of a press {; Diffusion bonding (~~B23K 20/001, B23K 20/04 take precedence~~)}
- U B23K 20/12 · the heat being generated by friction; Friction welding
- U B23K 20/122 · {using a non-consumable tool, e.g. friction stir welding}
- M B23K 20/127 · · {~~friction~~ **Friction** stir welding involving a mechanical connection (~~forged connections B21K 25/005; riveted connections B21J 15/027~~)}
- M B23K 20/129 · {specially adapted for particular articles or **workpieces work**}
- M B23K 25/00** **Slag welding, i.e. using a heated layer or mass of powder, slag, or the like in contact with the material to be joined (~~B23K 23/00 takes precedence; submerged-arc welding B23K 9/18~~)**
- M B23K 25/005 · {Welding for purposes other than joining, e.g. **built build**-up welding}

U B23K 26/00 Working by laser beam, e.g. welding, cutting or boring

NOTES

1. This subclass covers:

- laser working for making a weakened layer, with or without removing material;
- laser shock processing;
- apparatus for laser surface treatment;
- laser ablation.

2. This subclass does not cover:

- laser assisted deposition which is covered by subclass **C23C**;
- laser sintering which is covered by group **B22F 3/105** for metallic powder, by group **B29C 67/04** for plastics, by group **C03B 19/06** for glass or by group **C04B 35/64** for ceramics;
- laser assisted chemical etching which is covered by group **C23F 1/00**.

- M B23K 26/009 · {using a non-absorbing, e.g. transparent, reflective or refractive, layer on the workpiece (using a mask on the workpiece ~~B23K 26/066 B23K 26/0661~~)}
- M B23K 26/0093 · {combined with mechanical machining or metal-working covered by other subclasses than **B23K** (~~combined welding or cutting procedures or apparatus B23K 28/02~~)}
- M B23K 26/0096 · {Portable laser equipment, e.g. hand-held laser apparatus (~~surgical laser instruments A61B 18/20, Dental Lasers A61C 1/0046, Hand-held laser dental apparatus for curing resins A61C 19/004~~)}
- U B23K 26/02 · Positioning or observing the workpiece, e.g. with respect to the point of impact; Aligning, aiming or focusing the laser beam
- U B23K 26/035 · · Aligning the laser beam (automatically **B23K 26/042**)
- M B23K 26/037 · · · {by pressing on the workpiece, e.g. **using a** pressing roller foot}
- U B23K 26/06 · · Shaping the laser beam, e.g. by masks or multi-focusing
- U B23K 26/062 · · · by direct control of the laser beam
- U B23K 26/0622 · · · · by shaping pulses
- M B23K 26/0624 · · · · · {using ultrashort pulses, i.e. pulses of ~~1ns~~ **1 ns** or less}
- M B23K 26/067 · · · Dividing the beam into multiple beams, e.g. **multifocusing multi-focusing**
- U B23K 26/08 · Devices involving relative movement between laser beam and workpiece
- U B23K 26/083 · · {Devices involving movement of the workpiece in at least one axial direction}
- M B23K 26/0853 · · · {Devices involving movement of the workpiece in at least ~~in~~ two axial directions, e.g. in a plane}
- M B23K 26/0861 · · · · {in at least ~~in~~ three axial directions}

- U B23K 26/0869 . . {Devices involving movement of the laser head in at least one axial direction}
- U B23K 26/0876 . . . {in at least two axial directions}
- M B23K 26/0884 {in at least ~~in~~ three axial directions, e.g. manipulators, robots}
- M B23K 26/12 . in a special *environment or* atmosphere, e.g. in an enclosure
- U B23K 26/14 . using a fluid stream, e.g. a jet of gas, in conjunction with the laser beam; Nozzles therefor ([B23K 26/12](#) takes precedence)
- M B23K 26/1435 . . {involving specially adapted flow-~~control~~ means}
- M B23K 26/1437 . . . {for flow-~~rate~~ control}
- M B23K 26/20 . Bonding (soldering by means of radiant energy [B23K 1/005](#); ~~joining of preformed plastics parts by heating using laser beam B29C 65/16~~)

Project: MP12840 (B23K)

- U B23K 26/21 . . by welding
- U B23K 26/24 . . . Seam welding
- M B23K 26/30 of three-dimensional *[3D]* seams

Project: MP12804 (B23K)

- U B23K 26/346 . in combination with welding or cutting covered by groups [B23K 5/00](#) - [B23K 25/00](#), e.g. in combination with resistance welding
- M B23K 26/348 . . in combination with arc heating, e.g. ~~TIG~~ [tungsten inert gas *[TIG]*], MIG [metal inert gas *[MIG]*] or plasma welding (~~laser beam for starting a welding or cutting arc B23K 9/067~~)
- U B23K 26/352 . for surface treatment
- U B23K 26/3568 . . {Modifying rugosity}
- M B23K 26/3576 . . . {Diminishing rugosity, e.g. ~~grinding~~ *by grinding, polishing or smoothing*; ~~Polishing; Smoothing~~}
- M B23K 26/3584 . . . {Increasing rugosity, ~~e.g.~~ *i.e.* roughening}
- U B23K 26/36 . Removing material ([B23K 26/55](#), [B23K 26/57](#) take precedence)
- U B23K 26/38 . . by boring or cutting
- U B23K 26/382 . . . by boring
- M B23K 26/389 {of fluid openings, e.g. nozzles, jets (~~laser machining of inkjet nozzles B41J 2/1634~~)}
- U B23K 26/70 . Auxiliary operations or equipment
- U B23K 26/702 . . {Auxiliary equipment}
- M B23K 26/705 . . . {Beam measuring ~~device~~ *devices*}
- M B23K 28/00** **Welding or cutting not covered by *any of the preceding groups*, e.g. *electrolytic welding groups B23K 5/00 - B23K 26/00***
- U B23K 28/003 . {Welding in a furnace}
- M B23K 28/006 . {Welding metals by means of an electrolyte (~~working metal, e.g. cutting, by means of an electrolyte B23H~~)}
- M B23K 31/00** **Processes relevant to this subclass, specially adapted for particular articles or purposes, but not covered by *only any single* one of *the preceding* main groups *B23K 1/00 - B23K 28/00* (~~making tubes or profiled bars involving operations other than soldering or welding B21C 37/04, B21C 37/08~~)**
- M B23K 31/02 . relating to soldering or welding (~~dip or wave soldering in the manufacture of printed circuits H05K 3/34~~)
- M B23K 31/027 . . {Making tubes ~~with~~ *by* soldering or welding}

M	B23K 33/00	Specially-profiled edge portions of workpieces for making soldering or welding connections; Filling the seams formed thereby {(B23K 11/14 takes precedence)}
U	B23K 35/00	Rods, electrodes, materials, or media, for use in soldering, welding, or cutting
U	B23K 35/02	• characterised by mechanical features, e.g. shape
U	B23K 35/0211	• • {for use in cutting (B23K 35/0205 takes precedence)}
M	B23K 35/0216	• • • {Rods, electrodes; or wires}
M	B23K 35/0222	• • {for use in soldering; or brazing (B23K 35/0205 takes precedence)}
M	B23K 35/0227	• • • {Rods; or wires (B23K 35/0244 takes precedence)}
M	B23K 35/0233	• • • {Sheets; or foils (B23K 35/0244 takes precedence)}
U	B23K 35/0244	• • • {Powders, particles or spheres; Preforms made therefrom}
M	B23K 35/025	• • • • {Pastes, creams; or slurries}
U	B23K 35/0255	• • {for use in welding (B23K 35/0205 takes precedence)}
M	B23K 35/0261	• • • {Rods, electrodes; or wires}
U	B23K 35/22	• characterised by the composition or nature of the material
U	B23K 35/24	• • Selection of soldering or welding materials proper (B23K 35/34 takes precedence)
M	B23K 35/26	• • • with the principal constituent melting at less than 400-degrees °C
M	B23K 35/28	• • • with the principal constituent melting at less than 950-degrees °C
M	B23K 35/30	• • • with the principal constituent melting at less than 1550-degrees °C
M	B23K 35/32	• • • with the principal constituent melting at more than 1550-degrees °C
M	B23K 35/36	• • Selection of non-metallic compositions, e.g. coatings; or fluxes (B23K 35/34 takes precedence); Selection of soldering or welding materials, conjoint with selection of non-metallic compositions, both selections being of interest (selection of soldering or welding materials proper B23K 35/24)
M	B23K 35/40	• Making wire or rods for soldering or welding (processes involving a single technical art, see the relevant subclasses, e.g. B05D, B21C)
M	B23K 37/00	Auxiliary devices or processes, not specially adapted for a procedure covered by only one of the other main groups of this subclass {(laser protective screens B23K 26/706; eye-shields for welders worn on the operator's body or carried in the hand A61F 9/00; applicable to metal-working machines other than soldering, welding, or flame-cutting machines B23Q; other protective shields F16P 1/06)}
N	B23K 2101/00 - B23K 2103/00	<u>Indexing scheme associated with groups B23K 1/00 - B23K 31/00, relating to articles made by soldering, welding or cutting or to materials to be soldered, welded or cut</u>
U	B23K 2101/00	Articles made by soldering, welding or cutting
M	B23K 2101/34	• Coated articles { e.g. plated or painted ; Surface treated articles}
U	B23K 2103/00	Materials to be soldered, welded or cut
U	B23K 2103/02	• Iron or ferrous alloys
M	B23K 2103/04	• • Steel { or steel } alloys
M	B23K 2103/16	• Composite materials {e.g. fibre-reinforced}
M	B23K 2103/30	• {Organic material materials}
M	B23K 2103/38	• • {Fabrics; fibrous materials ; Fibrous materials}
M	B23K 2103/42	• • {Plastics other than composite materials } (B23K 2103/16 takes precedence)}

- M B23K 2103/50 • {Inorganic ~~material, e.g. metals, not provided for in B23K 2103/02—~~
B23K 2103/26 *materials other than metals or composite materials*}
- M B23K 2103/56 • • {*being* semiconducting}

Project: MP12828 (B23P)

- M B23P 21/00 Machines for assembling a multiplicity of different parts to compose units, with or without preceding or subsequent working of such parts, e.g. with ~~programme~~*program* control

Project: RP12800 (B23Q)

- M B23Q 3/00 Devices holding, supporting, or positioning work or tools, of a kind normally removable from the machine (work-tables or other parts, e.g. faceplates, normally not incorporating means for securing work B23Q 1/00; automatic position control B23Q 15/00 {; food cutting boards A47J 47/00; workpiece support for dies B21D 37/02}; rotary tool heads for turning-machines B23B 3/24, B23B 3/26; non-driven tool holders B23B 29/00; general features of turrets B23B 29/24 {; drawbars in spindles B23B 31/261; for electrical discharge machining B23H 11/003; for welding B23K 37/04; means for securing grinding wheels B24B 45/00; mountings for abrasive wheels B24D 5/16}; tools or bench devices for fastening, connecting, disengaging or holding B25B {; chucks for percussive tools B25D 17/084; work benches for manual work B25H 1/00; devices for securing circular saw blades B27B 5/32; for assembling or manufacturing aircrafts B64F 5/10; ~~for holding semiconductors or wafers H01L 21/67~~; devices for holding circuit boards H05K 13/0061}; *for holding semiconductors or wafers H10P 72/00*})

Project: MP12828 (B23Q)

- M B23Q 5/00 Driving or feeding mechanisms; Control arrangements therefor (automatic control B23Q 15/00; copying B23Q 33/00, B23Q 35/00; specially adapted for boring or drilling machines B23B 39/10, B23B 47/00 {; ~~numerical programme-control of machine tools G05B 19/18~~; *numerical program-control of machine tools G05B 19/18*})
- M B23Q 15/00 Automatic control or regulation of feed movement, cutting velocity or position of tool or work (~~programme-control G05B 19/00, e.g. numerical programme-control G05B 19/18~~)
- U B23Q 35/00 Control systems or devices for copying directly from a pattern or a master model; Devices for use in copying manually {(copy milling classified also in B27C 5/003)}
- U B23Q 35/04 • using a feeler or the like travelling along the outline of the pattern, model or drawing; Feelers, patterns, or models therefor
- U B23Q 35/08 • • Means for transforming movement of the feeler or the like into feed movement of tool or work
- M B23Q 35/12 • • • involving electrical means (~~programme-recording for copying purposes in a separate apparatus G05, G11~~*program recording for copying purposes in a separate apparatus G05, G11*)

Project: MP12823 (B24B)

- M B24B 1/04 • subjecting the grinding or polishing tools, the abrading or polishing medium or work to vibration, e.g. grinding with ultrasonic frequency (~~polishing or abrading surfaces on work by means of tumbling apparatus B24B 31/00, involving oscillating or vibrating containers B24B 31/06~~; *involving oscillating or vibrating containers B24B 31/06*; superfinishing surfaces on work, e.g. by means of abrading blocks reciprocating with high frequency, B24B 35/00)

Project: RP12800 (B25J)

M B25J MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES ({manipulators specially adapted for use in surgery [A61B 34/70](#); manipulators used in cleaning hollow articles [B08B 9/04](#)}; manipulators associated with rolling mills [B21B 39/20](#); manipulators associated with forging machines [B21J 13/10](#); {manipulators associated with picking-up and placing mechanisms [B23P 19/007](#)}; means for holding wheels or parts thereof [B60B 30/00](#); {vehicles with ground-engaging propulsion means, e.g. walking members [B62D 57/02](#), [B62D 57/032](#); devices for picking-up and depositing articles or materials between conveyors [B65G 47/90](#), [B65G 47/91](#); manipulators with gripping or holding means for transferring packages [B65H 67/065](#); cranes [B66C](#); {manipulators used in the protection or supervision of pipe-line installations [F17D 5/00](#); walking equipment adapted for nuclear steam-generators [F22B 37/006](#)}; manipulators specially adapted for, or associated with, nuclear reactors [G21C](#); ~~{apparatus used for handling wafers during manufacture or treatment of semiconductor H01L 21/68}~~; *{apparatus used for handling wafers during manufacture or treatment of semiconductor H10P 72/50}*)

NOTE

In this subclass, the following term is used with the meaning indicated :

- "manipulator" covers handling tools, devices, or machines having a gripping or work head capable of bodily movement in space and of change of orientation, such bodily movement and change of orientation being controlled, at will, by means remote from the head.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[B25J 9/18](#) covered by [B25J 9/16](#)
[B25J 9/22](#) covered by [B25J 9/1656](#), [G05B 19/42](#)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12828 (B25J)

M B25J 9/00 ~~Programme~~*Program*-controlled manipulators

M B25J 9/16 • ~~Programme~~*Program* controls (~~programme controls in general G05B 19/00~~; e.g. numerical pogramme controls ~~G05B 19/18~~; {recording or playback systems ~~G05B 19/42~~}*total factory control, i.e. centrally controlling a plurality of machines, G05B 19/418*)

M B25J 13/00 Controls for manipulators (programme controls [B25J 9/16](#); ~~control in general G05~~)

Project: RP12800 (B25J)

M B25J 15/00 Gripping heads {and other end effectors (grippers used in machine tools [B23Q 7/04](#); gripping members fitted on cranes [B66C 1/42](#), [B66C 1/44](#); ~~gripping means used in the manufacture of semiconductors H01L 21/68707~~; gripping means used for mounting electrical components [H05K 13/04](#); *gripping means used in the manufacture of semiconductors H10P 72/7602*)}

Project: MP12837 (B26D)

M B26D

CUTTING; DETAILS COMMON TO MACHINES FOR PERFORATING, PUNCHING, CUTTING-OUT, STAMPING-OUT OR SEVERING (~~soil-working A01B~~; for growing crops or plants [A01D](#), [A01G](#); for fodder or straw [A01F](#); for bulk butter [A01J](#); for dough [A21C](#); slaughtering [A22B](#); for tobacco, cigars or cigarettes [A24](#); marking-out, perforating or making buttonholes [A41H 25/00](#); manufacturing footwear [A43D](#); brushmaking [A46D](#); surgery [A61B](#); disintegrating, mincing or shredding in general [B02C](#); cutting wire, making pins or nails [B21F](#), [B21G](#); of the kind used for metal [B23](#); cutting by abrasive fluid jets [B24C 5/02](#); hand-held cutting tools [B26B](#); perforating, cutting-out, stamping-out or punching, or severing by means other than cutting [B26F](#); for wood [B27](#); for stone [B28D](#); working of plastics or substances in a plastic state [B29](#); making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, [B31B](#); article or web delivery apparatus incorporating cutting or line-perforating devices [B65H 35/00](#); for leather or upholstery [B68](#), [C14B](#); ~~C14B~~; for glass [C03B](#); making matches [C06F](#); for peat [C10F](#); for sugar [C13B 45/00](#); for textile materials [D06H](#); civil engineering, building, mining, *see* Section [E](#); for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))

NOTES

1. This subclass covers:

- cutting non-metallic sheet material and metal foil in general;
- cutting other forms of non-metallic material not otherwise provided for;
- features specific to machines for cutting, perforating, punching, cutting-out, stamping-out and severing by means other than cutting, which relate to a requirement or problem of a nature which is not peculiar to a machine for these purposes, that is, details of or arrangements for operating or controlling such machines, although the realisation of such features may differ according to the kind of machine concerned. This subclass covers such features in general even if the feature in any particular case is to some extent peculiar to, or is claimed only for, a machine designed for perforating, punching, cutting-out, stamping-out, or for severing other than by cutting.

2. If the details or arrangements have no essential features specific to cutting, perforating, punching, cutting-out, stamping-out or severing machines, the more general classes, e.g. [F16](#), take precedence.

3. In this subclass, in groups [B26D 5/00](#) and [B26D 7/00](#), the following term is used with the meaning indicated:

- "cutting" includes cutting-out, stamping-out, punching, perforating, and severing by means other than cutting.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12823 (B26F)

M B26F 1/00

Perforating; Punching; Cutting-out; Stamping-out; Apparatus therefor (~~subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency B24B 1/04, perforating by sand-blasting B24C; {e.g. abrasive blasting used for cutting B24C 1/045}; perforating by laser beam B23K 26/00; subjecting the grinding tools or the abrading medium to vibration, e.g. grinding with ultrasonic frequency, B24B 1/04; perforating by sand-blasting B24C~~; punching cards or tapes for statistical and record purposes [G06K 1/00](#))

Project: MP12840 (B29C)

- U B29C 70/00 Shaping composites, i.e. plastics material comprising reinforcements, fillers or preformed parts, e.g. inserts**
- NOTE**
- In this group, the following terms or expressions are used with the meanings indicated:
- "reinforcement" means a structure in the form of fibres, wires, rods, bars, sections, plates or blocks, which improves the strength of an article;
 - "filler" means a relatively inert substance in the form of particles, powder, beads, flakes or spheres, which improves the physical properties or increases the bulk or weight of an article;
 - "preformed part" means a part made of any material, being completely shaped to have a determined form and which is not used as a reinforcement, e.g. wires or nets forced only into the surface of an article;
 - "insert" means a preformed part incorporated in an article during moulding.
- U B29C 70/04 • comprising reinforcements only, e.g. self-reinforcing plastics
- U B29C 70/06 • • Fibrous reinforcements only
- U B29C 70/10 • • • characterised by the structure of fibrous reinforcements {, e.g. hollow fibres}
- U B29C 70/16 • • • • using fibres of substantial or continuous length {(non-woven fabrics per se D04H 3/00)}
- M B29C 70/22 • • • • • oriented in at least two directions forming a two-dimensional structure {-dimensional [2D] structure(woven fabrics per se D03D; knitted fabrics per se D04D; braid per se D04C)}
- M B29C 70/24 • • • • • oriented in at least three directions forming a three-dimensional-dimensional [3D] structure

Project: MP12716 (B29K)

- U B29K 2027/00 Use of polyvinylhalogenides {or derivatives thereof} as moulding material**
- U B29K 2027/12 • containing fluorine
- M B29K 2027/18 • • PTFE, i.e. polytetrafluorethene polytetrafluoroethylene {, e.g. ePTFE, i.e. expanded polytetrafluorethene polytetrafluoroethylene}
- U B29K 2227/00 Use of polyvinylhalogenides {or derivatives thereof} as reinforcement**
- U B29K 2227/12 • containing fluorine
- M B29K 2227/18 • • PTFE, i.e. polytetrafluorethene polytetrafluoroethylene {, e.g. ePTFE, i.e. expanded polytetrafluorethene polytetrafluoroethylene}
- U B29K 2427/00 Use of polyvinylhalogenides {or derivatives thereof} as filler**
- U B29K 2427/12 • containing fluorine
- M B29K 2427/18 • • PTFE, i.e. polytetrafluorethene polytetrafluoroethylene {, e.g. ePTFE, i.e. expanded polytetrafluorethene polytetrafluoroethylene}
- U B29K 2627/00 Use of polyvinylhalogenides {or derivatives thereof} for preformed parts, e.g. for inserts**
- U B29K 2627/12 • containing fluorine
- M B29K 2627/18 • • PTFE, i.e. polytetrafluorethene polytetrafluoroethylene {, e.g. ePTFE, i.e. expanded polytetrafluorethene polytetrafluoroethylene}
- U B29K 2827/00 Use of polyvinylhalogenides or derivatives thereof as mould material**
- U B29K 2827/12 • containing fluorine
- M B29K 2827/18 • • PTFE, i.e. polytetrafluorethene polytetrafluoroethylene, e.g. ePTFE, i.e. expanded polytetrafluorethene polytetrafluoroethylene

Project: MP12828 (B30B)

- U B30B 15/00** Details of, or accessories for, presses; Auxiliary measures in connection with pressing (safety devices [F16P](#))
- M B30B 15/26** - ~~Programme~~ *Program*-control arrangements

Project: MP12840 (B31D)

- M B31D 5/00** Multiple-step processes for making three-dimensional ~~articles~~ *{[3D] articles; Making three-dimensional articles}*
- NOTE
Making drinking straws is classified in group [B31D 5/00](#), e.g. [B31D 5/0095](#)

Project: Unknown (B32B)

B32B **LAYERED PRODUCTS, i.e. PRODUCTS BUILT-UP OF STRATA OF FLAT OR NON-FLAT, e.g. CELLULAR OR HONEYCOMB, FORM**

NOTES1. This subclass covers:

- layered products comprising different kinds of material or layered products not characterised by the particular kind of material used;
- a product similar to a layered product but comprising only material in the form of a sheet or network embedded in a mass of plastics or of physically-similar substances which mass penetrates the said sheet or network and lies on both sides of the latter (e.g. so that the sheet or network reinforces the plastics substance) PROVIDED THAT the embedded sheet or network extends coherently or connectedly over substantially the whole area of the product; thus the embedded sheet or network may be a fabric or a series of rods connected by cross wires. The manner of making such a product is, however, classified in this subclass only if it is essentially a process of building-up an assembly of layers of which at least one outer layer is preformed. If the embedded material comprises only a series of unconnected rods, the product is not classified in this subclass.

2. This subclass does not cover:

- processes or apparatus used in, or in connection with, the production or treatment of any product, if the process or apparatus is fully classifiable in a single other class or subclass for processes or apparatus, e.g. [B05](#), [B29](#), [B44D](#), [C08J](#), [C09J](#), [C23](#);
- compositions or preparation or treatment thereof, unless they are essentially restricted to layered products and cannot be fully classified in another class without ignoring this restriction;
- etched metallic pattern on the surface of a printed circuit board.

3. In this subclass:

- a film formed on a layer by spreading a substance thereon is not considered to constitute a layer itself if it serves only as an adhesive or its purpose is merely to finish a surface of a product
- {with exclusion to [B32B 15/01](#) - [B32B 15/018](#), a coating formed directly onto a substrate layer is not considered to constitute a layer when at the moment of its contact with the substrate it does not have the form of a layer with the exception of layers that come under the meaning of Note (4).}
- {groups designating products cover also methods or apparatus specially adapted for producing such products.}

4. In this subclass, the following terms or expressions are used with the meanings indicated:

- "layer" is a sheet or strip or anything else having a small thickness relatively to its other dimensions which, together with at least one other layer, exists in a product, whether it pre-existed, e.g. as a separate sheet

or strip, or was formed during the production of the layered product{, e.g. formed in-situ as with casting, extrusion or moulding. It may be deformed out of the flat plane to form a three-dimensional shape}. It may or may not be homogeneous or cohesive; it may be an assembly of fibres or pieces of material. It may be discontinuous, e.g. in the form of a grating, honeycomb, or frame. It may or may not be in complete contact with the next layer, e.g. a corrugated layer against a flat layer;

- "layered product" comprises at least two layers secured together. The term "secured" includes any method of uniting layers, e.g. needling, stitching, gluing, nailing, dovetailing or the interposition of an adhesive or adhesive impregnated support. It may also be an intermediate stage in the production of an article which is not layered in its final form, e.g. a panel with a protective layer {that} is stripped off when the panel is placed in its position of use. The layers are preformed layers or layers formed IN SITU on a preformed layer and may consist of coherent solid materials, including honeycombs and other cellular materials or of non-coherent solid materials composed of assemblies of strands, strips, fibres, tiles or the like;
- "filamentary layer" means a layer of threads or filaments of any substance (e.g. wires) of more or less unlimited length placed in an orderly arrangement and secured together; it may be woven, knitted, braided, or netted, or formed of threads crossed or laid side by side and bonded together;
- "fibrous layer" means a random assembly of fibres or filaments, usually of limited length, e.g. felt, fleece; the fibres {being} interengaged or connected, e.g. by adhesive.

5. If a layered product is characterised by the way it is produced and not by its structure or composition, the production method should be classified in groups [B32B 37/00](#) or [B32B 38/00](#), or in subclass [B29C](#), for example in groups [B29C 45/16](#) or [B29C 48/18](#).

6. {In this subclass,}

- The classification of layered products is provided for in many classes, most of which are confined to a particular kind of material. However, in order that this subclass may provide a basis for making a complete search with respect to layered products, all relevant subject matter is classified in this subclass even though it may also be classified in other classes.

7. {In groups [B32B 37/00](#), [B32B 38/00](#), [B32B 41/00](#) and [B32B 39/00](#), the following expressions are used with the meaning indicated:

- "lay-up" is considered to be the action of combining separate layers, one on top of the other, in order to form a half-product for entering the laminating process
- "laminating" means the action of combining previously unconnected but possibly laid up layers to become one product whose layers will remain together;
- "partial laminating" occurs when one layer does not fully cover a surface of another layer, whereby the layer with the greater surface area is laminated on only part of its surface or when two coextensive layers are bonded on only part of their facing surfaces;
- "adhesive" means a substance applied in any state or in any manner, which has bonding properties.

}

8. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the definitions of [B32B](#).}

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

B32B 3/24
B32B 17/12

covered by [B32B 3/266](#)
covered by [B32B 17/067](#)

Project: MP12731, MP12840 (B33Y)

M B33Y

ADDITIVE MANUFACTURING, i.e. MANUFACTURING OF THREE-DIMENSIONAL [3-D3D] OBJECTS BY ADDITIVE DEPOSITION, ADDITIVE AGGLOMERATION OR ADDITIVE LAYERING, e.g. BY 3-D3D PRINTING, STEREOLITHOGRAPHY OR SELECTIVE LASER SINTERING

NOTES

1. This subclass is for obligatory secondary classification in the sense of paragraph 107bis of the Guide to the IPC. Therefore, the classification symbols of this subclass are not listed first when assigned to patent documents. Secondary classification symbols may be assigned for either invention information or additional information, as appropriate.

~~1-2.~~ This subclass covers additive manufacturing, irrespective of the process or material used.

~~2-3.~~ This subclass is intended to enable a comprehensive search of subject matter related to additive manufacturing by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore, this subclass covers aspects of additive manufacturing (e.g. ~~3D~~*three-dimensional [3D]* printing) that might also be entirely or partially covered elsewhere in *the* CPC.

~~3. This subclass is for obligatory supplementary classification of subject matter already classified as such in other classification places, when the subject matter contains an aspect of additive manufacturing.~~

~~4. The classification symbols of this subclass are not listed first when assigned to patent documents.~~

Project: RP11529-F (B41J)

U B41J 2/00

Typewriters or selective printing mechanisms characterised by the printing or marking process for which they are designed (mounting, arrangement or disposition of types or dies [B41J 1/00](#))

NOTES

1. This group covers devices reproducing only a discrete number of tones, whereas group [H04N 1/00](#) covers devices used for the reproduction of documents or the like, which devices are capable of reproducing continuous tone value scales.

2. In this group, the following expressions are used with the meanings indicated:

- "ink jet" involves the projection of ink on to the printing material, e.g. paper, through a nozzle as a stream of droplets or particles of colouring matter
- "continuous ink jet" means a jet of ink transformed into a continuous stream of droplets or particles of colouring matter after having left the nozzle
- "ink spray" means a spray of ink transported by a stream of charged particles or air on to the printing material

U B41J 2/005

• characterised by bringing liquid or particles selectively into contact with a printing material (printing by selective application of impact or pressure on a printing or impression-transfer material [B41J 2/22](#))

U B41J 2/01

• • Ink jet

U B41J 2/135

• • • Nozzles

U B41J 2/165

• • • • Prevention {or detection} of nozzle clogging, e.g. cleaning, capping or moistening for nozzles

M	B41J 2/16505	<ul style="list-style-type: none"> • • • • {Caps, spittoons or covers for cleaning or preventing drying out} <p><u>WARNING</u> Group B41J 2/16505 is impacted by reclassification into groups B41J 2/16507 and B41J 2/16508. Groups B41J 2/16505, B41J 2/16507 and B41J 2/16508 should be considered in order to perform a complete search.</p>
M	B41J 2/16507	<ul style="list-style-type: none"> • • • • • {integral with the printhead} <p><u>WARNING</u> Group B41J 2/16507 is incomplete pending reclassification of documents from group B41J 2/16505. Groups B41J 2/16505 and B41J 2/16507 should be considered in order to perform a complete search.</p>
M	B41J 2/16508	<ul style="list-style-type: none"> • • • • • {connected with the printer frame} <p><u>WARNING</u> Group B41J 2/16508 is incomplete pending reclassification of documents from group B41J 2/16505. Groups B41J 2/16505 and B41J 2/16508 should be considered in order to perform a complete search.</p>
U	B41J 2/16517	<ul style="list-style-type: none"> • • • • • {Cleaning of print head nozzles (B41J 2/16505, B41J 2/1707 take precedence)}
U	B41J 2/1652	<ul style="list-style-type: none"> • • • • • {by driving a fluid through the nozzles to the outside thereof, e.g. by applying pressure to the inside or vacuum at the outside of the print head}
M	B41J 2/16523	<ul style="list-style-type: none"> • • • • • • {Waste ink transport from caps or spittoons, e.g. by suction (Collecting or collectors of waste ink B41J 2/1721)} <p><u>WARNING</u> Group B41J 2/16523 is impacted by reclassification into group B41J 2/1721. Groups B41J 2/16523 and B41J 2/1721 should be considered in order to perform a complete search.</p>
U	B41J 2/17	<ul style="list-style-type: none"> • • • characterised by ink handling {(cleaning by driving a fluid through the nozzles to the outside thereof B41J 2/1652; for treating before, during or after printing or for uniform coating or laminating the copy material before or after printing B41J 11/0015)}
M	B41J 2/1721	<ul style="list-style-type: none"> • • • • {Collecting waste ink; Collectors therefor} <p><u>WARNING</u> Group B41J 2/1721 is incomplete pending reclassification of documents from group B41J 2/16523. Groups B41J 2/16523 and B41J 2/1721 should be considered in order to perform a complete search.</p>
U	B41J 2/21	<ul style="list-style-type: none"> • • • for multi-colour printing
U	B41J 2/2107	<ul style="list-style-type: none"> • • • • {characterised by the ink properties (supplying ink in a solid state B41J 2/17593)}
M	B41J 2/211	<ul style="list-style-type: none"> • • • • • {Mixing of inks, solvent or air prior to paper contact} <p><u>WARNING</u> Group B41J 2/211 is incomplete pending reclassification of documents from group B41J 2/2114.</p>

Groups B41J 2/211 and B41J 2/2114 should be considered in order to perform a complete search.

- M B41J 2/2114 {Ejecting specialized liquids, e.g. transparent or processing liquids ([B41J 2/211](#) takes precedence)}

WARNING

Group B41J 2/2114 is impacted by reclassification into groups B41J 2/211 and B41J 2/2117.

Groups B41J 2/211, B41J 2/2114 and B41J 2/2117 should be considered in order to perform a complete search.

- M B41J 2/2117 {Ejecting white liquids}

WARNING

Group B41J 2/2117 is incomplete pending reclassification of documents from group B41J 2/2114.

Groups B41J 2/2114 and B41J 2/2117 should be considered in order to perform a complete search.

Project: MP12828 (B41J)

- U B41J 11/00 Devices or arrangements {of selective printing mechanisms, e.g. ink-jet printers or thermal printers,} for supporting or handling copy material in sheet or web form (script supports connected to the typewriter or printer [B41J 29/15](#))
- U B41J 11/36 . Blanking or long feeds; Feeding to a particular line, e.g. by rotation of platen or feed roller
- U B41J 11/42 . . Controlling {printing material conveyance for accurate alignment of the printing material with the printhead; Print registering}
- M B41J 11/44 . . . by devices, e.g. ~~programme~~*program* tape or contact wheel, moved in correspondence with movement of paper-feeding devices, e.g. platen rotation

Project: MP12828 (B41L)

- U B41L 47/00 Details of addressographs or like series-printing machines (common details of printing machines [B41F 21/00](#) - [B41F 35/00](#))
- U B41L 47/58 . Arrangements or devices for selecting, or for facilitating selection of, text or image to be printed
- U B41L 47/62 . . Selecting devices, e.g. cams, windows, positions indicators
- M B41L 47/64 . . . Automatic selecting devices with or without overriding manual control, e.g. with scanning-fingers, with presetting controls operable by push-buttons; ~~with programme~~ *or with program* control by punched tapes

Project: MP12840 (B44B)

- M B44B 1/00 ~~Artist's~~*Artists'* machines or apparatus equipped with tools or work holders moving, or able to be controlled, three-dimensionally for making single sculptures or models (copying devices for machine-tool use [B23Q 35/00](#))
- M B44B 1/02 . wherein three-dimensional [\[3D\]](#) copies are made
- M B44B 3/00 ~~Artist's~~*Artists'* machines or apparatus equipped with tools or work holders moving or able to be controlled substantially two-dimensionally for carving, engraving, or guilloching shallow ornamenting or markings (marking or engraving metal by the action of a high concentration of electric current [B23H 9/06](#); forme engraving ~~B41C~~, ~~B41D~~*B41C* 1/02; engraving by photomechanical reproduction ~~G03F~~*G03F* 7/20)

- U B44B 11/00 Artists' hand tools for sculpturing, kneading, carving, engraving, guilloching or embossing; Accessories therefor
- M B44B 11/02 • for substantially two-dimensional [2D] carving, engraving, or guilloching

Project: MP12840 (B44F)

- M B44F 7/00 Designs imitating three-dimensional [3D] effects

Project: RP12821 (B60D)

- M B60D VEHICLE CONNECTIONS ~~(components of brake systems B60T 17/04)~~

NOTE

Attention is drawn to the ~~note~~Note following the ~~title~~ of class B60.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

- M B60D 1/00 Traction couplings; Hitches; Draw-gear; Towing devices (~~devices specially adapted for connection between tractors and agricultural machines or implements A01B 59/00; fifth-wheel couplings B62D~~ **fifth-wheel traction couplings B62D 53/08**)
- U B60D 2001/001 • {specially adapted for use on vehicles other than cars}
- M B60D 2001/005 • • {for carts, scooters, or the like}
- U B60D 1/01 • Traction couplings or hitches characterised by their type
- D B60D 1/015 • • {Fifth-wheel couplings}
- <administratively transferred to B62D 53/08>
- M B60D 1/06 • • Ball-and-socket hitches ~~(, e.g. constructional details, auxiliary devices, their arrangement on the vehicle)~~
- U B60D 1/07 • • Multi-hitch devices, i.e. comprising several hitches of the same or of a different type; Hitch-adaptors, i.e. for converting hitches from one type to another
- M B60D 1/075 • • • {Hitch- adaptors}
- U B60D 1/14 • Draw-gear or towing devices characterised by their type
- M B60D 1/141 • • {Arrangements or frames adapted to allow the connection of trailers to tractor three-point hitches ~~(coupling of multipurpose tractors with equipment B62D 49/065)~~}
- T B60D 1/167 • • consisting of articulated or rigidly assembled bars or tubes forming a V-, Y-, or U-shaped draw gear ~~(B60D 1/173 takes precedence)~~
- WARNING
- Group B60D 1/167 is incomplete pending reclassification of documents from group B60D 1/173.
- Groups B60D 1/173 and B60D 1/167 should be considered in order to perform a complete search.
- C B60D 1/173 • • consisting of at least two bars which are not connected or articulated to each other
- WARNING
- Group B60D 1/173 is impacted by reclassification into group B60D 1/167.
- Groups B60D 1/173 and B60D 1/167 should be considered in order to perform a complete search.
- U B60D 1/18 • • Tow ropes, chains or the like

C	B60D 1/182	<ul style="list-style-type: none"> • • {comprising resilient members} <p>WARNING <i>Group B60D 1/182 is impacted by reclassification into group B60D 1/50. Groups B60D 1/182 and B60D 1/50 should be considered in order to perform a complete search.</i></p>
U	B60D 1/24	<ul style="list-style-type: none"> • characterised by arrangements for particular functions
M	B60D 1/243	<ul style="list-style-type: none"> • • {for protection in case of crash, collision, impact, or the like}
M	B60D 1/30	<ul style="list-style-type: none"> • • for sway control {e.g. stabilising or anti-fishtail devices; Sway alarm means}
U	B60D 1/32	<ul style="list-style-type: none"> • • • involving damping devices
M	B60D 1/322	<ul style="list-style-type: none"> • • • • {using fluid dampers (fluid dampers per se F16F 9/00)}
M	B60D 1/325	<ul style="list-style-type: none"> • • • • {using friction dampers (friction dampers per se F16F 7/02 - F16F 7/08)}
U	B60D 1/34	<ul style="list-style-type: none"> • • • involving springs
M	B60D 1/345	<ul style="list-style-type: none"> • • • • {the springs being of the bar or leaf type (torsion bars per se F16F 1/14; leaf springs per se F16F 1/18)}
T	B60D 1/36	<ul style="list-style-type: none"> • • for facilitating connection, e.g. hitch catchers {, visual guide means; signalling aids (B60D 1/465 takes precedence; vehicle signalling in general B60Q; optical arrangements specially adapted for viewing trailer-hitches B60R 1/003)} <p>WARNING <i>Group B60D 1/36 is incomplete pending reclassification of documents from group B60D 1/465. Groups B60D 1/465 and B60D 1/36 should be considered in order to perform a complete search.</i></p>
U	B60D 1/42	<ul style="list-style-type: none"> • • for being adjustable
U	B60D 1/46	<ul style="list-style-type: none"> • • • vertically
C	B60D 1/465	<ul style="list-style-type: none"> • • • • {comprising a lifting mechanism, e.g. for coupling while lifting} <p>WARNING <i>Group B60D 1/465 is impacted by reclassification into group B60D 1/36. Groups B60D 1/465 and B60D 1/36 should be considered in order to perform a complete search.</i></p>
U	B60D 1/48	<ul style="list-style-type: none"> • characterised by the mounting
M	B60D 1/481	<ul style="list-style-type: none"> • • {adapted for being mounted to the front and back of trailers, carts, trolleys, or the like to form a train}
M	B60D 1/486	<ul style="list-style-type: none"> • • {adapted for being mounted to the wheel axle of the^a vehicle}
T	B60D 1/50	<ul style="list-style-type: none"> • • resiliently mounted (<u>B60D 1/30</u> takes precedence {; B60D 1/182 takes precedence; springs or dampers per se F16F}) <p>WARNING <i>Group B60D 1/50 is incomplete pending reclassification of documents from group B60D 1/182. Groups B60D 1/182 and B60D 1/50 should be considered in order to perform a complete search.</i></p>
C	B60D 1/52	<ul style="list-style-type: none"> • • removably mounted (B60D 1/56 takes precedence) <p>WARNING <i>Group B60D 1/52 is incomplete pending reclassification of documents from groups B60D 1/56 and B60D 1/565. Group B60D 1/52 is also impacted by reclassification into group B60D 1/54.</i></p>

Groups B60D 1/52, B60D 1/56, B60D 1/565 and B60D 1/54 should be considered in order to perform a complete search.

- T B60D 1/54
- collapsible or retractable when not in use, e.g. hide-away hitches (~~B60D 1/52 takes precedence~~)
- WARNING
Group B60D 1/54 is incomplete pending reclassification of documents from groups B60D 1/52, B60D 1/56 and B60D 1/565. Groups B60D 1/52, B60D 1/56, B60D 1/565 and B60D 1/54 should be considered in order to perform a complete search.
- M B60D 2001/542
- • {characterised by the number of pivot ~~axis~~axes}
- M B60D 2001/544
- • • {~~one~~One pivot axis}
- M B60D 2001/546
- • • {~~two~~Two pivot axes}
- M B60D 2001/548
- • • {~~three~~Three pivot axes}
- C B60D 1/56
- securing to the vehicle bumper
- WARNING
Group B60D 1/56 is impacted by reclassification into groups B60D 1/52 and B60D 1/54. Groups B60D 1/56, B60D 1/52 and B60D 1/54 should be considered in order to perform a complete search.
- C B60D 1/565
- • {having an eyelet}
- WARNING
Group B60D 1/565 is impacted by reclassification into groups B60D 1/52 and B60D 1/54. Groups B60D 1/565, B60D 1/52 and B60D 1/54 should be considered in order to perform a complete search.
- U B60D 1/58
- Auxiliary devices
- M B60D 1/583
- • {Holding ~~-~~down means, e.g. holding ~~-~~down retainers}
- M B60D 1/62
- • involving supply lines, electric circuits, or the like
- M B60D 3/00
- Fittings to facilitate pushing (~~B60D 1/00 takes precedence; vehicle bumpers B60R 19/02; steering arrangements for backing a normally-drawn trailer B62D 13/06~~)**

Project: MP12833 (B60F)

- M B60F
- VEHICLES FOR USE BOTH ON RAIL AND ON ROAD; ~~AMPHIBIOUS OR LIKE VEHICLES; CONVERTIBLE VEHICLES CAPABLE OF TRAVELLING IN OR ON DIFFERENT MEDIA, e.g. AMPHIBIOUS~~ VEHICLES (air-cushion vehicles B60V)**
- WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme:
- M B60F 3/00
- Amphibious vehicles, i.e. vehicles capable of travelling both on land and on water; Land vehicles capable of travelling under water (~~buoyant wheels B60B -; equipment forming part of, or attachable to vessels, facilitating transport over land B63C 13/00~~)**
- M B60F 3/0007
- {Arrangement of propulsion or steering means on amphibious vehicles (~~marine propulsion or steering B63H~~)}

M	B60F 3/0015	• {comprising tracks specially adapted therefor {articulated tracks for vehicles; in general B62D 55/20} }
M	B60F 3/0023	• {comprising screw-type ground-engaging means {vehicles characterised by having other ground-engaging means than wheels or endless track B62D 57/00} }
U	B60F 3/003	• {Parts or details of the vehicle structure; vehicle arrangements not otherwise provided for}
M	B60F 3/0038	• {Flotation, updrift or stability devices {for ships or other waterborne vessels B63B 39/00, B63B 43/10} }
M	B60F 3/0053	• {Particular devices for gas circulation, e.g. air admission, cooling, water tightners watertightness}
M	B60F 3/0061	• {Amphibious vehicles specially adapted for particular purposes or of a particular type {armoured amphibious vehicles F41H 7/00; equipment for working under water B63C 11/00; flating bridges designed as or mounted on vehicles E01D 15/22} }
M	B60F 3/0069	• {Recreational amphibious vehicles {toy vehicles A63H 17/00 – A63H 31/00} }
M	B60F 3/0076	• {Amphibious snowmobiles {ski vehicles A63C 5/00; sledges in general B62B 13/00 – B62B 19/00} }
M	B60F 3/0084	• {Amphibious cycles {vessel being powered by land vehicle supported by vessel B63H 21/175} }
M	B60F 3/0092	• {Amphibious trailers {trailers in general B62D 63/06; house boats B63B 2035/4426} }
M	B60F 5/00	Other convertible vehicles, i.e. vehicles vehicles capable of travelling in or on different media {vehicles having alternatively usable runners and wheels B62B 13/18; cycles convertible into other types of land vehicles B62K 13/00; aircraft B64; flying-boats or seaplanes B64C B64C 35/00}
M	B60F 5/02	• convertible into aircraft {convertible aircraft B64C 37/00; convertible unmanned aerial vehicle [UAV]-type aircraft, e.g. convertible into land vehicles, B64U 10/70}
N	B60F 2301/00 - B60F 2301/00	<u>Indexing codes related to retractable wheels</u>

Project: MP12708 (B60G)

U	B60G 2600/00	Indexing codes relating to particular elements, systems or processes used on suspension systems or suspension control systems
M	B60G 2600/71	• Distributed control; Master – slave controllers Hierarchical control structure, e.g. with one unit steering and other units following ; Remote control units

Project: MP12809 (B60H)

M	B60H	ARRANGEMENTS OF HEATING, COOLING, VENTILATING OR OTHER AIR-TREATING DEVICES SPECIALLY ADAPTED FOR PASSENGER OR GOODS SPACES OF VEHICLES <u>NOTE</u> Attention is drawn to the Note following the title of class B60 <u>WARNING</u> {In this subclass, non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}
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M	B60H 1/00	<p>Heating, cooling or ventilating {{HVAC}} devices (heating, cooling or ventilating devices providing other air treatment, the other treatment being relevant, B60H 3/00; ventilating solely by opening windows, doors, roof parts, or the like B60J; heating or ventilating devices for vehicle seats B60N 2/56; vehicle window or windscreen cleaners using air, e.g. defrosters, B60S 1/54)</p> <p><u>NOTE</u></p> <p>In this group and its subgroups, as well as in patent documents, the following abbreviation is used:</p> <ul style="list-style-type: none"> • HVAC Heating, Ventilating and Air Conditioning
U	B60H 1/00271	<ul style="list-style-type: none"> • {HVAC devices specially adapted for particular vehicle parts or components and being connected to the vehicle HVAC unit}
M	B60H 1/00278	<ul style="list-style-type: none"> • {for the battery (arrangement of batteries B60R 16/04)}
M	B60H 1/00285	<ul style="list-style-type: none"> • {for vehicle seats (vehicle seats with heating or ventilation means independent from the HVAC system of the vehicle B60N 2/56)}
M	B60H 1/00292	<ul style="list-style-type: none"> • {for steering wheels (steering wheels with heating or ventilation means independent from the HVAC system of the vehicle B62D 1/065)}
M	B60H 1/00314	<ul style="list-style-type: none"> • {Arrangements permitting a rapid heating of the heating liquid (B60H 1/00492, B60H 1/03 take precedence; aiding engine start by heating of engine coolants F02N 19/10)}
M	B60H 1/00421	<ul style="list-style-type: none"> • {Driving arrangements for parts of a vehicle air-conditioning (B60H 1/3222 takes precedence; auxiliary drives per se for vehicles B60K 25/00)}
M	B60H 1/00478	<ul style="list-style-type: none"> • {Air-conditioning devices using the Peltier effect (for air-conditioning in general F24F 5/0042; for refrigeration F25B 21/02; electric devices exhibiting the Peltier effect H10N 10/00)}
M	B60H 1/00485	<ul style="list-style-type: none"> • {Valves for air-conditioning devices, e.g. thermostatic valves (valves per se F16K; thermostatic valves per se G05D 23/02)}
M	B60H 1/02	<ul style="list-style-type: none"> • the heat being derived from the propulsion plant {(B60H 1/00492 takes precedence)}
M	B60H 1/14	<ul style="list-style-type: none"> • otherwise <i>other</i> than from cooling liquid of the plant {, e.g. heat from the grease oil, the brakes, the transmission unit (B60H 1/03 takes precedence)}
M	B60H 1/18	<ul style="list-style-type: none"> • • the air being heated from the plant exhaust gases {(B60H 1/025 takes precedence; exhaust or silencing apparatus associated with devices profiting by exhaust energy F01N 5/00)}
M	B60H 1/22	<ul style="list-style-type: none"> • the heat being derived otherwise than from <i>source being other than</i> the propulsion plant {(B60H 1/0025, B60H 1/00492 and takes B60H 1/03 take precedence)}
M	B60H 1/2203	<ul style="list-style-type: none"> • {the heat being derived from burners (burners in general F23C, F23D, F24H 9/18)}
M	B60H 1/2206	<ul style="list-style-type: none"> • • {controlling the operation of burners (control of burners in general F23N 5/00)}
M	B60H 1/24	<ul style="list-style-type: none"> • Devices purely for ventilating or <i>Ventilating devices</i> where the heating or cooling is irrelevant (nozzles; <i>or</i> air-diffusers B60H 1/34)
U	B60H 1/26	<ul style="list-style-type: none"> • • Ventilating openings in vehicle exterior; Ducts for conveying ventilating air
M	B60H 1/265	<ul style="list-style-type: none"> • • {Openings in window or door posts or pillars (B60H 1/248 takes precedence; door posts per se B62D 25/04)}
M	B60H 1/267	<ul style="list-style-type: none"> • • {Openings in or near to vehicle windows (pivoting side windows B60J 1/14; wind deflectors associated with windows for ventilating B60J 1/20)}
M	B60H 1/32	<ul style="list-style-type: none"> • Cooling devices {(B60H 1/00478, B60H 1/005 take precedence; vehicles adapted to transport refrigerated goods B60P 3/20)}

- M B60H 1/3202
 - {using evaporation, i.e. not including a compressor, e.g. involving fuel or water evaporation ~~(B60H 1/3235 takes precedence; in general F25B 19/00; F25D 7/00)}~~}
- M B60H 1/34
 - Nozzles; ~~{Air-diffusers}(dispositions of air diffusers in a vehicle B60H 1/247)~~
- U B60H 3/00 Other air-treating devices**
- M B60H 3/02
 - Moistening {; ~~Devices influencing humidity levels, i.e. humidity control~~ *Humidity control* ~~(B60H 1/3202, B60H 1/3207 take precedence)}~~}
- M B60H 3/06
 - Filtering ~~-(B60H 3/0078 takes precedence)}~~

Project: Unknown (B60K)

- U B60K 2360/00 Indexing scheme associated with groups [B60K 35/00](#) or [B60K 37/00](#) relating to details of instruments or dashboards**
- U B60K 2360/589
 - Wireless data transfers
- M B60K 2360/5905
 - • Wi-~~fi~~ *F*®
- M B60K 2360/5911
 - • Bluetooth®

Project: MP12828 (B60L)

- U B60L 15/00 Methods, circuits, or devices for controlling the traction-motor speed of electrically-propelled vehicles**
- U B60L 15/20
 - for control of the vehicle or its driving motor to achieve a desired performance, e.g. speed, torque, programmed variation of speed
- M B60L 15/22
 - • with sequential operation of interdependent switches, e.g. relays, contactors; ~~programme~~ *or program* drum

Project: Unknown (B60R)

- U B60R 2325/00 Indexing scheme relating to vehicle anti-theft devices**
- U B60R 2325/10
 - Communication protocols, communication systems of vehicle anti-theft devices
- M B60R 2325/101
 - • Bluetooth®

Project: MP12825 (B61H)

- M B61H

BRAKES OR OTHER RETARDING DEVICES SPECIALLY ADAPTED FOR RAIL VEHICLES; ARRANGEMENT OR DISPOSITION THEREOF IN RAIL VEHICLES (~~electrodynamic braking of vehicles B60L, in general H02K; arrangements in rail vehicles for adjusting wheel-braking force to meet varying vehicular or permanent-way conditions [B60T 8/00](#); transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive, brake systems incorporating such transmitting means, e.g. air-pressure brake systems, [B60T 13/00](#); construction, arrangement or operation of valves incorporated in power brake systems [B60T 15/00](#); component parts, details or accessories of brake systems [B60T 17/00](#); brakes in general F16D~~)

WARNING

~~In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.~~
- M B61H 1/00

Applications or arrangements of brakes with a braking member or members co-operating with the periphery of the wheel rim, a drum, or the like ~~(self-applying brakes B61H 11/02; combinations of different types of brakes B61H 11/14; wheels B60B)~~

- M B61H 3/00** Applications or arrangements of brakes with an outwardly ~~movable~~ braking member or members co-operating with the inner surface of a drum or the like ~~(self-applying brakes B61H 11/02; combinations of different types of brakes B61H 11/14)~~
- M B61H 5/00** Applications or arrangements of brakes with substantially radial braking surfaces pressed together in axial direction, e.g. disc brakes ~~(self-applying brakes B61H 11/02; combinations of different types of brakes B61H 11/14; {discs adapted for mounting on the wheel of a railway vehicle F16D 65/124})~~
- U B61H 7/00** Brakes with braking members co-operating with the track (positive railway stops or track brakes secured to permanent way [B61K 7/00](#))
- M B61H 7/02**
 - Scotch ~~blocks~~, skids, or like track-engaging shoes
- M B61H 9/00** Brakes characterised by, or modified for, their application to special railway systems or purposes
- M B61H 13/00** Actuating rail ~~vehicle~~ brakes ~~(actuators directly acting on a brake head B61H 1/003; self-applying brakes B61H 11/02; wear-compensating mechanisms B61H 15/00)~~
- M B61H 13/20**
 - Transmitting mechanisms ~~(wear-compensating mechanisms B61H 15/00)~~
- M B61H 13/30**
 - adjustable to take account of variation of vehicle weight (*automatic adjustment B60T 8/18 arrangements for adjusting wheel-braking force in response to vehicle weight or load B60T 8/18*)
- U B61H 13/34**
 - Details
- M B61H 13/38**
 - Suspension of transmitting mechanisms ~~(B61H 13/36 takes precedence)~~

Project: MP12826 (B61K)

- M B61K** AUXILIARY EQUIPMENT SPECIALLY ADAPTED FOR RAILWAYS, NOT OTHERWISE PROVIDED FOR ~~(energy-storing brakes B61H; protection of permanent way against weather influences E01B; rail cleaning, snow ploughs E01H)~~
- WARNING**
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme:
- M B61K 5/00** Apparatus for placing vehicles on the track; Derailers; Lifting or lowering rail vehicle axles or wheels ~~(hoisting apparatus B66)~~
- M B61K 7/00** Railway stops fixed to permanent way; Track brakes or retarding apparatus fixed to permanent way; Sand tracks or the like ~~(skids, wedges, vehicle-mounted scotch blocks B61H)~~
- M B61K 7/02**
 - Track brakes or retarding apparatus ~~(operating mechanisms for track-mounted scotch blocks B61L)~~
- M B61K 7/10**
 - electrodynamic ~~{(on vehicles B60L {- B61K 7/025 takes precedence})}~~
- U B61K 9/00** Railway vehicle profile gauges; Detecting or indicating overheating of components; Apparatus on locomotives or cars to indicate bad track sections; General design of track recording vehicles
- M B61K 9/08**
 - Measuring installations for surveying permanent way ~~(applications of measuring apparatus or devices for track building purposes E01B 35/00; measuring techniques G01)~~
- M B61K 9/12**
 - Measuring or surveying wheel-rims ~~(measuring techniques G01)~~

- M B61K 11/00** Serving peculiar to locomotives, e.g. filling with, or emptying of, water, sand, or the like at the depots ~~(lifting or lowering axles or wheels B61K 5/00; filling stations for steam or pneumatic accumulator locomotives B61C 8/00; water or fuel supply fittings on locomotives B61C 17/02; refuelling locomotives with solid fuels B65G 67/18; washing or cleaning boilers F28G)~~
- M B61K 13/00** Other auxiliaries or accessories for railways ~~(safety belts or harnesses A62B 35/00)~~
- M B61K 13/02** • Starting aids for cars amplifying the ~~drawbar~~ draw-bar pull and transmitting it to the wheels
- M B61K 13/04** • Passenger-warning devices attached to vehicles; Safety devices for preventing accidents to passengers when entering or leaving vehicles ~~{(for preventing passengers from being injured by movements of doors B61D 19/026)}~~

Project: MP12837 (B62C)

- M B62C 3/00** Undercarriages or running gear of vehicles; Axle supports (undercarriages for supporting agricultural tools or apparatus [A01B 35/30](#), [A01B 39/24](#), [A01B 51/00](#); ~~A01B 51/00~~)

Project: MP12840 (B63B)

- U B63B 32/00** Water sports boards; Accessories therefor
- NOTE
This group covers: floating structures having a substantially thin body with respect to the width, usually meant to carry one user, which are specially adapted for water sports or leisure, e.g. surfboards, windsurfing boards, wakeboards, stand-up paddle [SUP] boards or water skis; accessories for such structures.
- M B63B 32/59** • Boards characterised by their manufacturing process, e.g. ~~moulded or 3D printed~~ moulding or three-dimensional [3D] printing

Project: MP12840 (B65B)

- U B65B 43/00** Forming, feeding, opening or setting-up containers or receptacles in association with packaging (forming pockets in sheets, blanks or webs, by pressing the material into forming dies or moving it through folding dies [B65B 47/00](#))
- M B65B 43/08** • Forming three-dimensional [3D] containers from sheet material

Project: MP12823 (B65B)

- U B65B 51/00** Devices for, or methods of, sealing or securing package folds or closures; Devices for gathering or twisting wrappers, or necks of bags
- U B65B 51/10** • Applying or generating heat or pressure or combinations thereof {(welding of plastics per se [B29C 65/02](#); closing plastic tube ends in general [B29C 57/10](#))}
- M B65B 51/22** • • by friction or ultrasonic or high-frequency electrical means ~~{, i.e. by friction or ultrasonic or induction welding}~~

Project: MP12716 (B65C)

- U B65C 3/00** Labelling other than flat surfaces (of fabrics [B65C 5/00](#))
- M B65C 3/26** • Affixing labels to non-rigid containers, e.g. bottles made of polyethylene; ~~or~~ boxes to be inflated by internal air pressure prior to labelling

Project: MP12834 (B65C)

M B65C 11/00 Manually-controlled or manually-operable label dispensers, e.g. modified for the application of labels to articles (special furniture, fittings, or accessories for shops, storehouses, bars, or the like [A47E](#); ~~for paper napkins, for toilet paper~~ [A47K](#); ~~for paper towels or toilet paper~~ [A47K 10/32](#); for playing cards [A63F](#); movable-strip writing or reading apparatus [B42D 19/00](#); adhesive tape dispensers [B65H 35/002](#); dispensers for tickets [G07B](#); coin-operated dispensers for stamps [G07F](#) {}; dispensing devices for pamphlets from vehicles [G09F 21/22](#)})

Project: RP12800 (B65D)**B65D**

CONTAINERS FOR STORAGE OR TRANSPORT OF ARTICLES OR MATERIALS, e.g. BAGS, BARRELS, BOTTLES, BOXES, CANS, CARTONS, CRATES, DRUMS, JARS, TANKS, HOPPERS, FORWARDING CONTAINERS; ACCESSORIES, CLOSURES, OR FITTINGS THEREFOR; PACKAGING ELEMENTS; PACKAGES

NOTES

1. In this subclass, the indexing codes of [B65D 2519/00004](#) - [B65D 2519/00995](#) should be added, if applicable
2. This subclass covers:
 - containers, packaging elements or packages with auxilliary means or provisions for displaying articles or materials;
 - methods of packaging which are wholly characterised by the form of the package produced or the form of the container or packaging element used, as distinct from the operations performed or the apparatus employed, which are covered by subclass [B65B](#)
3. This subclass, which is intended to be as comprehensive as possible, only excludes containers or packages of a nature clearly confined to a single other subclass, which are classified in that subclass
4. In this subclass, groups [B65D 5/00](#), [B65D 27/00](#), [B65D 29/00](#), [B65D 31/00](#) or [B65D 65/00](#) include constructional features of foldable or erectable container or wrapper blanks as well as the containers or wrappers formed by folding or erecting such blanks
5. Containers, packaging elements or packages classified in group [B65D 85/00](#), are also classified according to the constructional or functional features, if such features are of interest
6. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "rigid or semi-rigid containers" includes:
 - a. containers not deformed by, or not taking-up the shape of, their contents;
 - b. containers adapted to be temporarily deformed to expel their contents;
 - c. pallets;
 - d. trays;
 - "flexible containers" includes:
 - a. containers deformed by, or taking-up the shape of, their contents;
 - b. containers adapted to be permanently deformed to expel their contents;
 - "packaging elements" includes:
 - a. elements, other than containers, for covering, protecting, stiffening, or holding together articles or materials to be stored or transported;
 - b. packaging materials of special type or form not provided for in other subclasses;
 - "packages" includes:

- a. combination of containers or packaging elements with articles or materials to be stored or transported;
- b. articles joined together for convenience of storage or transport;
- "paper" includes materials, e.g. cardboard, plastic sheet materials, laminated materials, or metal foils, worked in a manner analogous to paper;
- "large containers", in groups [B65D 88/00](#) or [B65D 90/00](#), means containers having about the size of containers used in container traffic, sometimes referred to as freight, forwarding or "ISO" [International Organization for Standardization] containers, or larger containers

7. Tamper-indicating means for containers or closures are classified in the group appropriate to the type of container or closure, e.g. [B65D 5/54](#), [B65D 17/00](#), [B65D 27/30](#), [B65D 27/30](#), [B65D 27/34](#), [B65D 33/34](#), [B65D 41/32](#), [B65D 47/36](#), [B65D 49/12](#), [B65D 51/20](#), [B65D 55/06](#)

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

B65D 5/34	covered by	B65D 5/325
B65D 5/35	covered by	B65D 5/325
B65D 5/355	covered by	B65D 5/0005
B65D 5/43	covered by	B65D 5/42
B65D 5/462	covered by	B65D 5/46008 - B65D 5/46032
B65D 5/465	covered by	B65D 5/46008 - B65D 5/46032
B65D 5/468	covered by	B65D 5/4608
B65D 5/472	covered by	B65D 5/46048
B65D 5/475	covered by	B65D 5/46008
B65D 5/478	covered by	B65D 5/46056
B65D 5/4805 - B65D 5/489	covered by	B65D 5/48002
B65D 5/49 - B65D 5/499	covered by	B65D 5/48024
B65D 5/63	covered by	B65D 5/72
B65D 6/00 - B65D 6/40	covered by	B65D 7/00 , B65D 9/00 , B65D 11/00 , B65D 15/00
B65D 8/00 - B65D 8/22	covered by	B65D 7/00 , B65D 9/00 , B65D 11/00 , B65D 15/00
B65D 19/22	covered by	B65D 19/0004
B65D 19/24	covered by	B65D 19/0004
B65D 19/26	covered by	B65D 19/0004
B65D 19/28	covered by	B65D 19/0004
B65D 19/30	covered by	B65D 19/0004
B65D 19/31	covered by	B65D 19/0004
B65D 19/32	covered by	B65D 19/0002 , B65D 19/0004
B65D 19/34	covered by	B65D 19/0004
B65D 21/024	covered by	B65D 21/0201
B65D 21/028	covered by	B65D 21/0204
B65D 21/032	covered by	B65D 21/0209
B65D 21/036	covered by	B65D 21/0217
B65D 25/26	covered by	B65D 81/02
B65D 30/00 - B65D 30/28	covered by	B65D 29/00 , B65D 31/00
B65D 33/17	covered by	B65D 33/1633
B65D 33/36	covered by	B65D 75/58

B65D 33/38	covered by	B65D 75/5861
B65D 35/48 - B65D 35/54	covered by	B65D 47/2018
B65D 39/18	covered by	B65D 39/00
B65D 41/01	covered by	B65D 41/00
B65D 43/03	covered by	B65D 43/00 + B65D 2543/00027
B65D 43/04	covered by	B65D 43/0214
B65D 43/10	covered by	B65D 43/0204
B65D 47/22	covered by	B65D 47/20
B65D 47/34	covered by	B05B 11/10
B65D 50/08	covered by	B65D 50/02
B65D 50/10	covered by	B65D 50/061
B65D 50/12	covered by	B65D 50/00
B65D 50/14	covered by	B65D 50/067
B65D 65/26 - B65D 65/32	covered by	B65D 75/58
B65D 65/34	covered by	B65D 75/66
B65D 65/36	covered by	B65D 75/58
B65D 71/52 - B65D 71/68	covered by	B65D 71/0003 - B65D 71/0077
B65D 75/60 - B65D 75/64	covered by	B65D 75/58
B65D 81/15	covered by	B65D 81/05
B65D 81/17	covered by	B65D 81/02
B65D 85/57	covered by	G11B 23/00
B65D 85/575	covered by	G11B 23/00
B65D 85/86	covered by	B65D 2585/86 , H05K 13/00
B65D 85/88	covered by	B65D 2585/88 , H01M 50/00
B65D 85/90	covered by	H01L 21/00 H10W , H05K 13/00

2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

Project: RP12800 (B65G)

U	B65G 49/00	Conveying systems characterised by their application for specified purposes not otherwise provided for
U	B65G 49/05	• for fragile or damageable materials or articles
M	B65G 49/07	• • for semiconductor wafers {Not used, see H01L 21/677 H10P 72/00 }(specialy adapted for conveying of semiconductor wafers during manufacture or treatment of semiconductor or electric solid state devices or components H01L 21/677 <i>specialy adapted for conveying of semiconductor wafers during manufacture or treatment of semiconductor or electric solid state devices or components</i> H10P 72/00)

Project: MP12840 (B65G)

U	B65G 57/00	Stacking of articles (B65G 60/00 takes precedence; feeding, piling or stacking sheets B65H)
U	B65G 57/02	• by adding to the top of the stack
U	B65G 57/16	• • Stacking of articles of particular shape
M	B65G 57/20	• • • three-dimensional [3D] , e.g. cubiform; or cylindrical

Project: MP12708 (B66B)

- U B66B 1/00** **Control systems of elevators in general (safety devices [B66B 5/00](#); controlling door or gate operation [B66B 13/00](#); systems of general application [G05](#))**
- U B66B 1/34** • Details {, e.g. call counting devices, data transmission from car to control system, devices giving information to the control system}
- U B66B 1/3415** • • {Control system configuration and the data transmission or communication within the control system}
- U B66B 1/3423** • • • {Control system configuration, i.e. lay-out}
- M B66B 1/3438** • • • • {~~Master-slave~~[Controlling-dependent](#) control system configuration}

Project: MP12828 (B66C)

- U B66C 13/00** **Other constructional features or details**
- U B66C 13/18** • Control systems or devices (exclusively for rope, cable, or chain winding mechanisms [B66D 1/40](#))
- M B66C 13/48** • • Automatic control of crane drives for producing a single or repeated working cycle; ~~Programme~~[Program](#) control

Project: MP12708 (B67C)

- U B67C 3/00** **Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus; Filling casks or barrels with liquids or semiliquids**
- U B67C 3/02** • Bottling liquids or semiliquids; Filling jars or cans with liquids or semiliquids using bottling or like apparatus
- U B67C 3/22** • • Details
- U B67C 3/28** • • • Flow-control devices, e.g. using valves ({[B67C 3/2617](#), [B67C 3/2625](#), [B67C 3/2637](#) take precedence}); valves in general [F16K](#))
- U B67C 3/287** • • • • {related to flow control using predetermined or real-time calculated parameters}
- M B67C 3/288** • • • • • {using ~~master-slave~~[leader-follower](#) controls}

Project: MP12840 (B81)**M B81 MICROSTRUCTURAL TECHNOLOGY**NOTES

1. This class covers microstructural devices or systems, including at least one essential element or formation characterised by its very small size, typically within the range of 10^{-4} to 10^{-7} meters, i.e. its significant features ~~cannot~~[can not](#), in at least one dimension [[1D](#)], be completely discerned without the use of an optical microscope.
2. In this class, the following expressions are used with the meaning indicated:
 - "microstructural devices" covers:
 - i. micromechanical devices comprising movable, flexible or deformable elements; and
 - ii. three-dimensional [[3D](#)]structures without movable, flexible or deformable elements, comprising microformations designed to accomplish an essential structural function for interacting with their environment, as opposed to purely electronic or chemical functions, regardless of whether the structures are combined with microelectronic devices or formed from specific materials;
 - "microstructural systems" covers:
 - i. systems of cooperating microstructural devices; and

- ii. microelectro-mechanical or microopto-mechanical systems, which combine on a common substrate the specific features of microstructural devices and electrical or optical components, e.g. for controlling, analysing or signalling the functioning of microstructural devices.

Project: RP12800, MP12840 (B81B)

M B81B

MICROSTRUCTURAL DEVICES OR SYSTEMS, e.g. MICROMECHANICAL DEVICES (piezoelectric, electrostrictive or magnetostrictive elements per se [H10N 30/00](#))

NOTES

1. This subclass does not cover:
 - purely electrical or electronic devices per se which are covered by section [H](#), e.g. ~~subclass H01L~~ or class [H10](#);
 - purely optical devices per se which are covered by subclasses [G02B](#) or [G02F](#);
 - essentially two-dimensional [\[2D\]](#) structures, e.g. layered products which are covered by subclass [B32B](#);
 - chemical or biological structures per se which are covered by section [C](#);
 - structures in atomic scale produced by manipulation of single atoms or molecules, which are covered by group [B82B 1/00](#).
2. Devices or systems classified in this subclass are also classified in appropriate subclasses providing for their structural or functional features, if such features are of interest.
3. {Attention is drawn to the following places:

A61K 9/50	Microcapsules for medicinal preparations
B25J 7/00	Micromanipulators
G02B 21/32	Micromanipulators combined with microscopes
G11B 5/127	Magnetic heads
H01P 3/08	Waveguide microstrips.

}
4. {In this subclass, local "residual" subgroups, e.g. [B81B 7/0077](#), are used with the following purpose:

When classifying a document which does not fit in any of a set of subgroups with the same dot-level, the document should be classified in the residual group, if present, and not in the group at the hierarchical level one dot above.

In the example, the document shall be classified in [B81B 7/0077](#) and not in [B81B 7/0032](#) as [B81B 7/0077](#) is "residual" to [B81B 7/0035-B81B 7/0074](#)}

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: RP12800 (B81C)

M B81C

PROCESSES OR APPARATUS SPECIALLY ADAPTED FOR THE MANUFACTURE OR TREATMENT OF MICROSTRUCTURAL DEVICES OR SYSTEMS (making microcapsules or microballoons [B01J 13/02](#); processes or apparatus peculiar to the manufacture or treatment of piezoelectric, electrostrictive or magnetostrictive element per se [H10N 30/01](#))

NOTES

1. This subclass does not cover:

- processes or apparatus for the manufacture or treatment of purely electrical or electronic devices, which are covered by section [H](#), e.g. ~~group subclass H01L 21/00~~ [H10P](#);
- processes or apparatus involving the manipulation of single atoms or molecules, which are covered by group [B82B 3/00](#).

2. In this subclass, local "residual" subgroups, e.g. [B81C 1/00126](#), are used with the following purpose.

When classifying a document which does not fit in any of a set of subgroups with the same dot-level, the document should be classified in the residual group, if present, and not in the group at the hierarchical level one dot above.

In the example, the document shall be classified in [B81C 1/00126](#) and not in [B81C 1/00023](#) as [B81C 1/00126](#) is "residual" to [B81C 1/00031](#)-[B81C 1/00119](#)

Project: RP12819 (B81C)

- | | | |
|---|--------------|---|
| U | B81C 1/00 | Manufacture or treatment of devices or systems in or on a substrate (B81C 3/00 takes precedence) |
| U | B81C 1/00436 | • {Shaping materials, i.e. techniques for structuring the substrate or the layers on the substrate} |
| U | B81C 1/005 | • • {Bulk micromachining} |
| M | B81C 1/00507 | • • • {Formation of buried layers by techniques other than deposition, e.g. by deep implantation of elements (SIMOX techniques H01L 21/762 SIMOX techniques H10W 10/10)} |

Project: RP12800 (B81C)

- | | | |
|---|--------------|--|
| U | B81C 1/00555 | • • {Achieving a desired geometry, i.e. controlling etch rates, anisotropy or selectivity (B81C 1/00023 - B81C 1/0019 take precedence)} |
| M | B81C 1/00611 | • • • {Processes for the planarisation of structures (planarising depositions C23C , H01L H10)} |
| M | B81C 1/00841 | • {Cleaning during or after manufacture (cleaning of semiconductor devices H01L 21/306 cleaning of semiconductor devices H10P 50/00)} |

Project: MP12731 (B82)

M B82 NANOTECHNOLOGY

NOTE

In this class, the following terms are used with the meaning indicated:

- "nanosize" or "nanoscale" relate to a controlled geometrical size below 100 nanometres (nm) in one or more dimensions;
- "nanostructure" means an entity having at least one nanosized functional component that makes physical, chemical or biological properties or effects available, which are uniquely attributable to the nanoscale.

Project: MP12731 (B82B)**M B82B****NANOSTRUCTURES FORMED BY MANIPULATION OF INDIVIDUAL ATOMS, MOLECULES, OR LIMITED COLLECTIONS OF ATOMS OR MOLECULES AS DISCRETE UNITS; MANUFACTURE OR TREATMENT THEREOF**NOTES

1. This subclass does not cover chemical or biological nanostructures per se, provided for elsewhere, e.g. in classes [C08](#) or [C12](#).

~~2. Attention is drawn to the Note following the title of class B82, which defines the meaning of the terms "nanosize", "nanoscale" and "nanostructure" in this subclass.~~

~~3.~~ ~~2.~~ Subject matter classified in this subclass is further classified in subclass [B82Y](#), in order to enable a comprehensive search of nanostructure technology using classification symbols of *subclass* [B82Y](#) in combination with classification symbols of *subclass* [B82B](#).

~~4.~~ ~~3.~~ Nanostructures having specialised features or functions are further classified in appropriate places in other subclasses that provide for those features or functions, e.g. in *subclass* [G01Q](#), or in *groups* [G02F 1/017](#), or [H10D 30/43](#).

Project: MP12731 (B82Y)**M B82Y****SPECIFIC USES OR APPLICATIONS OF NANOSTRUCTURES; MEASUREMENT OR ANALYSIS OF NANOSTRUCTURES; MANUFACTURE OR TREATMENT OF NANOSTRUCTURES**NOTES

1. This subclass is for obligatory secondary classification in the sense of paragraph 107bis of the Guide to the IPC. Therefore, the classification symbols of this subclass are not listed first when assigned to patent documents. Secondary classification symbols may be assigned for either invention information or additional information, as appropriate.

~~1.~~ ~~2.~~ This subclass covers applications and aspects of nanostructures which are produced by any method, and is not restricted to those that are formed by manipulation of individual atoms or molecules.

~~2. Attention is drawn to the Note following the title of class B82, which defines the meaning of the terms "nanosize", "nanoscale" and "nanostructure" in this subclass.~~

3. This subclass is intended to enable a comprehensive search of subject matter related to nanostructures by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore, this subclass covers aspects of nanostructures that might also be entirely or partially covered elsewhere in the **IPC CPC**.

~~4. This subclass is for secondary classification, i.e. obligatory supplementary classification of subject matter already classified as such in other classification places, e.g.:~~

B82B	Nanostructures formed by individual manipulation of atoms, molecules, or limited collections of atoms or molecules as discrete units; manufacture or treatment thereof
A61K 9/51	Nanocapsules for medicinal preparations
B05D 1/20	Langmuir-Blodgett films
G01B 32/05	Carbon nanostructures, e.g. bucky-balls, nanotubes, nanocoils, nanodoughnuts or nanoonions
G01Q	Scanning probe techniques
G02F 1/017	Optical quantum wells or boxes

H01F 10/32	Nanostructured thin-magnetic films
H01F 41/30	Molecular-beam epitaxy [MBE]
H10D 30/43	Quantum-wire FETs

5. The classification-symbols of this subclass are not listed first when assigned to patent documents.

Project: RP12725 (C01B)

M C01B 3/00

Hydrogen; Gaseous mixtures containing hydrogen; Separation of hydrogen from mixtures containing it ~~(separation of gases by physical means B01D); Purification of hydrogen; Purification~~ **Reversible storage of hydrogen (production of water-gas or synthesis gas from solid carbonaceous material C10J; purifying or modifying the chemical compositions of combustible technical gases containing carbon monoxide C10K production of water-gas or synthesis gas from solid carbonaceous material C10J)**

NOTES

1. In this group it is desirable to add the indexing codes of groups [B01J 2208/00](#) and [B01J 2219/00](#), for details relating to the reactors used in the generation of hydrogen or synthesis gas.
2. In groups [C01B 3/12](#) - [C01B 3/18](#) and in groups [C01B 3/22](#) - [C01B 3/586](#) it is desirable to add the indexing codes of group [C01B 2203/00](#), for aspects relating to hydrogen or synthesis gas generation processes.

M C01B 3/0005

- ~~{Reversible uptake storage of hydrogen by an appropriate medium, i.e. based on physical or chemical sorption phenomena or on reversible chemical reactions, e.g. for hydrogen-storage purposes, e.g. by hydrogen getters or electrodes (purification of hydrogen C01B 3/508); Reversible gettering of hydrogen; Reversible uptake of hydrogen by electrodes}~~

NOTE

In groups C01B 3/0005 - C01B 3/0084, the last place priority rule is not applied.

C C01B 3/001

- ~~{characterised by the uptaking medium media; Treatment thereof}~~

WARNING

Group C01B 3/001 is impacted by reclassification into group C01B 3/0018. Groups C01B 3/001 and C01B 3/0018 should be considered in order to perform a complete search.

M C01B 3/0015

- ~~{Organic compounds Organic compounds, e.g. liquid organic hydrogen carriers [LOHC] or metalorganic compounds; Solutions thereof}~~

N C01B 3/0018

- ~~Inorganic elements or compounds, e.g. oxides, nitrides, borohydrides or zeolites; Solutions thereof~~

WARNING

Group C01B 3/0018 is incomplete pending reclassification of documents from group C01B 3/001.

Groups C01B 3/001 and C01B 3/0018 should be considered in order to perform a complete search.

M C01B 3/0021

- ~~{Carbon Elemental carbon, e.g. active carbon, carbon nanotubes, or fullerenes; Treatment thereof}~~

M C01B 3/0026

- ~~{of one single metal or a rare earth metal Metals or metal hydrides; Treatment thereof}~~

NOTE

1. ~~{In all of the groups C01B 3/0026 - C01B 3/0084, the metallic storage materials may contain minor quantities of non-metals such as B, C, O, S,~~

Se, Si; e.g. [C01B 3/0036](#) "only containing iron and titanium" includes Fe-Ti compositions comprising non-metals.}

2. ~~{In the groups C01B 3/0026 and C01B 3/0047 - C01B 3/0068 a "rare-earth metal" means one single metal or a combination of metals selected from the lanthanides, Sc or Y.}~~

- M C01B 3/0031 . . . ~~{Intermetallic compounds; Metal alloys; Treatment thereof}~~
- M C01B 3/0036 . . . ~~{only containing iron and titanium; Treatment thereof}~~
- M C01B 3/0042 . . . ~~{only containing magnesium and nickel; Treatment thereof}~~
- T C01B 3/0047 . . . ~~{containing a rare earth metal; Treatment thereof}~~

NOTE

{In the groups C01B 3/0047 - C01B 3/0057 a "rare-earth metal" means one single metal or a combination of metals selected from the lanthanides, Sc or Y}

- D C01B 3/0052 {also containing titanium}
<administratively transferred to [C01B 3/0047](#)>
- M C01B 3/0057 ~~{also containing~~and nickel}
- D C01B 3/0063 {only containing a rare earth metal and only one other metal}
<administratively transferred to [C01B 3/0047](#)>
- D C01B 3/0068 {the other metal being nickel}
<administratively transferred to [C01B 3/0047](#)>
- M C01B 3/0073 . . . {Slurries, Suspensions}Slurries; Suspensions
- M C01B 3/0078 . . . {Composite solid storage mediums, i.e. coherent or loose mixtures of different solid constituents, chemicallymedia, e.g. mixtures of polymers and metal hydrides, coated solid compounds or structurally heterogeneous solid masses, coated solids or solids having a chemically modified surface region}compounds
- M C01B 3/0084 . . . {Solid storage mediumsmedia characterised by their shape, e.g. pellets, sintered shaped bodies, sheets, porous compacts, spongy metals, hollow particles, solids with cavities, layered solids}porous compacts or hollow particles
- M C01B 3/0089 . {Ortho-para conversion}
- M C01B 3/0094 . {Atomic hydrogen}
- M C01B 3/02 . Production of hydrogen; Production of ~~hydrogen or of~~gaseous mixtures containing {a substantial proportion of}hydrogen
- M C01B 3/025 . . {Preparation or purification of gas mixtures for ammonia synthesis}
- M C01B 3/04 . . by decomposition of inorganic compounds, e.g. ammonia { (C01B 3/0005 takes precedencereversible storage of hydrogen C01B 3/0018)}
- C C01B 3/042 . . . {Decomposition of water} (by electrolysis of water C25B 1/04)

WARNING

Group C01B 3/042 is impacted by reclassification into group C01B 3/046. Groups C01B 3/042 and C01B 3/046 should be considered in order to perform a complete search.

- U C01B 3/045 {in gaseous phase}
- N C01B 3/046 using catalysts

WARNING

Group C01B 3/046 is incomplete pending reclassification of documents from group C01B 3/042.

Groups [C01B 3/042](#) and [C01B 3/046](#) should be considered in order to perform a complete search.

- | | | |
|---|-------------|---|
| M | C01B 3/047 | <ul style="list-style-type: none"> • • • {Decomposition of ammonia} |
| M | C01B 3/06 | <ul style="list-style-type: none"> • • by reaction of inorganic compounds containing electro-positively bound hydrogen, e.g. water, acids, bases, ammonia, with inorganic reducing agents (by electrolysis of water C25B 1/04) |
| M | C01B 3/061 | <ul style="list-style-type: none"> • • • {by reaction of water with metal oxides with water} |
| M | C01B 3/065 | <ul style="list-style-type: none"> • • • {from a hydride} <i>by reaction of inorganic compounds with hydrides</i> |
| U | C01B 3/066 | <ul style="list-style-type: none"> • • • {by reaction of water with phosphorus} |
| D | C01B 3/068 | <ul style="list-style-type: none"> • • • {the hydrogen being generated from the water as a result of a cyclus of reactions, not covered by groups C01B 3/063 or C01B 3/105} <p><administratively transferred to C01B 3/103></p> |
| M | C01B 3/08 | <ul style="list-style-type: none"> • • • <i>by reaction of inorganic compounds</i> with metals |
| T | C01B 3/10 | <ul style="list-style-type: none"> • • • <i>by reaction of water vapour with metals</i> |
| N | C01B 3/103 | <ul style="list-style-type: none"> • • • <i>the hydrogen being generated from the water as a result of cycles of reactions, e.g. sulfur-iodine cycle</i> |
| D | C01B 3/105 | <ul style="list-style-type: none"> • • • • {Cyclic methods} <p><administratively transferred to C01B 3/10></p> |
| M | C01B 3/22 | <ul style="list-style-type: none"> • • by decomposition of gaseous or liquid organic compounds {(C01B 3/0005 takes precedence) ; coking liquid carbonaceous materials C10B 55/00} |
| U | C01B 3/24 | <ul style="list-style-type: none"> • • • of hydrocarbons |
| T | C01B 3/28 | <ul style="list-style-type: none"> • • • • using moving solid particles, <i>e.g. fluidised bed technique</i> |
| D | C01B 3/30 | <ul style="list-style-type: none"> • • • • • using the fluidised bed technique <p><administratively transferred to C01B 3/28></p> |
| M | C01B 3/32 | <ul style="list-style-type: none"> • • by reaction of gaseous or liquid organic compounds with gasifying agents, e.g. water, carbon dioxide, or air |
| C | C01B 3/323 | <ul style="list-style-type: none"> • • • {Catalytic reaction of gaseous or liquid organic compounds other than hydrocarbons with gasifying agents} <p>WARNING
<i>Group C01B 3/323 is impacted by reclassification into group C01B 3/3231. Groups C01B 3/323 and C01B 3/3231 should be considered in order to perform a complete search.</i></p> |
| N | C01B 3/3231 | <ul style="list-style-type: none"> • • • • of alcohols, e.g. methanol or ethanol <p>WARNING
<i>Group C01B 3/3231 is incomplete pending reclassification of documents from group C01B 3/323. Groups C01B 3/323 and C01B 3/3231 should be considered in order to perform a complete search.</i></p> |
| M | C01B 3/326 | <ul style="list-style-type: none"> • • • • {characterised by the catalyst} <i>catalysts</i> |
| T | C01B 3/34 | <ul style="list-style-type: none"> • • • by reaction of hydrocarbons with gasifying agents |
| D | C01B 3/346 | <ul style="list-style-type: none"> • • • • {using heat generated by superheated steam} <p><administratively transferred to C01B 3/34></p> |
| D | C01B 3/348 | <ul style="list-style-type: none"> • • • • {by direct contact with heat accumulating liquids, e.g. molten metals, molten salts} <p><administratively transferred to C01B 3/34></p> |
| M | C01B 3/36 | <ul style="list-style-type: none"> • • • • <i>using oxygen;</i> using oxygen or mixtures containing oxygen as gasifying agents |

- M C01B 3/363 {characterised by the burner-used}
- T C01B 3/38 using catalysts
- M C01B 3/382 {Multi-step processes} *Processes with two or more reaction steps, of which at least one is catalytic, e.g. steam reforming and partial oxidation*
- M C01B 3/384 {the catalyst being continuously externally heated} *with external heating of the catalyst*
- M C01B 3/386 {Catalytic partial combustion}
- D C01B 3/388 {the heat being generated by superheated steam}
<administratively transferred to [C01B 3/38](#)>
- T C01B 3/42 using moving solid particles, *e.g. fluidised bed technique*
- D C01B 3/44 using the fluidised bed technique
<administratively transferred to [C01B 3/42](#)>
- M C01B 3/50 . Separation of hydrogen or hydrogen-containing gases from gaseous mixtures, e.g. purification ~~{C01B 3/14 takes precedence}~~
- M C01B 3/501 . . {by diffusion}
- M C01B 3/503 . . . {characterised by ~~the membrane~~ *membranes*}
- M C01B 3/505 . . . {Membranes containing palladium}
- M C01B 3/506 . . {at low temperatures}
- M C01B 3/508 . . {~~by selective and reversible uptake by an appropriate medium, i.e. the uptake being based on physical or chemical sorption phenomena or on reversible chemical reactions~~ *by using hydrogen storage media (the appropriate mediums per se C01B 3/0005 reversible storage of hydrogen C01B 3/0005)*}
- M C01B 3/52 . . by contacting with liquids; Regeneration of used liquids ~~{(C01B 3/508 takes precedence)}~~
- M C01B 3/56 . . by contacting with solids; Regeneration of used solids ~~{(C01B 3/508 takes precedence)}~~

Project: Unknown (C01B)**U C01B 13/00 Oxygen; Ozone; Oxides or hydroxides in general**

- U C01B 13/02 . Preparation of oxygen (by liquefying [F25J](#))
- C01B 13/0229 . . {Purification or separation processes}

NOTE

~~{~~In groups [C01B 13/0229](#) - [C01B 13/0288](#), additional features relating to the purification or separation processes are indexed with codes chosen from [C01B 2210/0026](#) - [C01B 2210/0098](#).~~}~~

Project: RP12725 (C01B)**U C01B 21/00 Nitrogen; Compounds thereof**

- M C01B 21/02 . Preparation of nitrogen (by decomposition of ammonia ~~{C01B 3/047}~~)

Project: MP12840 (C01B)

M C01B 39/00 Compounds having molecular sieve and base-exchange properties, e.g. crystalline zeolites; Their preparation; After-treatment, e.g. ion-exchange or dealumination (treatment to modify the sorption properties, e.g. shaping using a binder, [B01J 20/10](#); treatment to modify the catalytic properties, e.g. combination of treatments to make the zeolites appropriate to their use as a catalyst, [B01J 29/04](#); treatment to improve the ion-exchange properties [B01J 39/14](#))

NOTES

1. In this group, the following term is used with the meaning indicated:

- "zeolites" means:
 - i. crystalline aluminosilicates with base-exchange and molecular sieve properties, having three ~~dimensional~~-dimensional [3D], microporous lattice framework structure of tetrahedral oxide units; *al, microporous lattice framework structure of tetrahedral oxide units;*
 - ii. compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron.

2. Compounds classified in main group [C01B 39/00](#) are also classified in other groups of class [C01](#) according to their composition

Project: RP12725 (C01C)

U C01C 1/00 Ammonia; Compounds thereof {([C01C 3/08](#), [C01C 3/14](#), [C01C 3/16](#), [C01C 3/20](#) take precedence)}

NOTE

Complex ammine salts, e.g. [Pd(NH₃)₄]Cl₂, are { also} classified in the relevant groups of subclasses [C01D](#) - [C01G](#), according to the metal

U C01C 1/02 • Preparation, {purification} or separation of ammonia

M C01C 1/04 • • Preparation of ammonia by synthesis ~~{in the gas phase}~~(preparation or purification of gas mixtures for ammonia synthesis ~~{C01B 3/025}~~)

Project: RP12819 (C04B)**M C04B 35/00**

Shaped ceramic products characterised by their composition {(porous ceramic products [C04B 38/00](#); ceramic articles characterised by particular shape, see the relevant classes, e.g. linings for casting ladles, tundishes, cups or the like [B22D 41/02](#); ~~ceramic substrates for microelectronic semi-conductors H01L 23/15~~; ~~ceramic substrates for microelectronic semi-conductors H10W 70/692~~)}; Ceramics compositions (~~containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides other than as macroscopic reinforcing agents C22C~~; {shaping of ceramics [B28B](#)};) ~~containing free metal bonded to carbides, diamond, oxides, borides, nitrides, silicides, e.g. cermets, or other metal compounds, e.g. oxynitrides or sulfides other than as macroscopic reinforcing agents C22C~~; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products {(~~chemical preparation of powders of inorganic compounds C01~~; infiltration of sintered ceramic preforms with molten metal [C04B 41/51](#); ~~chemical preparation of powders of inorganic compounds C01~~)}

NOTES

1. In this group, in the absence of an indication to the contrary, compositions are classified according to the constituent present in the highest proportion by weight.
2. In this group, magnesium is considered as an alkaline earth metal.
3. In this group, a composite is considered as a sintered material containing more than one phase, where the secondary phases are not resulting from sintering aids
4. In this group, fine ceramics are considered as products having a polycrystalline, fine-grained microstructure, e.g. of dimensions below 100 micrometers.
5. The production of ceramic powder is classified in this group in so far as it relates to the preparation of powder with specific characteristics.
6. In groups [C04B 35/00](#) - [C04B 35/83](#), from 01-01-2005 onwards, the indexing codes of groups [C04B 2235/00](#) - [C04B 2235/9692](#) are used to identify aspects relating to ceramic starting mixtures and sintered ceramic products

Project: RP12800 (C04B)**U C04B 35/622**

- Forming processes; Processing powders of inorganic compounds preparatory to the manufacturing of ceramic products

NOTE

In groups [C04B 35/622](#) and subgroups indexing codes are given for aspects relating to the preparation, properties or mechanical treatment or to heat treatments of green bodies. The codes are chosen from [C04B 2235/60](#) - [C04B 2235/668](#)

M C04B 35/62222

- {obtaining ceramic coatings (coating of mortars, concrete, artificial or natural stone or ceramics [C04B 41/45](#); laminated ceramic products [B32B 18/00](#); ~~coating metallic materials C23~~; coating of glass [C03C 17/00](#), applying ceramic coatings on silicon for semi-conductor purposes [H01L H10W](#); ~~coating metallic materials C23~~)}

- U C04B 41/00** After-treatment of mortars, concrete, artificial stone or ceramics; Treatment of natural stone (conditioning of the materials prior to shaping [C04B 40/00](#); applying liquids or other fluent materials to surfaces, in general [B05](#); grinding or polishing [B24](#); apparatus or processes for treating or working shaped articles of clay or other ceramic compositions, slag or mixtures containing cementitious material [B28B 11/00](#); working stone or stone-like materials [B28D](#); glazes, other than cold glazes, [C03C 8/00](#); etching, surface-brightening or pickling compositions [C09K 13/00](#))
- NOTES**
1. In this group, the following terms or expressions are used with the meanings indicated:
 - "mortars", "concrete" and "artificial stone" cover materials after primary shaping.
 2. Treating, e.g. coating or impregnating, a material with the same material or with a substance that ultimately is transformed into the same material is not considered aftertreatment for this group but is classified as preparation of the material, e.g. a carbon body impregnated with a carbonisable substance is classified in [C04B 35/52](#).
 3. In groups [C04B 41/45](#) - [C04B 41/80](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
 4. {In this group, multiple classification is made according to the following rules:
 - when the substrate to be treated is of the artificial stone type, e.g. concrete, classification is made in the range [C04B 41/00](#) - [C04B 41/5392](#) as well as in the range [C04B 41/60](#) - [C04B 41/72](#)
 - when the substrate to be treated is of the ceramic type, classification is made in the range [C04B 41/00](#) - [C04B 41/5392](#) as well as in the range [C04B 41/80](#) - [C04B 41/91](#)
 - when the substrate to be treated is aspecific, classification is made only in the range [C04B 41/00](#) - [C04B 41/5392](#)
 5. {In groups [C04B 41/0018](#) - [C04B 41/53](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.}
 6. {In groups [C04B 41/00](#) - [C04B 41/53](#), it is desirable to add the indexing codes relating to the nature of the substrate being treated. The indexing codes that are chosen from groups [C04B 26/00](#) - [C04B 38/00](#) should be unlinked.}
 7. {In groups [C04B 41/00](#) - [C04B 41/53](#), it is desirable to add the indexing codes relating to aspects of the coating composition or to the method of application. The indexing codes that are chosen from groups [C04B 41/00](#) - [C04B 41/5392](#) should be unlinked.}
 8. {Attention is drawn to internal Note (2) following the title of subclass [C04B](#).}
- U C04B 41/53** - involving the removal of at least part of the materials of the treated article, {e.g. etching, drying of hardened concrete ([C04B 41/0036](#) - [C04B 41/0054](#) take precedence)}
- M C04B 41/5338** - {Etching (for obtaining decorative effects [B44C 1/22](#); ~~etching of specific electronic compounds, see the relevant places, e.g. etching of semiconductor bodies H01L 21/306~~; *etching of specific electronic compounds, see the relevant places, e.g. etching of semiconductor bodies H10P 50/00*)}
- U C04B 2235/00** **Aspects relating to ceramic starting mixtures or sintered ceramic products**
- NOTE**
- In this group, magnesium is considered as an alkaline earth metal.
- U C04B 2235/70** - Aspects relating to sintered or melt-casted ceramic products

- M C04B 2235/96
- Properties of ceramic products, e.g. mechanical properties such as strength, toughness, wear resistance
- NOTE
- Indexing* Codes [C04B 2235/96](#) - [C04B 2235/9692](#) are to be used only if the property is not identified already by an "invention information" symbol, e.g. by a symbol out of subclass [H01LH10N](#) indicating that the ceramic is dielectric, piezoelectric or magnetic.

Project: MP12716 (C07C)

- U C07C 11/00 **Aliphatic unsaturated hydrocarbons**
- U C07C 11/02
- Alkenes
- M C07C 11/04
- [Ethylene](#) *Ethene*
- U C07C 21/00 **Acyclic unsaturated compounds containing halogen atoms**
- U C07C 21/02
- containing carbon-to-carbon double bonds
- U C07C 21/04
- Chloro-alkenes
- M C07C 21/10
- [Trichloro-ethylene](#) *Trichloroethene*
- M C07C 21/12
- [Tetrachloro-ethylene](#) *Tetrachloroethene*
- U C07C 21/18
- containing fluorine
- M C07C 21/185
- [tetrafluorethene](#) *Tetrafluoroethene*

Project: MP11852 (C07G)

- M C07G **COMPOUNDS OF UNKNOWN CONSTITUTION (*sulfonated fats, oils or waxes of undetermined constitution* [C07C 309/62](#))**
- NOTE
1. This subclass does not cover peptides or proteins of unknown constitution, which are covered by subclass [C07K](#).
 2. Attention is drawn to Note (3) after class [C07](#), which defines the last place priority rule applied in the range of subclasses [C07C](#) - [C07K](#) and within these subclasses.
 3. Therapeutic activity of compounds is further classified in subclass [A61P](#).
- WARNING
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
- M C07G 1/00 **[Lignin; Lignin-derivatives](#) *Low-molecular-weight derivatives of lignin (high-molecular-weight derivatives of lignin {[C08H 6/00](#)})***
- M C07G 3/00 **Glycosides ~~(polysaccharides [C08B](#))~~**
- M C07G 9/00 **Ammonium bituminosulfonate, e.g. Ichthyol ~~{also bituminasulfonic acid and its salts}~~**
- M C07G 13/00 **Vitamins *of unknown constitution* (vitamin K1 [C07C 50/14](#); pantothenic acid [C07C 235/12](#); vitamins of the D-group [C07C 401/00](#); vitamin A [C07C 403/08](#); pyridoxal, pyridoxamin [C07D 213/66](#); pyridoxin [C07D 213/67](#); vitamin C [C07D 307/62](#); tocopherols [C07D 311/72](#); lipoic acid [C07D 339/04](#); vitamin B1 [C07D 415/00](#); riboflavin [C07D 475/14](#); biotin [C07D 495/04](#); sideramines; corresponding deoferri compounds [C07F 15/03](#); vitamin B12 [C07H 23/00](#))**


Project: RP12806 (C07K)

M	C07K 16/00	<p>Immunoglobulins [IGs/G], e.g. monoclonal or polyclonal antibodies {{antibodies with enzymatic activity, e.g. abzymes C12N 9/0002}}</p> <p>NOTES</p> <p>1. In this main group, where appropriate, after the virus or bacteria terminology, the indication of the order (O), family (F) or genus (G) is given in parentheses.</p> <p>1-2. {Documents characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified in <i>groups</i> C07K 16/00 - C07K 16/065 or <i>groups</i> C07K 16/46 - C07K 16/468.}</p> <p>2-3. {Documents not characterised by the technical aspects of the construction of an antibody or fragment thereof, should be classified only according to their specificity, where necessary accompanied by one or more appropriate indexing codes.}</p>
U	C07K 16/08	<ul style="list-style-type: none"> • against material from viruses
M	C07K 16/081	<ul style="list-style-type: none"> • • {from-DNA viruses}
M	C07K 16/082	<ul style="list-style-type: none"> • • • {Hepadnaviridae} <i>Hepadnaviridae (F)</i>, e.g. hepatitis B virus}
M	C07K 16/084	<ul style="list-style-type: none"> • • • <i>Papillomaviridae (F)</i>; {Papovaviridae} <i>Polyomaviridae (F)</i>, e.g. papillomavirus, polyomavirus, SV40, BK virus; or JC virus}
M	C07K 16/085	<ul style="list-style-type: none"> • • • {Herpetoviridae} <i>Orthoherpesviridae (F)</i>, e.g. pseudorabies virus; or Epstein-Barr virus}
M	C07K 16/087	<ul style="list-style-type: none"> • • • • {Herpes simplex virus}
M	C07K 16/10	<ul style="list-style-type: none"> • • from-RNA viruses
D	C07K 16/1002	<ul style="list-style-type: none"> • • • {Coronaviridae} <administratively transferred to C07K 16/102>
D	C07K 16/1003	<ul style="list-style-type: none"> • • • • {Severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2 or Covid-19]} <administratively transferred to C07K 16/104>
D	C07K 16/1009	<ul style="list-style-type: none"> • • • {Picornaviridae, e.g. hepatitis A virus} <administratively transferred to C07K 16/106>
D	C07K 16/1018	<ul style="list-style-type: none"> • • • {Orthomyxoviridae, e.g. influenza virus} <administratively transferred to C07K 16/108>
N	C07K 16/102	<ul style="list-style-type: none"> • • • <i>Coronaviridae (F)</i>
D	C07K 16/1027	<ul style="list-style-type: none"> • • • {Paramyxoviridae, e.g. respiratory syncytial virus} <administratively transferred to C07K 16/11>
D	C07K 16/1036	<ul style="list-style-type: none"> • • • {Retroviridae, e.g. leukemia viruses} <administratively transferred to C07K 16/112>
N	C07K 16/104	<ul style="list-style-type: none"> • • • • Severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]
D	C07K 16/1045	<ul style="list-style-type: none"> • • • • {Lentiviridae, e.g. HIV, FIV, SIV} <administratively transferred to C07K 16/114>
D	C07K 16/1054	<ul style="list-style-type: none"> • • • • • {gag-pol, e.g. p17, p24} <administratively transferred to C07K 16/1143>
N	C07K 16/106	<ul style="list-style-type: none"> • • • <i>Picornaviridae (F)</i>, e.g. hepatitis A virus
D	C07K 16/1063	<ul style="list-style-type: none"> • • • • • {env, e.g. gp41, gp110/120, gp160, V3, PND, CD4 binding site} <administratively transferred to C07K 16/1145>
D	C07K 16/1072	<ul style="list-style-type: none"> • • • • • {Regulatory proteins, e.g. tat, rev, vpt} <administratively transferred to C07K 16/1147>

N	C07K 16/108	. . . Orthomyxoviridae (F), e.g. influenza virus
D	C07K 16/1081	. . . { Togaviridae, e.g. flavivirus, rubella virus, hog cholera virus <administratively transferred to C07K 16/116 >
D	C07K 16/109	. . . { Hepatitis C virus; Hepatitis G virus <administratively transferred to C07K 16/118 >
N	C07K 16/11	. . . Paramyxoviridae (F); Pneumoviridae (F), e.g. respiratory syncytial virus [RSV]
N	C07K 16/112	. . . Retroviridae (F), e.g. leukemia viruses
N	C07K 16/114	. . . . Lentivirus (G), e.g. human immunodeficiency virus [HIV], feline immunodeficiency virus [FIV] or simian immunodeficiency virus [SIV]
N	C07K 16/1143	. . . . . {Gag-pol proteins, e.g. p17 or p24}
N	C07K 16/1145	. . . . . {Env proteins, e.g. gp41, gp110/120, gp160, V3, principal neutralising domain [PND] or CD4-binding site}
N	C07K 16/1147	. . . . . {Regulatory proteins, e.g. trans-activator of transcription [TAT], rev or vacuolar protein targeting [VPT]}
N	C07K 16/116	. . . Togaviridae (F); Matonaviridae (F); Flaviviridae (F)
N	C07K 16/118	. . . . Hepatitis C virus; GB virus C [GBV-C]
U	C07K 16/12	. against material from bacteria
M	C07K 16/1203	. . { from Gram-negative bacteria}
M	C07K 16/121	. . . { from Helicobacter (Campylobacter) (G)}; <i>Campylobacter (G)</i>
M	C07K 16/1214	. . . { from Pseudomonadaceae (F)}
M	C07K 16/1217	. . . { from Neisseriaceae (F)}
M	C07K 16/1218	. . . { from Acinetobacter} <i>Acinetobacter (G)</i>
M	C07K 16/1228	. . . { from Enterobacteriaceae (F <i>Enterobacterales (O)</i>), e.g. Citrobacter (<i>G</i>), Serratia (<i>G</i>), Proteus (<i>G</i>), Providencia, Morganella , Yersinia } (<i>G</i>), <i>Morganella (G)</i> or <i>Yersinia (G)</i>
M	C07K 16/1232	. . . . {from Escherichia (G)}
M	C07K 16/1235	. . . . {from Salmonella (G)}
M	C07K 16/1246	. . . { from Rickettsiales (O)}
M	C07K 16/126	. . . { from Legionella (G)}
M	C07K 16/1267	. . { from Gram-positive bacteria}
M	C07K 16/1271	. . . { from Micrococcaceae (F); e.g. Staphylococcus }; <i>Staphylococcaceae (F)</i> , e.g. <i>Staphylococcus (G)</i>
M	C07K 16/1275	. . . { from Streptococcus (G)}
M	C07K 16/1278	. . . { from Bacillus (G)}
M	C07K 16/1282	. . . { from Clostridium (G)}
M	C07K 16/1289	. . . { from Mycobacteriaceae (F)}

Project: MP12716 (C08F)

U	C08F 2/00	Processes of polymerisation
		<u>NOTE</u> {In this group, C-Sets are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the Definitions of C08F .}
U	C08F 2/12	. Polymerisation in non-solvents (C08F 2/32 takes precedence)
U	C08F 2/16	. . Aqueous medium

- U C08F 2/18 • • • Suspension polymerisation
- M C08F 2/20 • • •  with the aid of macromolecular dispersing agents
- U C08F 255/00 **Macromolecular compounds obtained by polymerising monomers on to polymers of hydrocarbons as defined in group [C08F 10/00](#)**
- NOTE
{In this group, C-Sets are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the Definitions of [C08F.](#)}
- U C08F 255/02 • on to polymers of olefins having two or three carbon atoms
- M C08F 255/04 • • on to ~~ethene-propene~~*ethylene-propylene* copolymers {([C08F 255/023](#) takes precedence)}
- M C08F 255/06 • • on to ~~ethene-propene~~*ethylene-propylene*-diene terpolymers {([C08F 255/023](#) takes precedence)}

Project: MP12716 (C08L)

- M C08L **COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (compositions based on polymerisable monomers [C08F](#), [C08G](#); artificial filaments or fibres [D01F](#); textile treating compositions [D06](#))**
- NOTES
- In this subclass, the following term is used with the meaning indicated:
 - Rubber includes:
 - natural or conjugated diene rubbers;
 - rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for compositions of such macromolecular compounds).
 - In this subclass:
 - compositions are classified according to the mutual proportions by weight of only the macromolecular constituents;
 - compositions are classified according to the macromolecular constituent or constituents present in the highest proportion: if all these constituents are present in equal proportions the composition is classified according to each of these constituents.
 - Any macromolecular constituent of a composition which is not identified by the classification according to Note (2) above, and the use of which is determined to be novel and non-obvious, must also be classified in this subclass. For example, a composition containing 80 parts ~~polyethene~~*polyethylene* and 20 parts polyvinyl chloride is classified in both groups [C08L 23/06](#) and [C08L 27/06](#), if the use of polyvinyl chloride is determined to be novel and non-obvious. {This IPC Note does not apply in CPC.}
 - Any macromolecular constituent of a composition which is not identified by the classification according to Notes (2) or (3) above, and which is considered to represent information of interest for search, may also be classified in this subclass. This can, for example, be the case when it is considered of interest to enable searching of compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". {This IPC Note does not apply in CPC}
 - In groups [C08L 65/00](#) - [C08L 85/00](#), in the absence of an indication to the contrary, compositions of macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to

the linkage present in excess. {This Note corresponds to IPC Note (1) relating to [C08L 65/00](#) - [C08L 85/00](#).}

6. {Compositions classified in [C08K](#) according to note 3 of [C08K](#), are not classified in [C08L](#).}

7. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules is present in the definitions of [C08L](#).}

8. {[C08L 2666/00](#) indexing codes were used for C-Sets classification of documents before April 2012. In addition to note (6), for searching documents classified before April 2012, see also [C08L 2666/00](#) in the definitions of [C08L](#).}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C08L 61/08-C08L 61/10	covered by	C08L 61/06
C08L 63/02	covered by	C08L 63/00
C08L 83/05	covered by	C08L 83/04
C08L 83/07	covered by	C08L 83/04

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

U C08L 23/00

Compositions of homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Compositions of derivatives of such polymers

NOTE

In this group, C-Sets are used.

The detailed information about the C-Sets construction and the associated syntax rules is present in the Definitions of [C08L](#).

- U C08L 23/02 • not modified by chemical after-treatment
- U C08L 23/04 • • Homopolymers or copolymers of ethene
- M C08L 23/06 • • • ~~Polyethene~~*Polyethylene*
- U C08L 23/08 • • • Copolymers of ethene ([C08L 23/16](#) takes precedence)
- U C08L 23/0846 • • • • with unsaturated hydrocarbons containing atoms other than carbon or hydrogen
- M C08L 23/0853 • • • • • ~~Ethene~~*Ethylene* vinyl acetate copolymers
- M C08L 23/0861 • • • • • Saponified copolymers, e.g. ~~ethene~~*ethylene* vinyl alcohol copolymers
- M C08L 23/16 • • ~~Ethene-propene or ethene-propene~~*Ethylene-propylene or ethylene-propylene*-diene copolymers
- U C08L 23/26 • modified by chemical after-treatment (saponified copolymers [C08L 23/0861](#); unsaturated acid salts [C08L 23/0876](#))
- U C08L 23/28 • • by reaction with halogens or halogen-containing compounds ([C08L 23/32](#) takes precedence)
- M C08L 23/286 • • • Chlorinated ~~polyethene~~*polyethylene*

Project: MP12716 (C09B)

- U C09B 62/00 **Reactive dyes, i.e. dyes which form covalent bonds with the substrates or which polymerise with themselves**
- U C09B 62/44 • with the reactive group not directly attached to a heterocyclic ring

- M C09B 62/62
- the reactive group being an **ethylenimino** **ethylenamino** or N—**acylated ethylenimino-acylated ethylenamino** group or a —CO—NH—CH₂—CH₂—X group, wherein X is a halogen atom, a quaternary ammonium group or O—**acyl** and acyl is derived from an organic or inorganic acid, or a beta—**substituted ethylamine** group

Project: MP12823 (C09C)

- U C09C 3/00 **Treatment in general of inorganic materials, other than fibrous fillers, to enhance their pigmenting or filling properties**
- M C09C 3/04
- Physical treatment, e.g. grinding; **or** treatment with ultrasonic vibrations {(C09C 3/006 takes precedence)}

Project: MP12716 (C09D)

- M C09D
- COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR (cosmetics [A61K](#); processes for applying liquids or other fluent materials to surfaces, in general, [B05D](#); staining wood [B27K 5/02](#); glazes or vitreous enamels [C03C](#); natural resins, French polish, drying-oils, driers, turpentine, per se, [C09F](#); polishing compositions other than French polish, ski waxes [C09G](#); adhesives or use of materials as adhesives [C09J](#); materials for sealing or packing joints or covers [C09K 3/10](#); materials for stopping leaks [C09K 3/12](#); processes for the electrolytic or electrophoretic production of coatings [C25D](#))**

NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:

- "use of materials for coating compositions" means the use of known or new polymers or products;
- "rubber" includes:
 - a. natural or conjugated diene rubbers;
 - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for coating compositions based on such macromolecular compounds);
 - "based on" is defined by means of Note (3), below;
 - "filling pastes" means materials used to fill up the holes or cavities of a substrate in order to smooth its surface prior to coating.

2. In this subclass, coating compositions; containing specific organic macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

Example: a coating composition containing **polyethene** **polyethylene** and amino-propyltrimethoxysilane is classified in group [C09D 123/06](#).

However, coating compositions containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09D 159/00](#) - [C09D 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09D 4/00](#).

Example: a coating composition containing **polyethene** **polyethylene** and styrene monomer is classified in group [C09D 4/00](#).

Aspects relating to the physical nature of the coating compositions or to the effects produced, as defined in group [C09D 5/00](#), if clearly and explicitly stated, are also classified in this subclass.

Coating compositions characterised by other features, e.g. additives, are classified in group [C09D 7/00](#), unless the macromolecular constituent is specified.

3. In this subclass, coating compositions comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the composition is based. If the composition is based on two or more constituents, present in equal proportions, the composition is classified according to each of these constituents.

Example: a coating composition containing 80 parts of ~~polyethene~~[polyethylene](#) and 20 parts of polyvinylchloride is classified in group [C09D 123/06](#). A coating composition containing 40 parts of ~~polyethene~~[polyethylene](#) and 40 parts of polyvinylchloride is classified in groups [C09D 123/06](#) and [C09D 127/06](#).

4. In groups [C09D 101/00](#) - [C09D 201/00](#), any macromolecular constituent of a coating composition which is not identified by the classification according to Note (3) after the title of subclass [C09D](#), and the use of which is determined to be novel and non-obvious, must also be classified in a group chosen from groups [C09D 101/00](#) - [C09D 201/00](#).

{This Note corresponds to IPC Note (1) relating to [C09D 101/00](#) - [C09D 201/00](#).}

5. Any macromolecular constituent of a coating composition which is not identified by the classification according to Note (3) after the title of subclass [C09D](#) or Note (1) above, and which is considered to represent information of interest for search, may also be classified in a group chosen from groups [C09D 101/00](#) - [C09D 201/00](#). This can for example be the case when it is considered of interest to enable searching of coating compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information." {This Note corresponds to IPC Note (2) relating to [C09D 101/00](#) - [C09D 201/00](#).}

6. In groups [C09D 165/00](#) - [C09D 185/00](#), in the absence of an indication to the contrary, coating compositions based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess.

{This Note corresponds to IPC Note (1) relating to [C09D 165/00](#) - [C09D 185/00](#).}

7. {In this subclass, combination sets [C-Sets] are used. Detailed information about the C-Sets construction and the associated syntax rules is found in the definitions for [C09D](#).}

8. {In addition to Note (4) above [C08L 2666/00](#) indexing codes were used for C-Sets classification of documents before April 2012. See C-Sets Search Rules in [C08L](#), in [C09D](#), or in [C09J](#) Definitions.}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09D 4/02	covered by	C09D 4/00
C09D 4/04	covered by	C09D 4/00
C09D 5/25	covered by	H01B 3/30
C09D 5/33	covered by	C09D 5/004
C09D 5/46	covered by	C09D 5/03
C09D 161/08 , C09D 161/10	covered by	C09D 161/06
C09D 163/02	covered by	C09D 163/00
C09D 183/05	covered by	C09D 183/04
C09D 183/07	covered by	C09D 183/04 , C09D 183/06

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

- U C09D 123/00** Coating compositions based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Coating compositions based on derivatives of such polymers

NOTE

{In this group, C-Sets are used for classification. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions of [C09D](#)}

- U C09D 123/02 • not modified by chemical after-treatment
- U C09D 123/04 • • Homopolymers or copolymers of ethene
- M C09D 123/06 • • • ~~Polyethene~~ Polyethylene
- M C09D 123/16 • • {Elastomeric} ~~ethene-propene or ethene-propene~~ ethylene-propylene or ethylene-propylene-diene copolymers; {, e.g. EPR and EPDM rubbers}

NOTE

This group is used for polymers comprising both ethylene and propylene

Project: RP12800 (C09G)

- U C09G 1/00** Polishing compositions (French polish [C09F 11/00](#); detergents [C11D](#))
- M C09G 1/02 • containing abrasives or grinding agents {(abrasives as such [C09K 3/14](#); ~~polishing of semi-conductors H01L~~; *polishing of semi-conductors H10P 52/40*)}

Project: MP12716 (C09J)

- M C09J** ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES (preparation of glue or gelatine [C09H](#))

NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:

- "use of materials as adhesives" means the use of known or new polymers or products;
- "rubber" includes:
 - a. natural or conjugated diene rubbers;
 - b. rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for adhesives based on such macromolecular compounds);
 - "based on" is defined by means of Note (3), below.

2. In this subclass, adhesives containing specific macromolecular substances are classified only according to the macromolecular substance, non-macromolecular substances not being taken into account.

- Example: an adhesive containing ~~polyethene~~ polyethylene and amino-propyltrimethoxysilane is classified in group [C09J 123/06](#).
- However, adhesives containing combinations of organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond with prepolymers or polymers other than unsaturated polymers of groups [C09J 159/00](#) - [C09J 187/00](#) are classified according to the unsaturated non-macromolecular component in group [C09J 4/06](#).
- Example: an adhesive containing ~~polyethene~~ polyethylene and styrene monomer is classified in group [C09J 4/06](#).
- Aspects relating to the physical nature of the adhesives or to the effects produced, as defined in group [C09J 9/00](#), if clearly and explicitly stated, are also classified in this subclass.

- Adhesives characterised by other features, e.g. additives, are classified in group [C09J 11/00](#), unless the macromolecular constituent is specified.
3. In this subclass, adhesives comprising two or more macromolecular constituents are classified according to the macromolecular constituent or constituents present in the highest proportion, i.e. the constituent on which the adhesive is based. If the adhesive is based on two or more constituents, present in equal proportions, the adhesive is classified according to each of these constituents.
- Example: An **an** adhesive containing 80 parts of **polyethene****polyethylene** and 20 parts of polyvinylchloride is classified in group [C09J 123/06](#). An adhesive containing 40 parts of **polyethene****polyethylene** and 40 parts of polyvinylchloride is classified in groups [C09J 123/06](#) and [C09J 127/06](#).
4. {In groups [C09J 101/00](#) - [C09J 201/00](#), any macromolecular constituent of an adhesive composition which is not identified by the classification according to Note (3) after the title of subclass [C09J](#), and the use of which is determined to be novel and non-obvious, must also be classified in a group chosen from groups [C09J 101/00](#) - [C09J 201/00](#). This Note corresponds to IPC Note (1) relating to [C09J 101/00](#) - [C09J 201/00](#).}
5. {Any macromolecular constituent of an adhesive composition which is not identified by the classification according to Note (3) after the title of subclass [C09J](#) or Note (4) above, and which is considered to represent information of interest for search, may also be classified in a group chosen from groups [C09J 101/00](#) - [C09J 201/00](#). This can, for example, be the case when it is considered of interest to enable searching of adhesive compositions using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". This Note corresponds to IPC Note (2) relating to [C09J 101/00](#) - [C09J 201/00](#).}
6. {In groups [C09J 165/00](#) - [C09J 185/00](#), in the absence of an indication to the contrary, adhesives based on macromolecular compounds obtained by reactions forming two different linkages in the main chain are classified only according to the linkage present in excess. This Note corresponds to IPC Note (1) relating to [C09J 165/00](#) - [C09J 185/00](#).}
7. {An adhesive composition containing polyethylene and amino-propyltrimethoxysilane is classified in groups [C09J 123/06](#) and [C08K 5/544](#).}
8. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions of [C09J](#).}
9. {In addition to Note (8), [C08L 2666/00](#) indexing codes were used for C-Sets classification of documents before April 2012 (see also C-Sets search rules in [C08L](#), [C09D](#) and in the [C09J](#) definition).}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C09J 4/02	covered by	C09J 4/00
C09J 4/04	covered by	C09J 4/00
C09J 161/08 - C09J 161/10	covered by	C09J 161/06
C09J 163/02	covered by	C09J 163/00
C09J 183/05	covered by	C09J 183/04
C09J 183/07	covered by	C09J 183/04

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

U C09J 123/00 **Adhesives based on homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Adhesives based on derivatives of such polymers**

NOTE

{In this group, C-Sets are used for classification. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions of [C09J](#)}

- U C09J 123/02 • not modified by chemical after-treatment
- U C09J 123/04 • • Homopolymers or copolymers of ethene
- M C09J 123/06 • • • ~~Polyethene~~ *Polyethylene*
- M C09J 123/16 • • {Elastomeric} ~~ethene-propene or ethene-propene~~ *ethylene-propylene or ethylene-propylene*-diene copolymers; {, e.g. EPR and EPDM rubbers}

NOTE

This group is used for polymers comprising both ethylene and propylene

Project: RP12800 (C09K)

U C09K 3/00 **Materials not provided for elsewhere**

NOTE

When classifying in groups [C09K 3/10](#) - [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 2003/1034](#) - [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) - [C09K 2200/0697](#)

- M C09K 3/14 • Anti-slip materials; Abrasives {(products specifically intended for the fabrication of abrasive tools, blocks or papers, or for operations of the kind of sand-blasting and barrelling [B24B 31/14](#), [B24C 1/00](#); polishing compositions containing abrasive or grinding agents [C09G 1/02](#); ~~polishing of semi-conductors H01L~~; friction compositions for brakes or clutches [F16D 69/02](#); *polishing of semi-conductors H10P 52/40*)}

NOTE

In this group, boron and silicon are considered as being metals. Likewise for associations of carbon with metals, e.g. carbides.

Project: RP12808 (C09K)

M C09K 11/00 **Luminescent *materials*, e.g. electroluminescent, ~~chemiluminescent materials~~ or *chemiluminescent***

NOTE

In this main group, it is desirable to add the indexing codes of groups [C09K 2111/00](#) - [C09K 2113/00](#).

- U C09K 11/06 • containing organic luminescent materials

NOTE

{When classifying in this group it is desirable to add the indexing codes of groups [C09K 2211/00](#) - [C09K 2211/188](#) relating to the chemical nature of the luminescent material}

- M C09K 11/07 • • having chemically ~~-~~interreactive components, e.g. reactive chemiluminescent compositions

M C09K 11/08 • containing inorganic luminescent materials

NOTES

1. In groups {C09K 11/08 - C09K 11/897}, *the last place priority rule is applied, i.e. at each hierarchical level*, in the absence of an indication to the contrary, ~~classification of materials is made~~ *materials are classified* in the last appropriate place; *however, activating constituents of the luminescent materials are disregarded for classification purposes.*

2. {In this group, magnesium is considered as an alkaline earth metal-}.

WARNING

Groups C09K 11/0805 - C09K 11/0894, with the exception of C09K 11/0883 for classifying nitrides, are no longer used for classification of new documents. The backlog of this group is being continuously reclassified to subgroups C09K 11/54 - C09K 11/897

Project: RP12800 (C09K)

M C09K 13/00 Etching, surface-brightening or pickling compositions (for glass C03C 15/00, {C03C 25/66; for mortars, concrete, artificial or natural stone or ceramics C04B 41/5338}; for metallic material C23F, C23G 1/00, C25F 1/00; ~~{for semi-conductors H01L}~~; {for semi-conductors H10P 52/40})

NOTE

In groups C09K 13/02 - C09K 13/12, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

Project: RP12808 (C09K)

M C09K 17/00 Soil-conditioning materials or soil-stabilising materials (specially adapted for boreholes or wells C09K 8/00; fertilisers C05; consolidating by placing solidifying or pore-filling substances in the soil E02D 3/12)

NOTES

1. This group covers mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their soil-conditioning or soil-stabilising activity.

2. This group does not cover mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their fertilising activity which are covered by subclass C05G.

3. For the purpose of classification in this group, the presence of fertilisers in the composition is not taken into account.

4. In groups C09K 17/02 - C09K 17/50, *the last place priority rule is applied, i.e. at each hierarchical level*, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

5. In this group, it is desirable to add the indexing codes of groups C09K 2101/00 - C09K 2109/00.

N C09K 2101/00 - C09K 2109/00 Indexing scheme associated with group C09K 17/00, relating to the use or the intended effect of the soil-conditioning or soil-stabilising materials

U C09K 2109/00 pH regulation

N C09K 2111/00 - C09K 2113/00 Indexing scheme associated with group C09K 11/00, relating to the luminescent materials

N C09K 2111/00 Perovskites, i.e. ABX₃

N C09K 2113/00 Quantum dots

Project: MP12716 (C10M)

- U C10M 107/00** **Lubricating compositions characterised by the base-material being a macromolecular compound**
- WARNING
Groups [C10M 107/00](#) - [C10M 107/54](#) are incomplete pending reclassification of documents from groups [C10M 1/00](#), [C10M 1/08](#), [C10M 3/00](#), [C10M 5/00](#) and [C10M 7/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- U C10M 107/02 • Hydrocarbon polymers; Hydrocarbon polymers modified by oxidation
- M C10M 107/04 • • ~~Polyethene~~ *Polyethylene*
- M C10M 107/14 • • containing conjugated ~~diens~~ *diene*
- U C10M 143/00** **Lubricating compositions characterised by the additive being a macromolecular hydrocarbon or such hydrocarbon modified by oxidation**
- WARNING
Groups [C10M 143/00](#) - [C10M 143/18](#) are incomplete pending reclassification of documents from groups [C10M 1/00](#), [C10M 1/08](#), [C10M 3/00](#), [C10M 5/00](#) and [C10M 7/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- M C10M 143/02 • ~~Polyethene~~ *Polyethylene*

Project: RP12830 (C12M)

- C12M** **APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; {APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS}**
- NOTES
1. In this subclass the term microorganism includes prokaryotic and eukaryotic cells. Viruses, human, animal or plant cells, protozoa, tissues and unicellular algae are considered microorganisms.
 2. When classifying an apparatus according to its use in group [C12M 21/00](#), classification should also be given in at least one of the groups [C12M 23/00](#)-[C12M 99/00](#).
 3. This subclass covers apparatus or devices for the fermentation or for growing microorganisms or animal tissues of both laboratory and industrial scale, i.e. bioreactors.
 4. This subclass covers also apparatus or devices for the pre-treatment or after-treatment of the biomass or microorganisms to be cultured or that have been cultured.
 5. This subclass does not cover the methods or processes taking place in the bioreactors that are not based on the use of the parts of the apparatus.
 6. This subclass does not cover:
 - apparatus for culturing plant tissue, which are covered by [A01H 4/001](#);
 - apparatus for preservation of excised living parts of bodies of humans or animals, which are covered by [A01N 1/142](#);
 - apparatus or devices for testing sterility conditions not linked to a bioreactor or fermenter growing biomass, which are covered by ~~A61L 2/00~~; [G01N 31/226](#);
 - apparatus for biological treatment of water, waste water, sewage or sludge, which are covered by [C02F 3/00](#), [C02F 11/00](#);

- apparatus for brewing of beer, which are covered by [C12C](#);
- apparatus for production of wine or vinegar, which are covered by [C12G](#), [C12J 1/10](#);
- apparatus or devices for DNA and RNA technology, which are covered by [B01L 7/52](#), [B01J 19/0046](#), [C12N 15/1003](#);
- fermentation processes, which are covered by [C12P](#);
- apparatus for bioleaching of ores, which are covered by [C22B 3/18](#);
- removing cellulose from cellulosic substances, which is covered by [D21C](#);
- apparatus or devices for sampling, detection, investigation or analysis of microorganisms or biosensors, which are covered by [G01N 33/48](#);
- apparatus for automatic analysis not linked to a bioreactor or fermenter growing biomass, which are covered by [G01N 35/00](#);
- testing or evaluating the effect of a chemical or biological compound involving human or animal cells, which are covered by [G01N 33/5005](#);
- apparatus for immunological test processes, which are covered by [G01N 33/5302](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12798 (C12N)

M C12N 1/00

Microorganisms, e.g. protozoa; Compositions thereof (medicinal preparations containing material from protozoa, bacteria or viruses [A61K 35/66](#), from algae [A61K 36/02](#), from fungi [A61K 36/06](#); preparing medicinal bacterial antigen or antibody compositions, e.g. bacterial vaccines, [A61K 39/00](#)); Processes of propagating, maintaining or preserving microorganisms or compositions thereof; Processes of preparing or isolating a composition containing a microorganism; Culture media therefor

- U C12N 1/06 • Lysis of microorganisms
- M C12N 1/063 • • {of yeast}
- M C12N 1/066 • • {by physical ~~methods~~ *processes*}
- U C12N 1/10 • Protozoa; Culture media therefor
- M C12N 1/105 • • {Protozoal isolates}
- U C12N 1/12 • Unicellular algae; Culture media therefor (as new plants [A01H 13/00](#))
- M C12N 1/125 • • {Unicellular algae isolates}
- U C12N 1/14 • Fungi (culture of mushrooms [A01G 18/00](#); as new plants [A01H 15/00](#)); Culture media therefor
- M C12N 1/145 • • {Fungal isolates} *Fungi isolates*
- U C12N 1/16 • Yeasts; Culture media therefor
- M C12N 1/165 • • • {Yeast isolates}
- U C12N 1/18 • • • Baker's yeast; Brewer's yeast
- M C12N 1/185 • • • • {Saccharomyces isolates}
- U C12N 1/20 • Bacteria; Culture media therefor
- M C12N 1/205 • • {Bacterial isolates}

Project: RP12839 (C12Q)

- U C12Q 1/00** **Measuring or testing processes involving enzymes, nucleic acids or microorganisms (measuring or testing apparatus with condition measuring or sensing means, e.g. colony counters, [C12M 1/34](#)); Compositions therefor; Processes of preparing such compositions**
- NOTE**
{In this group, C-Sets are used for classification. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions of [C12Q](#).}
- U C12Q 1/68** **· involving nucleic acids**
- NOTES**
1. In this group, classification is made according to the most relevant feature irrespective of the last place priority rule.
2. {In groups [C12Q 1/68](#) - [C12Q 1/6874](#), and [C12Q 1/6897](#), C-Sets are used for classification. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions of [C12Q](#).}
- U C12Q 1/6876** **· · Nucleic acid products used in the analysis of nucleic acids, e.g. primers or probes**
- U C12Q 1/6883** **· · · for diseases caused by alterations of genetic material**
- M C12Q 1/6886** **· · · for cancer (immunoassay for cancer [G01N 33/574](#)[G01N 33/575](#))**

Project: RP12831 (C21D)

- M C21D 8/00** **Modifying the physical properties *of ferrous metals or ferrous alloys* by deformation combined with, or followed by, heat treatment (hardening articles or materials formed by forging or rolling with no further heating beyond that required for the formation [C21D 1/02](#))**

- D C21D 8/005** **· {of ferrous alloys (C21D 8/02 - C21D 8/12 take precedence)}**
<administratively transferred to [C21D 8/02](#)>

- C C21D 8/02** **· during manufacturing of plates or strips ([C21D 8/12](#) takes precedence)**

WARNING

Group [C21D 8/02](#) is impacted by reclassification into groups [C21D 8/04](#) - [C21D 8/0494](#).

Groups [C21D 8/02](#) and [C21D 8/04](#) - [C21D 8/0494](#) should be considered in order to perform a complete search.

- D C21D 8/0205** **· · {of ferrous alloys}**
<administratively transferred to [C21D 8/02](#)>

- C C21D 8/021** **· · {involving ~~a~~ particular fabrication *steps* or ~~treatment of ingot or slab~~ *treatments of ingots or slabs*}**

WARNING

Group [C21D 8/021](#) is impacted by reclassification into groups [C21D 8/04](#) - [C21D 8/0494](#).

Groups [C21D 8/021](#) and [C21D 8/04](#) - [C21D 8/0494](#) should be considered in order to perform a complete search.

- C C21D 8/0215** **· · · {Rapid solidification; Thin strip casting}**

WARNING

Group [C21D 8/0215](#) is impacted by reclassification into groups [C21D 8/04](#) - [C21D 8/0494](#).

Groups C21D 8/0215 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0221

- • {characterised by the working steps}

WARNING

Group C21D 8/0221 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0221 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0226

- • • {Hot rolling}

WARNING

Group C21D 8/0226 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0226 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0231

- • • {Warm rolling}

WARNING

Group C21D 8/0231 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0231 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0236

- • • {Cold rolling}

WARNING

Group C21D 8/0236 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0236 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0242

- • • {Flattening; Dressing; Flexing}

WARNING

Group C21D 8/0242 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0242 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0247

- • {characterised by the heat treatment}

WARNING

Group C21D 8/0247 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0247 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

C C21D 8/0252

- • • {with application of tension}

WARNING

Group C21D 8/0252 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0252 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

- C C21D 8/0257 • • • {with diffusion of elements, e.g. decarburising, nitriding}
- WARNING
*Group C21D 8/0257 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0257 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0263 • • • {following hot rolling}
- WARNING
*Group C21D 8/0263 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0263 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0268 • • • {between cold rolling steps}
- WARNING
*Group C21D 8/0268 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0268 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0273 • • • {Final recrystallisation annealing}
- WARNING
*Group C21D 8/0273 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0273 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0278 • • • {involving a particular surface treatment (C21D 8/0294 takes precedence)}
- WARNING
*Group C21D 8/0278 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0278 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0284 • • • {Application of a separating or insulating coating}
- WARNING
*Group C21D 8/0284 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0284 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0289 • • • {Application of a tension-inducing coating}
- WARNING
*Group C21D 8/0289 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.
 Groups C21D 8/0289 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.*
- C C21D 8/0294 • • • {involving a localised treatment}
- WARNING
Group C21D 8/0294 is impacted by reclassification into groups C21D 8/04 - C21D 8/0494.

Groups C21D 8/0294 and C21D 8/04 - C21D 8/0494 should be considered in order to perform a complete search.

- T C21D 8/04
- to produce plates or strips for *drawing, e.g. for* deep-drawing
- WARNING**
Groups C21D 8/04 - C21D 8/0494 are incomplete pending reclassification of documents from groups C21D 8/02, C21D 8/021, C21D 8/0221, C21D 8/0247, C21D 8/0278 and C21D 8/0294. All groups listed in this Warning should be considered in order to perform a complete search.
- D C21D 8/0405
- • {of ferrous-alloys}
 - <administratively transferred to [C21D 8/04](#)>
- U C21D 8/06
- during manufacturing of rods or wires
- D C21D 8/065
- • {of ferrous-alloys}
 - <administratively transferred to [C21D 8/06](#)>
- U C21D 8/10
- during manufacturing of tubular bodies
- D C21D 8/105
- • {of ferrous-alloys}
 - <administratively transferred to [C21D 8/10](#)>
- U C21D 8/12
- during manufacturing of articles with special electromagnetic properties
- M C21D 8/1205
- • {involving a particular fabrication *steps* or *treatment of ingot or slab*} *treatments of ingots or slabs*
- M C21D 8/1216
- • {*the working step(s) being of interest*} *characterised by the working steps*
- M C21D 8/1244
- • {*characterised by* the heat treatment(s) *being of interest*}
- M C21D 8/1277
- • {involving a particular surface treatment ([C21D 8/1294](#) takes precedence)}
- M C21D 8/1294
- • {involving a *localized*/*localised* treatment}

Project: RP12800 (C23C)

- U C23C 18/00
- Chemical coating by decomposition of either liquid compounds or solutions of the coating forming compounds, without leaving reaction products of surface material in the coating; Contact plating**
- NOTE
This groups covers also suspensions containing reactive liquids and non-reactive solid particles.
- U C23C 18/16
- by reduction or substitution, e.g. electroless plating ([C23C 18/54](#) takes precedence)
- U C23C 18/1601
- • {Process or apparatus}
- U C23C 18/1633
- • • {Process of electroless plating}
- U C23C 18/1635
- • • • {Composition of the substrate}
- U C23C 18/1639
- • • • • {Substrates other than metallic, e.g. inorganic or organic or non-conductive}
- M C23C 18/1642
- • • • • {semiconductor (~~semiconductor H01L 21/288~~ *semiconductor H10P 14/48*)}

Project: RP12800 (C23F)**C23F**

NON-MECHANICAL REMOVAL OF METALLIC MATERIAL FROM SURFACE (working metal by laser beams [B23K 26/00](#); desurfacing by applying flames [B23K 7/00](#); working of metal by electro-erosion [B23H](#); producing decorative effects by removing surface material, e.g. by engraving, by etching, [B44C 1/22](#); electrolytic etching or polishing [C25F](#)); **INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL; MULTI-STEP PROCESSES FOR SURFACE TREATMENT OF METALLIC MATERIAL INVOLVING AT LEAST ONE PROCESS PROVIDED FOR IN CLASS [C23](#) AND AT LEAST ONE PROCESS COVERED BY SUBCLASS [C21D](#) OR [C22F](#) OR CLASS [C25](#)**

NOTES

1. protective layers or coating compositions or methods of applying them; these are classified in the appropriate places, e.g. [B05](#), [B44](#), [C09D](#), [C23C](#).
2. mechanical devices or constructional features of particular articles for inhibiting incrustation; these are classified in the appropriate places, e.g. in pipes or pipe fittings [F16L 58/00](#).
3. articles characterised by being made of materials selected for their properties of resistance to corrosion or incrustation; these are classified in the appropriate places, e.g. turbine blades [F01D 5/28](#).

WARNINGS

1. The following IPC group is not in the CPC scheme. The subject matter for this IPC group is classified in the following CPC groups:

[C23F 1/24](#) covered by [C09K 13/00](#), [H01L 21/00](#)
[H10P 50/00](#)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12823 (C25D)**U C25D 5/00****Electroplating characterised by the process; Pretreatment or after-treatment of workpieces****M C25D 5/20**• Electroplating using ~~ultrasonics~~ ~~{, vibrations}~~ [ultrasonic waves](#)**Project: RP12800 (C30B)****M C30B**

SINGLE-CRYSTAL GROWTH (by using ultra-high pressure, e.g. for the formation of diamonds, [B01J 3/06](#)); **UNIDIRECTIONAL SOLIDIFICATION OF EUTECTIC MATERIAL OR UNIDIRECTIONAL DEMIXING OF EUTECTOID MATERIAL; REFINING BY ZONE-MELTING OF MATERIAL** (zone-refining of metals or alloys [C22B](#)); **PRODUCTION OF A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (casting of metals, casting of other substances by the same processes or devices [B22D](#); working of plastics [B29](#); modifying the physical structure of metals or alloys [C21D](#), [C22F](#)); **SINGLE CRYSTALS OR HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE; AFTER-TREATMENT OF SINGLE CRYSTALS OR A HOMOGENEOUS POLYCRYSTALLINE MATERIAL WITH DEFINED STRUCTURE** (~~for producing semiconductor devices or parts thereof~~ [H01L](#), [H10](#)~~for producing semiconductor devices or parts thereof~~ [H10](#)); **APPARATUS THEREFOR**

NOTES

1. In this subclass, the following expressions are used with the meaning indicated:
 - "single-crystal" includes also twin crystals and a predominantly single crystal product;

- "homogeneous polycrystalline material" means a material with crystal particles, all of which have the same chemical composition;
 - "defined structure" means the structure of a material with grains which are oriented in a preferential way or have larger dimensions than normally obtained.
2. In this subclass:
- the preparation of crystals or a homogeneous polycrystalline material with defined structure of particular materials or shapes is classified in the group for the process as well as in group [C30B 29/00](#);
 - an apparatus specially adapted for a specific process is classified in the appropriate group for the process. Apparatus to be used in more than one kind of process is classified in group [C30B 35/00](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12828 (D03C)

- U D03C 2700/00 Shedding mechanisms**
- U D03C 2700/01 • Shedding mechanisms using heald frames
- M D03C 2700/0127 • **ProgrammeProgram**-controlled heald frame movement

Project: MP12828 (D04B)

- U D04B 15/00 Details of, or auxiliary devices incorporated in, weft knitting machines, restricted to machines of this kind (details or auxiliary devices not so restricted [D04B 35/00](#))**
- M D04B 15/66 • Devices for determining or controlling patterns {; **ProgrammeProgram**-control arrangements}

Project: MP12840 (D04D)

- U D04D 7/00 Decorative or ornamental textile articles**
- M D04D 7/04 • Three-dimensional **[3D]** articles (ornamental buttons [A44B 1/04](#))

Project: MP12840 (D04H)

- U D04H 1/00 Non-woven fabrics formed wholly or mainly of staple fibres or like relatively short fibres**
- U D04H 1/04 • from fleeces or layers composed of fibres having existing or potential cohesive properties, e.g. natural fibres, prestretched or fibrillated artificial fibres (felting apparatus [D04H 17/00](#))
- U D04H 1/08 • • and hardened by felting; Felts or felted products
- M D04H 1/22 • • • Three-dimensional **[3D]** articles formed by felting processes
- M D04H 1/24 • • • Covers felted on to three-dimensional **[3D]** articles

Project: MP12828 (D05B)

- M D05B 3/00 Sewing apparatus or machines with mechanism for lateral movement of the needle or the work or both for making ornamental pattern seams, for sewing buttonholes, for reinforcing openings, or for fastening articles, e.g. buttons, by sewing (**programme-controlled sewing machines D05B 19/00**; **program-controlled sewing machines D05B 19/00**; with devices for automatically controlling movement of work-carrier [D05B 21/00](#))**

- M D05B 19/00 **Programme**~~Program~~-controlled sewing machines (with devices for automatically controlling movement of work-carrier [D05B 21/00](#); devices for stopping drive when sewing tools have reached a predetermined position [D05B 69/22](#))
- M D05B 21/00 Sewing machines with devices for automatically controlling movement of work-carrier relative to stitch-forming mechanism in order to obtain particular configuration of seam, e.g. ~~programme~~**program**-controlled for sewing collars; **or** for attaching pockets

Project: MP12828 (D05C)

- M D05C 3/00 - ~~D05C 17/00~~
D05C 13/00 Embroidering machines ~~{{embroidering attachments for sewing machines D05B 3/243}; programme-controlled sewing machines with embroidering capability D05B 19/00, D05B 21/00}~~

Project: MP12823 (D06M)

- M D06M 10/00 Physical treatment of fibres, threads, yarns, fabrics; or fibrous goods made from such materials, e.g. **by** ultrasonic **waves**, corona discharge, irradiation, electric currents; or magnetic fields; Physical treatment combined with treatment with chemical compounds or elements
- M D06M 10/02 **ultrasonic-or-sonic****Sonic or ultrasonic waves**; Corona discharge

Project: MP12840 (D06M)

- U D06M 23/00 Treatment of fibres, threads, yarns, fabrics or fibrous goods made from such materials, characterised by the process
- M D06M 23/14 **Processes for the fixation or treatment of textile materials in three-dimensional [3D] forms**

Project: MP12840 (E01F)

- U E01F 9/00 **Arrangement of road signs or traffic signals; Arrangements for enforcing caution (for obstructing or restricting traffic [E01F 13/00](#))**
- U E01F 9/60 **Upright bodies, e.g. marker posts or bollards; Supports for road signs**
- U E01F 9/623 **characterised by form or by structural features, e.g. for enabling displacement or deflection**
- M E01F 9/654 **in the form of three-dimensional [3D] bodies, e.g. cones; capable of assuming ~~three-dimensional~~**3D** form, e.g. by inflation or erection to form a geometric body**

Project: MP12834 (E03C)

- U E03C 1/00 **Domestic plumbing installations for fresh water or waste water; Sinks {{work tops [A47B 77/022](#)}**
- M E03C 1/01 **for combinations of baths, showers, sinks, wash-basins, closets, urinals, or the like {{combinations of baths, ~~douches~~**showers** or the like; [A47K 4/00](#); cell-like units for special technical purposes [E04B 1/34869](#); panels adapted for locating conduits [E04C 2/52](#); ducts for installation lines [E04F 17/08](#)}**

Project: MP12840 (E04B)

- U E04B 1/00 **Constructions in general; Structures which are not restricted either to walls, e.g. partitions, or floors or ceilings or roofs (scaffolds, shutterings [E04G](#); structures specially adapted for buildings for special purposes, general layout of buildings, e.g. modular co-ordination, [E04H](#))**

- U E04B 1/18
- Structures comprising elongated load-supporting parts, e.g. columns, girders, skeletons ([E04B 1/32](#) - [E04B 1/36](#) take precedence; elongated load-supporting parts as elements, trusses, truss-like structures [E04C 3/00](#))

NOTE

Group [E04B 1/19](#) takes precedence over groups [E04B 1/20](#) - [E04B 1/30](#).
 {This Note corresponds to IPC Note (1) relating to [E04B 1/19](#), [E04B 1/20](#) - [E04B 1/30](#).}

- M E04B 1/19
- Three-dimensional [\[3D\]](#) framework structures

Project: RP10483-F (E04B)

- M E04B 1/343
- Structures characterised by movable, separable, or collapsible parts, e.g. for transport (movable roof parts [E04B 7/16](#); floatable buildings [B63B](#); small prefabricated buildings, transportable as a whole, [E04H 1/12](#); small garages [E04H 6/02](#); tents or canopies, in general [E04H 15/00](#))

WARNING

Group E04B 1/343 is impacted by reclassification into groups E04B 1/34305, E04B 1/3431, E04B 1/34312, E04B 1/34315, E04B 1/34317, E04B 1/34321, E04B 1/34326, E04B 1/34331, E04B 1/34384, E04B 1/344, E04B 1/3441, E04B 1/3442 - E04B 1/3444, E04B 1/3445, E04B 1/3447, E04B 1/3448, E04B 1/3449, E04B 1/345 and E04B 1/3455.

All groups listed in this Warning should be considered in order to perform a complete search.

- M E04B 1/34305
- {telescopic}

WARNING

Groups E04B 1/34305 - E04B 1/34312 are incomplete pending reclassification of documents from group E04B 1/343.

All groups listed in this Warning should be considered in order to perform a complete search.

- M E04B 1/34315
- {characterised by separable parts}

WARNING

Groups E04B 1/34315 - E04B 1/34331 are incomplete pending reclassification of documents from group E04B 1/343.

All groups listed in this Warning should be considered in order to perform a complete search.

- M E04B 1/34384
- {Assembling details for foldable, separable, collapsible or retractable structures}

WARNING

Group E04B 1/34384 is incomplete pending reclassification of documents from group E04B 1/343.

Groups E04B 1/343 and E04B 1/34384 should be considered in order to perform a complete search.

- M E04B 1/344
- with hinged parts

WARNING

Group E04B 1/344 is incomplete pending reclassification of documents from group E04B 1/343.

Group E04B 1/344 is also impacted by reclassification into group E04B 1/3449.

Groups E04B 1/343, E04B 1/344 and E04B 1/3449 should be considered in order to perform a complete search.

- M E04B 1/3441 • • • {with articulated bar-shaped elements}
- WARNING
Group E04B 1/3441 is incomplete pending reclassification of documents from group E04B 1/343.
Groups E04B 1/343 and E04B 1/3441 should be considered in order to perform a complete search.
- M E04B 1/3442 • • • {folding out from a core cell}
- WARNING
Group E04B 1/3442 is incomplete pending reclassification of documents from group E04B 1/343.
Group E04B 1/3442 is also impacted by reclassification into group E04B 1/3449.
Groups E04B 1/343, E04B 1/3442 and E04B 1/3449 should be considered in order to perform a complete search.
- M E04B 1/3444 • • • {with only lateral unfolding}
- WARNING
Group E04B 1/3444 is incomplete pending reclassification of documents from group E04B 1/343.
Group E04B 1/3444 is also impacted by reclassification into group E04B 1/3449.
Groups E04B 1/343, E04B 1/3444 and E04B 1/3449 should be considered in order to perform a complete search.
- M E04B 1/3445 • • • {foldable in a flat stack of parallel panels}
- WARNING
Group E04B 1/3445 is incomplete pending reclassification of documents from group E04B 1/343.
Group E04B 1/3445 is also impacted by reclassification into group E04B 1/3449.
Groups E04B 1/343, E04B 1/3445 and E04B 1/3449 should be considered in order to perform a complete search.
- M E04B 1/3447 • • • {Portal- or saddle-shaped structures}
- WARNING
Group E04B 1/3447 is incomplete pending reclassification of documents from group E04B 1/343.
Groups E04B 1/343 and E04B 1/3447 should be considered in order to perform a complete search.
- M E04B 1/3448 • • • {with rotating shell-forming segments}
- WARNING
Group E04B 1/3448 is incomplete pending reclassification of documents from group E04B 1/343.
Groups E04B 1/343 and E04B 1/3448 should be considered in order to perform a complete search.
- M E04B 1/3449 • • • {with living hinge ([E04B 1/345](#) takes precedence)}
- WARNING
Group E04B 1/3449 is incomplete pending reclassification of documents from groups E04B 1/343, E04B 1/344, E04B 1/3442, E04B 1/3444 and E04B 1/3445.
Group E04B 1/3449 is also impacted by reclassification into group E04B 1/345.

All groups listed in this Warning should be considered in order to perform a complete search.

- M E04B 1/345 • • {Structures deriving their rigidity from concertina folds}

WARNING

Group E04B 1/345 is incomplete pending reclassification of documents from groups E04B 1/343 and E04B 1/3449.

Groups E04B 1/343, E04B 1/3449 and E04B 1/345 should be considered in order to perform a complete search.

- M E04B 1/3455 • {Wheeled arch-type structures}

WARNING

Group E04B 1/3455 is incomplete pending reclassification of documents from group E04B 1/343.

Groups E04B 1/343 and E04B 1/3455 should be considered in order to perform a complete search.

Project: MP12840 (E04C)

- U E04C 5/00 Reinforcing elements, e.g. for concrete; Auxiliary elements therefor ({methods or devices for making reinforcing materials [B21D](#);} material composition {[C04B](#),} [C21](#), [C22](#))**

NOTES

1. In this group, the following terms or expressions are used with the meanings indicated:

- "reinforcing" means increasing any physical strength characteristic of the end product, e.g. compressive or flexural strength;
- "elements" includes relatively large bodies, e.g. steel bars, as well as relatively small discrete bodies of any form, e.g. glass fibres.

2. Discrete reinforcing elements, which are small compared with the reinforced building element, only characterised by their composition are classified in [C04B](#), e.g. steel fibres [C04B 14/48](#), plastic elements with a shape other than granular or fibrous [C04B 16/12](#)

- U E04C 5/01 • Reinforcing elements of metal, e.g. with non-structural coatings ({[E04C 5/08](#) takes precedence})
- M E04C 5/02 • • of low bending resistance, *i.e. of essentially one-dimensional [1D] or two-dimensional [2D] extent*
- M E04C 5/06 • • of high bending resistance, *i.e. of essentially three-dimensional [3D] extent*, e.g. lattice girders ({anchorage devices specially adapted for balconies [E04B 1/0038](#); supporting devices for connector reinforcing rods for concrete walls [E04G 21/125](#)})

Project: MP12840 (E04G)

- U E04G 1/00 Scaffolds primarily resting on the ground**

- M E04G 1/02 • composed essentially of members elongated in one dimension *[1D]* only, e.g. poles, lattice masts, with or without end portions of special form, connected together by any means
- M E04G 1/14 • Comprising essentially pre-assembled two-dimensional *[2D]* frame-like elements, e.g. of rods in L- or H-shape, with or without bracing ([E04G 1/15](#) takes precedence)
- M E04G 1/17 • Comprising essentially pre-assembled three-dimensional *[3D]* elements, e.g. cubic elements

Project: MP12708 (E05B)

- U E05B 27/00** **Cylinder locks {or other locks} with tumbler pins or balls that are set by pushing the key in**
- M E05B 27/0053 • {for use with more than one key, e.g. master-~~slave~~*secondary* key-~~{master key systems in general E05B 35/10}~~}
- U E05B 29/00** **Cylinder locks {and other locks} with plate tumblers which are set by pushing the key in {(fastening of cylinders, rotors, plugs or cores [E05B 9/084](#); with magnetic tumblers [E05B 47/0044](#); with electromagnetic control [E05B 47/0611](#))}**
- M E05B 29/0046 • {for use with more than one key, e.g. master-~~slave~~*secondary* key-~~{master key systems in general E05B 35/10}~~}

Project: RP11845-F (E05Y)

- U E05Y 2201/00** **Constructional elements; Accessories therefor**
- U E05Y 2201/20 • Brakes; Disengaging means; Holders; Stops; Valves; Accessories therefor
- U E05Y 2201/218 • • Holders
- M E05Y 2201/22 • • • Locks

WARNING

Group E05Y 2201/22 is impacted by reclassification into group E05Y 2201/221.-

Groups E05Y 2201/22 and E05Y 2201/221 should be considered in order to perform a complete search.-

- M E05Y 2201/221 • • • • Touch latches

WARNING

Group E05Y 2201/221 is incomplete pending reclassification of documents from group E05Y 2201/22.-

Groups E05Y 2201/22 and E05Y 2201/221 should be considered in order to perform a complete search.-

- U E05Y 2400/00** **Electronic control; Electrical power; Power supply; Power or signal transmission; User interfaces**
- U E05Y 2400/10 • Electronic control
- M E05Y 2400/36 • • Speed control, detection or monitoring

WARNING

Group E05Y 2400/36 is impacted by reclassification into group E05Y 2400/37.-

Groups E05Y 2400/36 and E05Y 2400/37 should be considered in order to perform a complete search.-

- M E05Y 2400/37 • • • by using acceleration sensors

WARNING

Group E05Y 2400/37 is incomplete pending reclassification of documents from group E05Y 2400/36.-

Groups E05Y 2400/36 and E05Y 2400/37 should be considered in order to perform a complete search.-

- U E05Y 2400/44 • • Sensors not directly associated with the wing movement

M	E05Y 2400/447	<ul style="list-style-type: none"> • • • Moisture or submergence sensors <p><u>WARNING</u> Group E05Y 2400/447 is incomplete pending reclassification of documents from group E05Y 2800/428. Groups E05Y 2800/428 and E05Y 2400/447 should be considered in order to perform a complete search.</p>
U	E05Y 2400/50	<ul style="list-style-type: none"> • • Fault detection
M	E05Y 2400/502	<ul style="list-style-type: none"> • • • of components <p><u>WARNING</u> Group E05Y 2400/502 is incomplete pending reclassification of documents from group E05Y 2800/404. Groups E05Y 2800/404 and E05Y 2400/502 should be considered in order to perform a complete search.</p>
U	E05Y 2400/52	<ul style="list-style-type: none"> • • Safety arrangements associated with the wing motor
M	E05Y 2400/528	<ul style="list-style-type: none"> • • • Overheating or overcooling prevention <p><u>WARNING</u> Group E05Y 2400/528 is incomplete pending reclassification of documents from group E05Y 2800/414. Groups E05Y 2800/414 and E05Y 2400/528 should be considered in order to perform a complete search.</p>
U	E05Y 2400/53	<ul style="list-style-type: none"> • • • Wing impact prevention or reduction
M	E05Y 2400/54	<ul style="list-style-type: none"> • • • • Obstruction or resistance detection <p><u>WARNING</u> Group E05Y 2400/54 is incomplete pending reclassification of documents from group E05Y 2800/41. Groups E05Y 2800/41 and E05Y 2400/54 should be considered in order to perform a complete search.</p>
M	E05Y 2400/80	<ul style="list-style-type: none"> • User interfaces <p><u>WARNING</u> Group E05Y 2400/80 is impacted by reclassification into groups E05Y 2400/8505, E05Y 2400/851 and E05Y 2400/8515. All groups listed in this Warning should be considered in order to perform a complete search.</p>
U	E05Y 2400/81	<ul style="list-style-type: none"> • • Feedback to user, e.g. tactile
M	E05Y 2400/818	<ul style="list-style-type: none"> • • • Visual <p><u>WARNING</u> Group E05Y 2400/818 is impacted by reclassification into group E05Y 2600/58. Groups E05Y 2400/818 and E05Y 2600/58 should be considered in order to perform a complete search.</p>
M	E05Y 2400/85	<ul style="list-style-type: none"> • • User input means <p><u>WARNING</u> Group E05Y 2400/85 is impacted by reclassification into groups E05Y 2400/8505, E05Y 2400/851 and E05Y 2400/8515. All groups listed in this Warning should be considered in order to perform a complete search.</p>

M	E05Y 2400/8505	<ul style="list-style-type: none"> • • • User authentication, e.g. biometric <p><u>WARNING</u> Group E05Y 2400/8505 is incomplete pending reclassification of documents from groups E05Y 2400/80, E05Y 2400/85 and E05Y 2800/426. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	E05Y 2400/851	<ul style="list-style-type: none"> • • • Voice <p><u>WARNING</u> Group E05Y 2400/851 is incomplete pending reclassification of documents from groups E05Y 2400/80 and E05Y 2400/85. Groups E05Y 2400/80, E05Y 2400/85 and E05Y 2400/851 should be considered in order to perform a complete search.</p>
M	E05Y 2400/8515	<ul style="list-style-type: none"> • • • Smart phones; Tablets <p><u>WARNING</u> Group E05Y 2400/8515 is incomplete pending reclassification of documents from groups E05Y 2400/80 and E05Y 2400/85. Groups E05Y 2400/80, E05Y 2400/85 and E05Y 2400/8515 should be considered in order to perform a complete search.</p>
U	E05Y 2600/00	Mounting or coupling arrangements for elements provided for in this subclass
U	E05Y 2600/50	<ul style="list-style-type: none"> • Mounting methods; Positioning
M	E05Y 2600/56	<ul style="list-style-type: none"> • • Positioning, e.g. re-positioning, or pre-mounting <p><u>WARNING</u> Group E05Y 2600/56 is impacted by reclassification into group E05Y 2600/58. Groups E05Y 2600/56 and E05Y 2600/58 should be considered in order to perform a complete search.</p>
M	E05Y 2600/58	<ul style="list-style-type: none"> • • • by using indicators or markings, e.g. scales <p><u>WARNING</u> Group E05Y 2600/58 is incomplete pending reclassification of documents from groups E05Y 2400/818 and E05Y 2600/56. Groups E05Y 2400/818, E05Y 2600/56 and E05Y 2600/58 should be considered in order to perform a complete search.</p>
U	E05Y 2800/00	Details, accessories and auxiliary operations not otherwise provided for
M	E05Y 2800/26	<ul style="list-style-type: none"> • Form or shape <p><u>WARNING</u> Groups E05Y 2800/26, E05Y 2800/30 and E05Y 2800/31 are incomplete pending reclassification of documents from group E05Y 2800/264. All groups listed in this Warning should be considered in order to perform a complete search.</p>
D	E05Y 2800/264 —(Frozen)	<ul style="list-style-type: none"> • • compact <p><u>WARNING</u> Group E05Y 2800/264 is no longer used for the classification of documents as of May 1, 2024. The content of this group is being reclassified into groups E05Y 2800/26, E05Y 2800/269, E05Y 2800/30 and E05Y 2800/31.</p>

E05Y 2800/264

(Frozen)

(continued)

All groups listed in this Warning should be considered in order to perform a complete search.

M E05Y 2800/268

- cylindrical; disc-shaped; circular

WARNING

Group E05Y 2800/268 is impacted by reclassification into group E05Y 2800/269.

Groups E05Y 2800/268 and E05Y 2800/269 should be considered in order to perform a complete search.

M E05Y 2800/269

- ball shaped, e.g. spherical

WARNING

Group E05Y 2800/269 is incomplete pending reclassification of documents from groups E05Y 2800/264 and E05Y 2800/268.

Groups E05Y 2800/264, E05Y 2800/268 and E05Y 2800/269 should be considered in order to perform a complete search.

U E05Y 2800/40

- Physical or chemical protection

M E05Y 2800/404

- against component faults or failure

WARNING

Group E05Y 2800/404 is impacted by reclassification into group E05Y 2400/502.

Groups E05Y 2800/404 and E05Y 2400/502 should be considered in order to perform a complete search.

M E05Y 2800/41

- against finger injury

WARNING

Group E05Y 2800/41 is impacted by reclassification into group E05Y 2400/54.

Groups E05Y 2800/41 and E05Y 2400/54 should be considered in order to perform a complete search.

M E05Y 2800/414

- against high or low temperatures

WARNING

Group E05Y 2800/414 is impacted by reclassification into group E05Y 2400/528.

Groups E05Y 2800/414 and E05Y 2400/528 should be considered in order to perform a complete search.

U E05Y 2800/424

- against unintended use, e.g. protection against vandalism or sabotage

M E05Y 2800/426

- against unauthorised use, e.g. keys

WARNING

Group E05Y 2800/426 is impacted by reclassification into group E05Y 2400/8505.

Groups E05Y 2800/426 and E05Y 2400/8505 should be considered in order to perform a complete search.

M E05Y 2800/428

- against water or ice

WARNING

Group E05Y 2800/428 is impacted by reclassification into group E05Y 2400/447.

Groups E05Y 2800/428 and E05Y 2400/447 should be considered in order to perform a complete search.

U E05Y 2800/67

- Materials; Strength alteration thereof

M E05Y 2800/676 • • Plastics

WARNING

Group E05Y 2800/676 is incomplete pending reclassification of documents from group E05Y 2800/682.

Group E05Y 2800/676 is also impacted by reclassification into group E05Y 2800/683.

Groups E05Y 2800/676, E05Y 2800/682 and E05Y 2800/683 should be considered in order to perform a complete search.

M E05Y 2800/678 • • Elastomers

WARNING

Group E05Y 2800/678 is incomplete pending reclassification of documents from group E05Y 2800/682.

Group E05Y 2800/678 is also impacted by reclassification into group E05Y 2800/683.

Groups E05Y 2800/678, E05Y 2800/682 and E05Y 2800/683 should be considered in order to perform a complete search.

M E05Y 2800/682 • • Strength alteration by reinforcing, e.g. by applying ribs

WARNING

Group E05Y 2800/682 is impacted by reclassification into groups E05Y 2800/676, E05Y 2800/678 and E05Y 2800/683.

All groups listed in this Warning should be considered in order to perform a complete search.

M E05Y 2800/683 • • by fibre reinforcement

WARNING

Group E05Y 2800/683 is incomplete pending reclassification of documents from groups E05Y 2800/676, E05Y 2800/678 and E05Y 2800/682.

All groups listed in this Warning should be considered in order to perform a complete search.

Project: MP12823 (E21C)

U E21C 37/00 Other methods or devices for dislodging with or without loading (breaking-down by means inserted in slits [E21C 27/14](#))

M E21C 37/20 • by ~~ultrasonics~~ *ultrasonic waves*

Project: MP12828 (F02D)

U F02D 27/00 Controlling engines characterised by their being reversible

M F02D 27/02 • by performing a ~~programme~~ *program*

M F02D 28/00 ~~Programme~~-*Program* control of engines

Project: MP12828 (F15B)

U F15B 21/00 Common features of fluid actuator systems; Fluid-pressure actuator systems or details thereof, not covered by any other group of this subclass

M F15B 21/02 • Servomotor systems with ~~programme~~ *program* control derived from a store or timing device; Control devices therefor

Project: MP12828 (F15C)**U F15C 1/00****Circuit elements having no moving parts**NOTE

Group [F15C 1/22](#) takes precedence over groups [F15C 1/08](#) - [F15C 1/20](#).
 {This Note corresponds to IPC Note (1) relating to [F15C 1/08](#) - [F15C 1/20](#).}

M F15C 1/02

- Details {, e.g. special constructional devices for circuits with fluid elements, such as resistances, capacitive circuit elements; devices preventing reaction coupling in composite elements (servomotor systems adapted for maintaining constant speed [F15B 11/05](#)); Switch boards; ~~Programme~~*Program* devices (~~hydraulic programme control~~ [F15B 21/02](#) *hydraulic program control* [F15B 21/02](#))}

Project: MP12708 (F16D)**M F16D 2025/081**

- {Hydraulic devices that initiate movement of pistons in ~~slave~~*secondary* cylinders for actuating clutches, i.e. ~~master~~*primary* cylinders}

Project: MP12838 (F16D)**M F16D 47/00**

Systems of clutches, or clutches and couplings, comprising devices of types grouped under at least two of the ~~preceding guide headings~~ following sets of groups: [F16D 1/00](#) - [F16D 9/00](#), [F16D 11/00](#) - [F16D 23/00](#), [F16D 25/00](#) - [F16D 29/00](#), [F16D 31/00](#) - [F16D 39/00](#), [F16D 41/00](#) - [F16D 45/00](#) (freewheels combined with a clutch to lock the driving and driven members of the freewheel [F16D 41/04](#), [F16D 41/26](#))

Project: MP12708 (F16D)**U F16D 48/00****External control of clutches****U F16D 48/02**

- Control by fluid pressure

M F16D 2048/0212

- {Details of pistons for ~~master or slave~~*primary or secondary* cylinders especially adapted for fluid control}

U F16D 2048/0227

- {Source of pressure producing the clutch engagement or disengagement action within a circuit; Means for initiating command action in power assisted devices}

U F16D 2048/0233

- • {by rotary pump actuation}

M F16D 2048/0251

- • • {Electric motor driving a piston, e.g. for actuating the ~~master~~*primary* cylinder}

U F16D 66/00**Arrangements for monitoring working conditions, e.g. wear, temperature****U F16D 66/02**

- Apparatus for indicating wear

U F16D 66/021

- {using electrical detection or indication means}

U F16D 66/022

- • {indicating that a lining is worn to minimum allowable thickness}

M F16D 66/025

- • • {sensing the position of parts of the brake system other than the braking members, e.g. limit switches mounted on ~~master~~*primary* cylinders}

U F16D 2500/00**External control of clutches by electric or electronic means****U F16D 2500/50**

- Problem to be solved by the control system

U F16D 2500/501

- • Relating the actuator

M F16D 2500/5016

- • • Shifting operation, i.e. volume compensation of the ~~master~~*primary* cylinder due to wear, temperature changes or leaks in the cylinder

Project: MP12840 (F16H)

- U F16H 21/00 Gearings comprising primarily only links or levers, with or without slides ([F16H 23/00](#) takes precedence)
- M F16H 21/46 · with movements in three dimensions [\[3D\]](#)

Project: MP12840 (F21Y)

- U F21Y 2105/00 Planar light sources
- M F21Y 2105/10 · comprising a two-dimensional [\[2D\]](#) array of point-like light-generating elements
- M F21Y 2105/14 · · characterised by the overall shape of the two-dimensional [\[2D\]](#) array

Project: MP12838 (F22D)

- U F22D 1/00 Feed-water heaters, i.e. economisers or like preheaters
- M F22D 1/02 · with water tubes arranged in the boiler ~~furnace~~[furnaces](#), fire tubes or flue ways

Project: MP12828 (F23N)

- U F23N 5/00 Systems for controlling combustion (regulating fuel supply [F23N 1/00](#), regulating air supply or draught [F23N 3/00](#))
- M F23N 5/20 · with a time ~~programme~~[program](#) acting through electrical means, e.g. using time-delay relays
- M F23N 5/22 · with a time ~~programme~~[program](#) acting through mechanical means, e.g. using cams

Project: RP12819 (F25D)

- U F25D 3/00 Devices using other cold materials; Devices using cold-storage bodies
- M F25D 3/10 · using liquefied gases, e.g. liquid air {(~~for cooling semiconductor devices~~ [H01L 23/445](#) ~~for cooling semiconductor devices~~ [H10W 40/305](#))}

Project: RP12727 (F26B)

- M F26B DRYING SOLID MATERIALS OR OBJECTS BY REMOVING LIQUID THEREFROM ([drying devices for combines](#) [A01D 41/133](#); racks for drying fruit ~~and/or~~ vegetables [A01F 25/12](#); drying foodstuffs [A23](#); drying hair [A45D 20/00](#); body-drying implements [A47K 10/00](#); drying household articles [A47L](#), {e.g. ~~drying footwear~~ [A47L 23/20](#); } drying gases ~~and/or~~ vapours [B01D](#); chemical ~~and/or~~ physical processes for dewatering or like separating liquids from solids [B01D 43/00](#); centrifugal apparatus [B04](#); drying ceramics [C04B 33/30](#); drying yarns ~~and/or~~ fabrics in association with some other form of treatment [D06C](#); drying frames for laundry without heating or positive air circulation, domestic ~~and like laundry or spin-dryers~~ [driers](#), wringing ~~and/or~~ hot pressing laundry [D06F](#); furnaces, kilns, ovens [F27](#); {~~treatment including a drying step of semiconductor substrates, e.g. wafers, H01L 21/67028~~)}

NOTE

{In this subclass, it is desirable to add the indexing codes of groups [F26B 2200/00](#) or [F26B 2210/00](#)}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

F26B 11/06	covered by	F26B 11/0486
F26B 13/02	covered by	F26B 13/10
F26B 13/04	covered by	F26B 13/10
F26B 13/20	covered by	F26B 13/104

F26B 23/08 covered by [F26B 3/343](#), [F26B 3/347](#)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

- U F26B 5/00** **Drying solid materials or objects by processes not involving the application of heat (separating liquids from solids by straining [B01D](#); replacing liquids in wet solids by other liquids, e.g. water by spirit, [B01D 12/00](#); drying by electrophoresis [B01J](#))**
- M F26B 5/005
 - {by dipping them into or mixing them with a chemical liquid, e.g. organic; chemical, e.g. organic, dewatering aids ([F26B 3/005](#) takes precedence; using chemical vapours or gases [F26B 21/14](#) [F26B 21/40](#))}
- U F26B 17/00** **Machines or apparatus for drying materials in loose, plastic, or fluidised form, e.g. granules, staple fibres, with progressive movement ([F26B 13/00](#) takes precedence {; feed or discharge arrangements [F26B 25/002](#)})**
- M F26B 17/02
 - with movement performed by belts carrying the materials; with movement performed by belts ~~{or elements attached to endless belts or chains}~~ propelling the materials over stationary surfaces ~~{(the movement being in a helical path [F26B 15/26](#); [F26B 17/003](#), [F26B 17/263](#) take precedence)}~~
- C F26B 21/00** **Arrangements ~~{or duct systems, e.g. in combination with pallet boxes,} for supplying and~~ [for supplying or](#) controlling air or [other](#) gases for drying solid materials or objects ~~{([F26B 9/10](#) takes precedence; systems for vehicle body drying [B60S 3/002](#)); air conditioning or ventilation in general [F24F](#)}~~**
- WARNING**
Group [F26B 21/00](#) is impacted by reclassification into group [F26B 21/45](#). Groups [F26B 21/00](#) and [F26B 21/45](#) should be considered in order to perform a complete search.
- M F26B 21/001
 - ~~{Drying-air~~ [Air](#) generating units, e.g. movable; ~~or~~ independent of drying enclosure}
- M F26B 21/002
 - ~~{heating the drying air indirectly~~ [with means for indirect air heating](#), i.e. using a heat exchanger ~~heat exchangers~~ ~~{([F26B 23/001](#) takes precedence; closed-loop systems [F26B 23/10](#))}~~
- M F26B 21/003
 - ~~{Supply-air~~ [Air](#) or gas filters}
- D F26B 21/004
 - {Nozzle assemblies; Air knives; Air distributors; Blow boxes ([F26B 3/082](#), [F26B 13/104](#), [F26B 13/108](#), [F26B 21/006](#) take precedence)}

<administratively transferred to [F26B 21/50](#)>
- D F26B 21/005
 - {Drying-steam generating means}

<administratively transferred to [F26B 21/452](#)>
- M F26B 21/006
 - ~~{the gas supply or exhaust being effected~~ [with the air or gases passing](#) through hollow spaces or cores ~~in~~ [within](#) the materials or objects ~~to be dried~~, e.g. tubes, pipes; ~~or~~ bottles ~~{([F26B 9/003](#) and [F26B 9/103](#) take precedence)}~~
- M F26B 21/008
 - ~~{the objects being flexible articles, which may be blown up by the drying gas; e.g. tubes, sausage casings; e.g. inflatable tubes or sausage casings}~~ ~~{fire hoses [A62C 33/02](#)}~~
- D F26B 21/02
 - Circulating air or gases in closed cycles, e.g. wholly within the drying enclosure ([F26B 21/08](#), [F26B 21/14](#), ~~{[F26B 23/022](#)}~~ take precedence)

<administratively transferred to [F26B 21/20](#)>

- D F26B 21/022
- {with provisions for changing the drying gas flow pattern, e.g. by reversing gas flow, by moving the materials or objects through subsequent compartments, at least two of which have a different direction of gas flow (varying fan speed F26B 21/12)}
- <administratively transferred to [F26B 21/202](#)>
- D F26B 21/024
- • {by using movable fan units}
- <administratively transferred to [F26B 21/204](#)>
- D F26B 21/026
- • {by reversing fan rotation}
- <administratively transferred to [F26B 21/206](#)>
- D F26B 21/028
- • {by air valves, movable baffles or nozzle arrangements}
- <administratively transferred to [F26B 21/208](#)>
- D F26B 21/04
- • partly outside the drying enclosure {(F26B 21/006 takes precedence)}
- <administratively transferred to [F26B 21/25](#)>
- D F26B 21/06
- Controlling, e.g. regulating, parameters of gas supply (F26B 21/14 takes precedence; control in general G05)
- <administratively transferred to [F26B 21/30](#)>
- D F26B 21/08
- • Humidity
- <administratively transferred to [F26B 21/33](#)>
- D F26B 21/083
- • {by using sorbent or hygroscopic materials, e.g. chemical substances, molecular sieves}
- <administratively transferred to [F26B 21/331](#)>
- D F26B 21/086
- • {by condensing the moisture in the drying medium, which may be recycled, e.g. using a heat pump cycle}
- <administratively transferred to [F26B 21/333](#)>
- D F26B 21/10
- • Temperature; Pressure {(F26B 23/026 takes precedence)}
- <administratively transferred to [F26B 21/35](#)>
- D F26B 21/12
- • Velocity of flow; Quantity of flow {, e.g. by varying fan speed, by modifying cross flow area (F26B 21/004 takes precedence; changing air flow pattern F26B 21/022)}
- <administratively transferred to [F26B 21/37](#)>
- D F26B 21/14
- using gases or vapours other than air or steam {, e.g. inert gases}
- <administratively transferred to [F26B 21/40](#)>
- D F26B 21/145
- {Condensing the vapour onto the surface of the materials to be dried (using condensing steam F26B 3/00; using chemical liquids F26B 5/005)}
- <administratively transferred to [F26B 21/471](#)>
- N F26B 21/20
- *Circulating air or gases in closed cycles, e.g. wholly within the drying enclosure*
- N F26B 21/202
- • {with means for changing the flow pattern, e.g. by reversing gas flow or by moving the materials or objects through subsequent compartments, at least two of which have a different flow direction}
- N F26B 21/204
- • • {by using movable fan units}
- N F26B 21/206
- • • {by reversing fan rotation}
- N F26B 21/208
- • • {by air valves, movable baffles or nozzle arrangements}
- N F26B 21/25
- • partly outside the drying enclosure
- N F26B 21/30
- Controlling, e.g. regulating, parameters of gas supply
- N F26B 21/33
- • Humidity

N	F26B 21/331	<ul style="list-style-type: none"> • • {by using sorbent or hygroscopic materials, e.g. chemical substances or molecular sieves}
N	F26B 21/333	<ul style="list-style-type: none"> • • {by condensing the moisture in the drying medium, which may be recycled, e.g. using a heat pump cycle}
N	F26B 21/35	<ul style="list-style-type: none"> • • Temperature; Pressure
N	F26B 21/37	<ul style="list-style-type: none"> • • Velocity of flow; Quantity of flow
N	F26B 21/40	<ul style="list-style-type: none"> • using gases other than air
N	F26B 21/45	<ul style="list-style-type: none"> • • using steam <p><u>WARNING</u> Group F26B 21/45 is incomplete pending reclassification of documents from group F26B 21/00. Groups F26B 21/00 and F26B 21/45 should be considered in order to perform a complete search.</p>
N	F26B 21/452	<ul style="list-style-type: none"> • • {characterised by the steam generating means}
N	F26B 21/471	<ul style="list-style-type: none"> • • {condensing vapours onto the surface of the materials to be dried}
Q	F26B 21/50	<ul style="list-style-type: none"> • Ducting arrangements from the source of air or other gases to the materials or objects being dried <p><u>WARNING</u> Group F26B 21/50 is impacted by reclassification into group F26B 21/55. Groups F26B 21/50 and F26B 21/55 should be considered in order to perform a complete search.</p>
N	F26B 21/55	<ul style="list-style-type: none"> • • Outlets for directing or distributing the air or other gases <p><u>WARNING</u> Group F26B 21/55 is incomplete pending reclassification of documents from group F26B 21/50. Groups F26B 21/50 and F26B 21/55 should be considered in order to perform a complete search.</p>
M	F26B 23/00	Heating arrangements ({by radiation, e.g. infrared, ultraviolet, solar F26B-3/28 and F26B 3/30}; using heated air or other gases F26B 21/00)
U	F26B 23/001	<ul style="list-style-type: none"> • {using waste heat}
U	F26B 23/002	<ul style="list-style-type: none"> • • {recovered from dryer exhaust gases (F26B 23/022 takes precedence)}
M	F26B 23/005	<ul style="list-style-type: none"> • • • {using a closed cycle heat pump system (with recycling of drying medium F26B-21/086F26B 21/333); using a heat pipe system}
U	F26B 25/00	Details of general application not covered by group F26B 21/00 or F26B 23/00 (loading, conveying, and unloading in general B65G)
U	F26B 25/001	<ul style="list-style-type: none"> • {Handling, e.g. loading or unloading arrangements}
M	F26B 25/002	<ul style="list-style-type: none"> • • {for bulk goods (F26B-17/103 takes precedence)}
M	F26B 25/009	<ul style="list-style-type: none"> • {Alarm systems; Safety systemssystems, e.g. preventing fire and explosions (using inert gases F26B-21/14F26B 21/40)}
N	F26B 2200/00 - F26B 2210/00	Indexing schemes for drying specific solid materials or objects
M	F26B 2200/00	Drying processes and machines for solid materials characterised by the specific requirements of the drying goodgoods
D	F26B 2210/00 - F26B 2210/00	Drying processes and machines for solid materials or objects characterised by the specific requirements of the drying good
M	F26B 2210/00	Drying processes and machines for solid objects characterised by the specific requirements of the drying goodgoods

Project: MP12840 (G01C)

- U G01C 19/00 Gyroscopes; Turn-sensitive devices using vibrating masses; Turn-sensitive devices without moving masses; Measuring angular rate using gyroscopic effects**
- U G01C 19/56 • Turn-sensitive devices using vibrating masses, e.g. vibratory angular rate sensors based on Coriolis forces
- U G01C 19/567 • • using the phase shift of a vibration node or antinode
- M G01C 19/5677 • • • of essentially two-dimensional *[2D]* vibrators, e.g. ring-shaped vibrators
- M G01C 19/5691 • • • of essentially three-dimensional *[3D]* vibrators, e.g. wine glass-type vibrators

Project: MP12754 (G01G)

- U G01G 19/00 Weighing apparatus or methods adapted for special purposes not provided for in the preceding groups {(electric measuring arrangements involving comparison with a reference value *G01R 17/00*)}**
- U G01G 19/02 • for weighing wheeled or rolling bodies, e.g. vehicles
- M G01G 19/03 • • for weighing during motion (*{G01G 19/022, G01G 19/045,} G01G 19/04, G01G 19/07* take precedence *{check weighing of materials dispensed into removable containers G01G 15/00; weighing a continuous stream of material during flow G01G 11/00; G01G 19/02, e.g. G01G 19/022, G01G 19/045 take precedence}; check weighing of materials dispensed into removable containers G01G 15/00}*)

Project: MP12828 (G01G)

- U G01G 19/22 • for apportioning materials by weighing prior to mixing them (ratio regulation *G05D 11/00*)
- M G01G 19/38 • • *programme* *program* controlled, e.g. by perforated tape *(programme control in general G05B 19/00)*

Project: MP12823 (G01H)

- M G01H 17/00 Measuring mechanical vibrations or ultrasonic, sonic or infrasonic waves, not provided for in the preceding groups {other groups of this subclass (see provisionally also *G01H 1/00*)}**

Project: RP0752-F (G01J)

- M G01J 5/00 Radiation pyrometry, e.g. infrared or optical thermometry**

WARNING

Group G01J 5/00 is impacted by reclassification into group G01J 5/90.
Groups G01J 5/00 and G01J 5/90 should be considered in order to perform a complete search.

- M G01J 5/02 • Constructional details

WARNING

Group G01J 5/02 is impacted by reclassification into group G01J 5/05.
Groups G01J 5/02 and G01J 5/05 should be considered in order to perform a complete search.

- M G01J 5/026 • • {Control of working procedures of a pyrometer, other than calibration; Bandwidth calculation; Gain control}

WARNING

Group G01J 5/026 is impacted by reclassification into group G01J 5/90.

Groups G01J 5/026 and G01J 5/90 should be considered in order to perform a complete search.

Project: RP12819 (G01J)

- U G01J 5/04 • • Casings
- U G01J 5/041 • • • {Mountings in enclosures or in a particular environment}
- M G01J 5/045 • • • • {Sealings; Vacuum enclosures; Encapsulated packages; Wafer bonding structures; Getter arrangements (~~getter arrangements per se H01L 23/26 and H01L 21/3221~~getter arrangements per se H10W 76/48, H10P 36/03)}

Project: RP0752-F (G01J)

- M G01J 5/05 • • Means for preventing contamination of the components of the optical system; Means for preventing obstruction of the radiation path

WARNING

Group G01J 5/05 is incomplete pending reclassification of documents from group G01J 5/02.
Groups G01J 5/02 and G01J 5/05 should be considered in order to perform a complete search.

- U G01J 5/06 • • Arrangements for eliminating effects of disturbing radiation; Arrangements for compensating changes in sensitivity (for adjusting of solid angle of collected radiation [G01J 5/07](#); means for wavelength selection [G01J 5/0801](#))
- M G01J 5/064 • • • {Ambient temperature sensor; Housing temperature sensor; Constructional details thereof}

WARNING

Group G01J 5/064 is impacted by reclassification into group G01J 5/70.
Groups G01J 5/064 and G01J 5/70 should be considered in order to perform a complete search.

- M G01J 5/08 • • Optical arrangements

WARNING

Group G01J 5/08 is impacted by reclassification into groups G01J 5/0801 and G01J 5/0803.
Groups G01J 5/08, G01J 5/0801, and G01J 5/0803 should be considered in order to perform a complete search.

- M G01J 5/0801 • • • Means for wavelength selection or discrimination

WARNING

Group G01J 5/0801 is incomplete pending reclassification of documents from groups G01J 5/08 and G01J 5/0803.
Groups G01J 5/08, G01J 5/0803, and G01J 5/0801 should be considered in order to perform a complete search.

- M G01J 5/0803 • • • Arrangements for time-dependent attenuation of radiation signals

WARNING

Group G01J 5/0803 is incomplete pending reclassification of documents from groups G01J 5/08 and G01J 5/0816.
Group G01J 5/0803 is also impacted by reclassification into groups G01J 5/0801 and G01J 5/0879.
All groups listed in this Warning should be considered in order to perform a complete search.

M	G01J 5/0804	<ul style="list-style-type: none"> • • • Shutters <p><u>WARNING</u> Group G01J 5/0804 is impacted by reclassification into group G01J 5/0805. Groups G01J 5/0804 and G01J 5/0805 should be considered in order to perform a complete search.</p>
M	G01J 5/0805	<ul style="list-style-type: none"> • • • Means for chopping radiation <p><u>WARNING</u> Group G01J 5/0805 is incomplete pending reclassification of documents from group G01J 5/0804. Groups G01J 5/0804 and G01J 5/0805 should be considered in order to perform a complete search.</p>
M	G01J 5/0808	<ul style="list-style-type: none"> • • • Convex mirrors <p><u>WARNING</u> Group G01J 5/0808 is impacted by reclassification into groups G01J 5/0813 and G01J 5/0814. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	G01J 5/0813	<ul style="list-style-type: none"> • • Planar mirrors; Parallel phase plates <p><u>WARNING</u> Group G01J 5/0813 is incomplete pending reclassification of documents from group G01J 5/0808. Groups G01J 5/0808 and G01J 5/0813 should be considered in order to perform a complete search.</p>
M	G01J 5/0814	<ul style="list-style-type: none"> • • {Particular reflectors, e.g. faceted or dichroic mirrors} <p><u>WARNING</u> Group G01J 5/0814 is incomplete pending reclassification of documents from group G01J 5/0808. Groups G01J 5/0808 and G01J 5/0814 should be considered in order to perform a complete search.</p>
M	G01J 5/0816	<ul style="list-style-type: none"> • • {using attenuators} <p><u>WARNING</u> Group G01J 5/0816 is impacted by reclassification into group G01J 5/0803. Groups G01J 5/0816 and G01J 5/0803 should be considered in order to perform a complete search.</p>
M	G01J 5/0879	<ul style="list-style-type: none"> • • {Optical elements not provided otherwise, e.g. optical manifolds, holograms, cubic beamsplitters, non-dispersive prisms or particular coatings} <p><u>WARNING</u> Group G01J 5/0879 is incomplete pending reclassification of documents from group G01J 5/0803. Groups G01J 5/0803 and G01J 5/0879 should be considered in order to perform a complete search.</p>
U	G01J 5/10	<ul style="list-style-type: none"> • using electric radiation detectors
M	G01J 5/34	<ul style="list-style-type: none"> • • using capacitors, e.g. pyroelectric capacitors <p><u>WARNING</u> Group G01J 5/34 is impacted by reclassification into group G01J 5/35.</p>

~~Groups G01J 5/34 and G01J 5/35 should be considered in order to perform a complete search.~~

- M G01J 5/35
- • • Electrical features thereof

WARNING

Group G01J 5/35 is incomplete pending reclassification of documents from group G01J 5/34.
~~Groups G01J 5/34 and G01J 5/35 should be considered in order to perform a complete search.~~

- M G01J 5/70
- Passive compensation of pyrometer measurements, e.g. using ambient temperature sensing or sensing of temperature within housing

WARNING

Group G01J 5/70 is incomplete pending reclassification of documents from group G01J 5/064.
~~Groups G01J 5/064 and G01J 5/70 should be considered in order to perform a complete search.~~

- M G01J 5/90
- Testing, inspecting or checking operation of radiation pyrometers

WARNING

Group G01J 5/90 is incomplete pending reclassification of documents from group G01J 5/00.
~~Groups G01J 5/00 and G01J 5/90 should be considered in order to perform a complete search.~~

Project: RP12800 (G01K)

- U G01K 7/00 **Measuring temperature based on the use of electric or magnetic elements directly sensitive to heat (giving results other than momentary value of temperature [G01K 3/00](#)) {; Power supply therefor, e.g. using thermoelectric elements}**

- M G01K 7/16
- using resistive elements ~~(resistive elements per se H01C, H01L)~~

Project: MP12754 (G01K)

- U G01K 17/00 **Measuring quantity of heat (measuring temperature by calorimetry [G01K 3/00](#) - [G01K 11/00](#); specially adapted for measuring thermal properties of materials, e.g. specific heat, heat of combustion [G01N](#))**

- U G01K 17/06
- Measuring quantity of heat conveyed by flowing media, e.g. in heating systems ([G01K 17/02](#), [G01K 17/04](#) take precedence){e.g. the quantity of heat in a transporting medium, delivered to or consumed in an expenditure device}

- U G01K 17/08
- • based upon measurement of temperature difference {or of a temperature}

- M G01K 17/20
- • • across a radiating surface, combined with ascertainment of the heat ~~-~~transmission coefficient ~~{(materials therefor G01K 17/08)}~~

Project: MP12823 (G01M)

- U G01M 3/00 **Investigating fluid-tightness of structures**

- U G01M 3/02
- by using fluid or vacuum

- U G01M 3/04
- • by detecting the presence of fluid at the leakage point

- M G01M 3/24
- • • using infrasonic, sonic, or ultrasonic vibrations

Project: Unknown (G01N)

G01N **INVESTIGATING OR ANALYSING MATERIALS BY DETERMINING THEIR CHEMICAL OR PHYSICAL PROPERTIES (measuring or testing apparatus or processes other than immunoassay, involving enzymes or microorganisms [C12M](#), [C12Q](#))**

NOTES

1. { In this subclass, the following terms are used with the meanings indicated :
 - "investigating" means testing or determining;
 - "materials" includes solid, liquid or gaseous media, e.g. the atmosphere.
2. {Attention is drawn to the Notes following the title of class [G01](#).}
3. {Investigating the properties of materials, specially adapted for use in processes covered by subclass [B23K](#), is classified in group [B23K 31/12](#).}

WARNING

{In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

G01N 3/00 **Investigating strength properties of solid materials by application of mechanical stress**

NOTE

{This group covers the stressing of materials not only below but also beyond the elastic limit, e.g. until breaking occurs.}

U G01N 15/00 **Investigating characteristics of particles; Investigating permeability, pore-volume or surface-area of porous materials**

G01N 15/06 • Investigating concentration of particle suspensions (by weighing [G01N 5/00](#); investigating sedimentation of particle suspensions [G01N 15/04](#); investigating individual particles [G01N 15/10](#))

NOTE

{References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group and its subgroups:

- Investigating or analysing materials;
- by the use of optical means: [G01N 21/00](#), e.g. [G01N 21/47](#), [G01N 21/90](#);
- by other radiations or by particles: [G01N 23/00](#), e.g. [G01N 23/02](#), [G01N 23/201](#);
- by measuring impedance: [G01N 27/02](#), e.g. [G01N 27/06](#), [G01N 27/22](#);
- by electrochemical means: [G01N 27/00](#), e.g. [G01N 27/26](#);
- by measuring absorption of sonic or ultrasonic vibrations: [G01N 29/00](#), e.g. [G01N 29/02](#)

}

U G01N 15/10 • Investigating individual particles

U G01N 15/14 • • Optical investigation techniques, e.g. flow cytometry

G01N 15/1468 • • • {with spatial resolution of the texture or inner structure of the particle}

NOTE

{References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:

- counting objects disposed at random with size distinction [G06M 11/04](#)
- extraction of features from image for pattern recognition [G06V 10/40](#)
- specific image analysis method for the recognition of microscopic objects [G06V 20/69](#)

- image enhancement [G06T 5/00](#)
- image analysis [G06T 7/00](#)

}

G01N 21/00

Investigating or analysing materials by the use of optical means, i.e. using sub-millimetre waves, infrared, visible or ultraviolet light ([G01N 3/00](#) - [G01N 19/00](#) take precedence)

NOTE

{ This group does not cover the investigation of spectral properties of light per se, or measurements of the properties of materials where spectral properties of light are sensed and primary emphasis is placed on creating, detecting or analysing the spectrum providing that the properties of the materials to be investigated are of minor importance. Those subjects are covered by group [G01J 3/00](#). }

- U G01N 21/17 • Systems in which incident light is modified in accordance with the properties of the material investigated (where the material investigated is optically excited causing a change in wavelength of the incident light [G01N 21/63](#))
- U G01N 21/25 • • Colour; Spectral properties, i.e. comparison of effect of material on the light at two or more different wavelengths or wavelength bands
- U G01N 21/31 • • • Investigating relative effect of material at wavelengths characteristic of specific elements or molecules, e.g. atomic absorption spectrometry {([G01N 21/72](#) takes precedence)}
- U G01N 21/35 • • • • using infrared light ([G01N 21/39](#) takes precedence)
- U G01N 21/3504 • • • • • for analysing gases, e.g. multi-gas analysis
- G01N 21/3518 • • • • • Devices using gas filter correlation techniques; Devices using gas pressure modulation techniques

NOTE

{This group also covers devices without instrumental sources, e.g. radiometric-type devices using ambient infrared light. }

Project: RP12800 (G01N)

- U G01N 21/84 • Systems specially adapted for particular applications
- U G01N 21/88 • • Investigating the presence of flaws or contamination
- U G01N 21/95 • • • characterised by the material or shape of the object to be examined ([G01N 21/89](#) - [G01N 21/91](#), [G01N 21/94](#) take precedence)
- M G01N 21/9501 • • • • {Semiconductor wafers (~~manufacturing processes per se of semiconductor devices implementing a measuring step H01L 22/40~~ *manufacturing processes per se of semiconductor devices implementing a measuring step H10P 74/20*)}
- M G01N 21/956 • • • • Inspecting patterns on the surface of objects {(contactless testing of electronic circuits [G01R 31/308](#); testing currency [G07D](#); ~~manufacturing processes per se of semiconductor devices implementing a measuring step H01L 22/40~~ *manufacturing processes per se of semiconductor devices implementing a measuring step H10P 74/20*)}

Project: Unknown (G01N)

- U G01N 23/00 Investigating or analysing materials by the use of wave or particle radiation, e.g. X-rays or neutrons, not covered by groups [G01N 3/00](#) – [G01N 17/00](#), [G01N 21/00](#) or [G01N 22/00](#)

G01N 23/22

- by measuring secondary emission from the material

NOTE

{ Devices per se are classified in the relevant places, e.g. [H01J 37/00](#), [H01J 49/00](#) }

Project: MP12823 (G01N)**M G01N 29/00**

Investigating or analysing materials by the use of ultrasonic, sonic or infrasonic waves; Visualisation of the interior of objects by transmitting ultrasonic or sonic waves through the object ([G01N 3/00](#), ~~[G01N 5/00](#)~~, ~~[G01N 7/00](#)~~, ~~[G01N 9/00](#)~~, ~~[G01N 11/00](#)~~, ~~[G01N 13/00](#)~~, ~~[G01N 15/00](#)~~, ~~[G01N 17/00](#)~~, ~~[G01N 19/00](#)~~, ~~[G01N 21/00](#)~~, ~~[G01N 22/00](#)~~, ~~[G01N 23/00](#)~~, ~~[G01N 24/00](#)~~, ~~[G01N 25/00](#)~~, [G01N 27/00](#) take precedence)

Project: Unknown (G01N)**G01N 30/00**

Investigating or analysing materials by separation into components using adsorption, absorption or similar phenomena or using ion-exchange, e.g. chromatography {or field flow fractionation} ([G01N 3/00](#), [G01N 5/00](#), [G01N 7/00](#), [G01N 9/00](#), [G01N 11/00](#), [G01N 13/00](#), [G01N 15/00](#), [G01N 17/00](#), [G01N 19/00](#), [G01N 21/00](#), [G01N 22/00](#), [G01N 23/00](#), [G01N 24/00](#), [G01N 25/00](#), [G01N 27/00](#), [G01N 29/00](#) take precedence)

NOTE

{ In this group, the following term is used with the meaning indicated:

- "conditioning" refers to the adjustment or control of environmental parameters, e.g. temperature or pressure.

}

U G01N 30/02

- Column chromatography

U G01N 30/60

- • Construction of the column

G01N 30/6095

- • • {Micromachined or nanomachined, e.g. micro- or nanosize}

NOTE

{Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "microstructural devices" and "microstructural systems" and the Notes following the title of subclass [B82B](#) relating to "nanostructures" .}

U G01N 31/00

Investigating or analysing non-biological materials by the use of the chemical methods specified in the subgroup; Apparatus specially adapted for such methods

U G01N 31/005

- {investigating the presence of an element by oxidation ([G01N 31/12](#) takes precedence)}

G01N 31/007

- • {by measuring the quantity of water resulting therefrom ([G01N 31/12](#) takes precedence)}

NOTE

†

G01N 33/00

Investigating or analysing materials by specific methods not covered by groups [G01N 1/00](#) - [G01N 31/00](#)

NOTE

In groups [G01N 33/52](#) - [G01N 33/98](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

{This Note corresponds to IPC Note (1) relating to [G01N 33/52](#) - [G01N 33/98](#).}

- U G01N 33/48
 - Biological material, e.g. blood, urine ([G01N 33/02](#), [G01N 33/26](#), [G01N 33/44](#), [G01N 33/46](#) take precedence); Haemocytometers (counting blood corpuscles distributed over a surface by scanning the surface [G06M 11/02](#))
- G01N 33/50
 - Chemical analysis of biological material, e.g. blood, urine; Testing involving biospecific ligand binding methods; Immunological testing (measuring or testing processes involving enzymes or microorganisms, compositions or test papers therefor; processes for forming such compositions, condition responsive control in microbiological or enzymological processes [C12Q](#))

NOTES

1. {In this group, the following expression is used with the meaning indicated: "involving", when used in relation to a material, includes the testing for the material as well as employing the material as a determinant or reactant in a test for a different material. }
2. {In groups [G01N 33/52](#) – [G01N 33/98](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place. }
3. {Documents relating to new peptides or new DNA or its corresponding mRNA, encoding for the peptides, and their use in measuring or testing processes are classified in subclass [C07K](#) or in group [C12N 9/00](#) according to the peptides, with the appropriate indexing codes relating to their use in diagnostics. However, if the investigating or analysing aspects are of interest, the documents are classified in this group. }

Project: RP12839 (G01N)

- U G01N 33/53
 - • • Immunoassay; Biospecific binding assay; Materials therefor
- U G01N 33/573
 - • • • for enzymes or isoenzymes
- M G01N 33/5735
 - • • • {co-enzymes or co-factors, e.g. NAD⁺ or ATP}
- D G01N 33/574
 - • • • for cancer

NOTE

In this group:

- relevant features relating to a specifically defined cancer are only classified in groups G01N 33/57407 – G01N 33/57449
- relevant features describing cancer markers related to multiple forms of cancer are classified in groups G01N 33/57484 – G01N 33/57496

<administratively transferred to [G01N 33/575](#)>

- D G01N 33/57407
 - • • • {Specifically defined cancers}

<administratively transferred to [G01N 33/57557](#)>

- D G01N 33/57411
 - • • • {of cervix}

<administratively transferred to [G01N 33/5755](#)>

- D G01N 33/57415
 - • • • {of breast}

<administratively transferred to [G01N 33/57515](#)>

- D G01N 33/57419
 - • • • {of colon}

<administratively transferred to [G01N 33/57535](#)>

- D G01N 33/57423
 - • • • {of lung}

<administratively transferred to [G01N 33/5752](#)>

- D G01N 33/57426
 - • • • {leukemia}

<administratively transferred to [G01N 33/57505](#)>

- D G01N 33/5743 {of skin, e.g. melanoma}
<administratively transferred to [G01N 33/5751](#)>
- D G01N 33/57434 {of prostate}
<administratively transferred to [G01N 33/57555](#)>
- D G01N 33/57438 {of liver, pancreas or kidney}
<administratively transferred to [G01N 33/57525](#)>
- D G01N 33/57442 {of the uterus and endometrial}
<administratively transferred to [G01N 33/5755](#)>
- D G01N 33/57446 {of stomach or intestine}
<administratively transferred to [G01N 33/5753](#)>
- D G01N 33/57449 {of ovaries}
<administratively transferred to [G01N 33/57545](#)>
- D G01N 33/57469 {involving tumor associated glycolinkage, i.e. TAG}
<administratively transferred to [G01N 33/5756](#)>
- D G01N 33/57473 {involving carcinoembryonic antigen, i.e. CEA}
<administratively transferred to [G01N 33/57565](#)>
- D G01N 33/57476 {involving oncofetal proteins}
<administratively transferred to [G01N 33/5757](#)>
- D G01N 33/5748 {involving oncogenic proteins}
<administratively transferred to [G01N 33/57575](#)>
- D G01N 33/57484 {involving compounds serving as markers for tumor, cancer, neoplasia, e.g. cellular determinants, receptors, heat shock/stress proteins, A-protein, oligosaccharides, metabolites}
<administratively transferred to [G01N 33/5758](#)>
- D G01N 33/57488 {involving compounds identifiable in body fluids}
<administratively transferred to [G01N 33/57585](#)>
- D G01N 33/57492 {involving compounds localized on the membrane of tumor or cancer cells}
<administratively transferred to [G01N 33/5759](#)>
- D G01N 33/57496 {involving intracellular compounds}
<administratively transferred to [G01N 33/57595](#)>
- N G01N 33/575 for cancer

NOTE*{In this group:*

- *relevant features relating to specifically defined cancers are only classified in groups [G01N 33/57505](#) - [G01N 33/57557](#);*
- *relevant features describing cancer markers related to multiple forms of cancer are classified in groups [G01N 33/5756](#) - [G01N 33/57595](#).*

}

- N G01N 33/57505 of the blood, e.g. leukaemia

WARNING

*{Group [G01N 33/57505](#) is incomplete pending reclassification of documents from group [G01N 33/57557](#).
Groups [G01N 33/57557](#) and [G01N 33/57505](#) should be considered in order to perform a complete search.}*

- N G01N 33/5751 of the skin, e.g. melanoma
- N G01N 33/57515 of the breast
- N G01N 33/5752 of the lungs
- Q G01N 33/57525 of the liver or pancreas
- WARNING
 {Group [G01N 33/57525](#) is impacted by reclassification into group [G01N 33/5754](#).
 Groups [G01N 33/57525](#) and [G01N 33/5754](#) should be considered in order to perform a complete search.}
- Q G01N 33/5753 of the stomach or small intestine
- WARNING
 {Group [G01N 33/5753](#) is impacted by reclassification into group [G01N 33/57535](#).
 Groups [G01N 33/5753](#) and [G01N 33/57535](#) should be considered in order to perform a complete search.}
- N G01N 33/57535 of the large intestine, e.g. colon, rectum or anus
- WARNING
 {Group [G01N 33/57535](#) is incomplete pending reclassification of documents from group [G01N 33/5753](#).
 Groups [G01N 33/5753](#) and [G01N 33/57535](#) should be considered in order to perform a complete search.}
- N G01N 33/5754 of the renal system, e.g. kidneys or ureters
- WARNING
 {Group [G01N 33/5754](#) is incomplete pending reclassification of documents from groups [G01N 33/57525](#) and [G01N 33/57557](#).
 Groups [G01N 33/57525](#), [G01N 33/57557](#) and [G01N 33/5754](#) should be considered in order to perform a complete search.}
- N G01N 33/57545 of the ovaries
- N G01N 33/5755 of the uterine cervix, uterine corpus or endometrium
- N G01N 33/57555 of the prostate
- Q G01N 33/57557 {of other specific parts of the body, e.g. brain}
- WARNING
 {Group [G01N 33/57557](#) is impacted by reclassification into groups [G01N 33/57505](#) and [G01N 33/5754](#).
 Groups [G01N 33/57557](#), [G01N 33/57505](#) and [G01N 33/5754](#) should be considered in order to perform a complete search.}
- N G01N 33/5756 {involving tumour-associated glycolinkage [TAG]}
- N G01N 33/57565 {involving carcinoembryonic antigen [CEA]}
- N G01N 33/5757 {involving oncofoetal proteins}
- N G01N 33/57575 {involving oncogenic proteins}
- N G01N 33/5758 {involving compounds serving as markers for tumours, cancers or neoplasias, e.g. cellular determinants, receptors, heat shock/stress proteins, A-protein, oligosaccharides or metabolites}
- N G01N 33/57585 {involving compounds identifiable in body fluids}
- N G01N 33/5759 {involving compounds localised on the membrane of tumour or cancer cells}
- N G01N 33/57595 {involving intracellular compounds}

Project: MP12754 (G01N)

- M G01N 33/577 . . . involving monoclonal antibodies {binding reaction mechanisms characterised by the use of monoclonal antibodies ([G01N 33/5302](#) - [G01N 33/576](#) take precedence)}; ~~monoclonal antibodies per se are classified with their corresponding antigens; (G01N 33/53 - G01N 33/576 take precedence)}~~

Project: Unknown (G01N)

G01N 2333/00 Assays involving biological materials from specific organisms or of a specific nature

NOTE

{ In groups [G01N 2333/47](#) - [G01N 2333/994](#) indexing codes are assigned according to the chemical nature of the materials irrespective of the source organism. }

G01N 2333/195 . from bacteria

NOTE

{ In groups [G01N 2333/20](#) - [G01N 2333/365](#), where appropriate, after the bacteria terminology, the indication of the order (O), family (F) or genus (G) of the bacteria is given in brackets. }

G01N 2333/90 . Enzymes; Proenzymes

NOTE

{Enzymes are generally categorised below according to the "Nomenclature and Classification of Enzymes" of the International Commission on Enzymes. Where appropriate, this designation appears in the groups below in parenthesis.}

G01N 2560/00 Chemical aspects of mass spectrometric analysis of biological material

NOTES

- {Analysis of proteins, peptides or amino acids by mass spectrometry is classified in [G01N 33/6848](#) and [G01N 33/6851](#). }
- {Analysis of nucleic acids by mass spectrometry is classified in [C12Q 1/6872](#), [C12Q 2563/167](#) and [C12Q 2565/627](#). }

Project: RP12839 (G01N)

G01N 2800/00 Detection or diagnosis of diseases

NOTES

- {The indexing codes [G01N 2800/02](#) - [G01N 2800/44](#) are based on The Merck Manual of Diagnosis and Therapy (17th. Edition, Mark Beers and Robert Berkow). }
- {For diseases caused by microorganism where the microorganism is detected, which subject matter is classified in [G01N 33/569](#) and subgroups, [G01N 33/571](#) or [G01N 33/576](#), the present indexing scheme is not used. }
- ~~For cancers, which subject matter is classified in G01N 33/574 and subgroups, the~~ {The present indexing scheme is not used ~~for cancers classified in group G01N 33/575.-}~~ }
- {When indexing in the following scheme, the organ takes precedence, e.g. inflammation of the skin is indexed with dermatological disorders and not with immunology or allergic disorders, asthma with pulmonary disorders and not with immunology or allergic disorders. Exception is made for thrombosis which is indexed with haematological disorders. }

Project: Unknown (G01N)

G01N 2800/26

- Infectious diseases, e.g. generalised sepsis

NOTE

{Indexing code [G01N 2800/26](#) is not used for documents already classified in one or more of groups [G01N 33/569](#) and subgroups, [G01N 33/571](#) or [G01N 33/576](#) and subgroups }

Project: MP12823 (G01P)**M G01P**

MEASURING LINEAR OR ANGULAR SPEED, ACCELERATION, DECELERATION, OR SHOCK; INDICATING PRESENCE, ABSENCE, OR DIRECTION, OF MOVEMENT (measuring or recording blood flow [A61B 5/02](#), [A61B 8/06](#); monitoring speed or deceleration of electrically-propelled vehicles [B60L 3/00](#); vehicle lighting systems adapted to indicate speed [B60Q 1/54](#); determining position or course in navigation, measuring ground distance in geodesy or surveying [G01C](#); combined measuring devices for measuring two or more variables of movement [G01C 23/00](#); measuring velocity of sound [G01H](#); measuring velocity of light [G01J 7/00](#); measuring direction or velocity of solid objects by reception or emission of radiowaves or other waves and based on propagation effects, e.g. Doppler effect, propagation time, direction of propagation, [G01S](#); measuring speed of nuclear radiation [G01T](#); measuring acceleration of gravity [G01V](#); {measuring or recording the speed of trains [B61L 23/00](#); speed indicators incorporated in motor vehicles [B60K 35/00](#); measuring frequency or phase [G01R](#); traffic control [G08G](#)})

NOTES

1. This subclass covers measuring direction or velocity of flowing fluids using propagation effects of radiowaves or other waves caused in the fluid itself, e.g. by laser anemometer; or by ultrasonic flowmeter with "sing-around-system".
2. Attention is drawn to the Notes following the title of class [G01](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12754 (G01R)**U G01R 1/00**

Details of instruments or arrangements of the types included in groups [G01R 5/00](#) - [G01R 13/00](#) and [G01R 31/00](#) (constructional details particular to {electromechanical} arrangements for measuring the electric consumption [G01R 11/02](#))

U G01R 1/02

- General constructional details

U G01R 1/04

- • Housings; Supporting members; Arrangements of terminals

U G01R 1/0408

- • • {Test fixtures or contact fields; Connectors or connecting adaptors; Test clips; Test sockets ([G01R 1/067](#) takes precedence; mass production testing systems [G01R 31/59](#); testing of connections [G01R 31/66](#); for testing printed circuit boards [G01R 31/2808](#))}

U G01R 1/0433

- • • • {Sockets for IC's or transistors}

M G01R 1/0483

- • • • • {Sockets for ~~un-leaded~~unleaded IC's having matrix type contact fields, e.g. BGA or PGA devices; Sockets for unpackaged, naked chips ~~(for IC's with connecting points around the edges only G01R 1/0433)~~}

- U G01R 19/00** Arrangements for measuring currents or voltages or for indicating presence or sign thereof (**G01R 5/00** takes precedence; for measuring bioelectric currents or voltages **A61B 5/24**)
- NOTE**
Within groups **G01R 19/02** - **G01R 19/32**, group **G01R 19/28** takes precedence. Groups **G01R 19/18** - **G01R 19/257** take precedence over groups **G01R 19/02** - **G01R 19/17** and **G01R 19/30**.
- M G01R 19/0084** • {~~measuring~~ *Measuring* voltage only {~~all subgroups of G01R 19/00 take precedence~~}}
- M G01R 19/0092** • {~~measuring~~ *Measuring* current only {~~all subgroups of G01R 19/00 take precedence~~}}

Project: RP12800 (G01R)

- M G01R 31/00** Arrangements for testing electric properties; Arrangements for locating electric faults; Arrangements for electrical testing characterised by what is being tested not provided for elsewhere ({~~measuring superconductive properties **G01R 33/1238**;~~ ~~testing or measuring semiconductors or solid state devices during manufacture **H01L 22/00**;~~ testing line transmission systems **H04B 3/46**; *testing or measuring semiconductors or solid state devices during manufacture **H10P 74/00***})
- NOTE**
Groups **G01R 31/08**, **G01R 31/12**, **G01R 31/327**, **G01R 31/24**, **G01R 31/26**, **G01R 31/34**, **G01R 31/36**, **G01R 31/40**, **G01R 31/44** take precedence over group **G01R 31/50**.

Project: MP12828 (G01R)

- U G01R 31/08** • Locating faults in cables, transmission lines, or networks
- M G01R 31/10** • • by increasing destruction at fault, e.g. burning-in by using a pulse generator operating a special ~~programme~~ *program*

Project: RP12800 (G01R)

- M G01R 31/26** • Testing of individual semiconductor devices (~~testing or measuring during manufacture or treatment **H01L 22/00**;~~ testing of photovoltaic devices **H02S 50/10**; *testing or measuring during manufacture or treatment **H10P 74/00***})
- M G01R 31/2648** • • {Characterising semiconductor materials (testing of materials or semi-finished products **G01R 31/2831**; ~~testing during manufacture **H01L 22/00**;~~ *testing during manufacture **H10P 74/00***})

Project: MP12754 (G01R)

- U G01R 31/28** • Testing of electronic circuits, e.g. by signal tracer ({EMC, EMP or similar testing of electronic circuits **G01R 31/002**;} testing for short-circuits, discontinuities, leakage or incorrect line connection **G01R 31/50**; checking computers {or computer components} **G06F 11/00**; checking static stores for correct operation **G11C 29/00** {; testing receivers or transmitters of transmission systems **H04B 17/00**})
- U G01R 31/2801** • • {Testing of printed circuits, backplanes, motherboards, hybrid circuits or carriers for multichip packages [MCP] (**G01R 31/318508** takes precedence; contactless testing **G01R 31/302**; testing contacts or connections **G01R 31/66**})

- U G01R 31/281 . . . {Specific types of tests or tests for a specific type of fault, e.g. thermal mapping, shorts testing ([G01R 31/2818](#) takes precedence)}
- M G01R 31/2813 {Checking the presence, location, orientation or value, e.g. resistance, of components or conductors (orientation of the DUT with respect to the test fixture [G01R 1/06705](#), ~~G01R 31/281~~)}

Project: RP12800 (G01R)

- U G01R 31/282 . . {Testing of electronic circuits specially adapted for particular applications not provided for elsewhere ([G01R 31/2801](#) and [G01R 31/2851](#) take precedence)}
- NOTE
 {References listed below indicate CPC places which could also be of interest when carrying out a search in respect of the subject matter covered by the preceding group:
- testing of individual LEDs [G01R 31/2635](#)
 - testing of lamps [G01R 31/44](#)
 - testing of displays and display drivers, e.g. LCDs [G09G 3/006](#)
 - testing of ADCs or DACs [H03M 1/1071](#).
- }
- M G01R 31/2831 . . . {Testing of materials or semi-finished products, e.g. semiconductor wafers or substrates ([G01R 31/318511](#) takes precedence; ~~testing during manufacture H01L 22/00~~; *testing during manufacture H10P 74/00*)}
 - U G01R 31/2851 . . {Testing of integrated circuits [IC] ([G01R 31/317](#) takes precedence; testing individual devices [G01R 31/26](#); testing printed circuits [G01R 31/2801](#))}
 - M G01R 31/2893 . . . {Handling, conveying or loading, e.g. belts, boats, vacuum fingers ([G01R 31/2867](#) takes precedence; ~~handling semiconductor devices or wafers during manufacture or treatment H01L 21/67~~; *handling semiconductor devices or wafers during manufacture or treatment H10P 72/00*)}

Project: RP12819 (G01R)

- M G01R 31/2896 . . . {Testing of IC packages; Test features related to IC packages (~~containers per se H01L 23/02~~, ~~encapsulations per se H01L 23/28~~ *containers per se H10W 76/10*, *encapsulations per se H10W 74/00*)}
- U G01R 33/00 Arrangements or instruments for measuring magnetic variables**
- M G01R 33/0047 . {Housings or packaging of magnetic sensors (~~packaging of semiconductor devices H01L 23/00~~ *packaging of semiconductor devices H10W 99/00*); Holders}

Project: MP12823 (G01S)

- M G01S 3/00 **Direction-finders for determining the direction from which infrasonic, sonic, ultrasonic, or electromagnetic waves, or particle emission, not having a directional significance, are being received (position-fixing by co-ordinating a plurality of determinations of direction or position lines [G01S 5/00](#))**

Project: MP12754 (G01S)

- U G01S 3/02 . using radio waves
- U G01S 3/14 . . Systems for determining direction or deviation from predetermined direction {(aerial arrangements for changing or varying the orientation or the shape of the directional pattern [H01Q 3/00](#); combinations of different interacting aerial units for giving a desired directional characteristic [H01Q 21/29](#); aerials or aerial systems providing at least two radiation patterns [H01Q 25/00](#))}

- M G01S 3/58 • • • Rotating or oscillating beam systems using continuous analysis of received signal for determining direction in the plane of rotation or oscillation or for determining deviation from a predetermined direction in such a plane
(~~G01S 3/14~~ ~~G01S 3/16~~ takes precedence)

Project: MP12823 (G01S)

- U G01S 5/00 **Position-fixing by co-ordinating two or more direction or position line determinations; Position-fixing by co-ordinating two or more distance determinations {(using active systems [G01S 13/00](#), [G01S 15/00](#), [G01S 17/00](#))}**
- M G01S 5/18 • using ultrasonic, sonic, or infrasonic waves

Project: MP12840 (G01S)

- U G01S 7/00 **Details of systems according to groups [G01S 13/00](#), [G01S 15/00](#), [G01S 17/00](#)**
- U G01S 7/02 • of systems according to group [G01S 13/00](#)
- U G01S 7/04 • • Display arrangements
- U G01S 7/06 • • • Cathode-ray tube displays {or other two dimensional or three-dimensional displays}
- M G01S 7/10 • • • Providing two-dimensional ~~and~~ [\[2D\]](#) co-ordinated display of distance and direction
- M G01S 7/20 • • • Stereoscopic displays; Three-dimensional [\[3D\]](#) displays; Pseudo-~~three-dimensional~~ [3D](#) displays

Project: MP12823 (G01S)

- U G01S 11/00 **Systems for determining distance or velocity not using reflection or reradiation (position-fixing by co-ordinating two or more distance determinations [G01S 5/00](#))**
- M G01S 11/14 • using ultrasonic, sonic, or infrasonic waves

Project: MP12840 (G01S)

- U G01S 13/00 **Systems using the reflection or reradiation of radio waves, e.g. radar systems; Analogous systems using reflection or reradiation of waves whose nature or wavelength is irrelevant or unspecified**

NOTES

1. This group covers :
 - systems for detecting the presence of an object, e.g. by reflection or reradiation from the object itself, or from a transponder associated with the object, for determining the distance or relative velocity of an object, for providing a co-ordinated display of the distance and direction of an object or for obtaining an image thereof;
 - systems arranged for mounting on a moving craft or vehicle and using the reflection of waves from an extended surface external to the craft, e.g. the surface of the earth, to determine the velocity and direction of motion of the craft relative to the surface.
2. This group does not cover :
 - systems for determining the direction of an object by means not employing reflection or reradiation, which are covered by groups [G01S 1/00](#) or [G01S 3/00](#);
 - systems for determining distance or velocity of an object by means not employing reflection or reradiation, which are covered by group [G01S 11/00](#).

- U G01S 13/66 • Radar-tracking systems; Analogous systems

- M G01S 13/72
 - • for two-dimensional [\[2D\]](#) tracking, e.g. combination of angle and range tracking, track-while-scan radar
- M G01S 17/894
 - • • [3D Three-dimensional \[3D\]](#) imaging with simultaneous measurement of time-of-flight at a [2D two-dimensional \[2D\]](#) array of receiver pixels, e.g. time-of-flight cameras or flash lidar

Project: MP12754 (G01T)

- U G01T 1/00 **Measuring X-radiation, gamma radiation, corpuscular radiation, or cosmic radiation ([G01T 3/00](#), [G01T 5/00](#) take precedence)**
- U G01T 1/16
 - Measuring radiation intensity ([G01T 1/29](#) takes precedence {; self-powered detectors [G01T 3/006](#); using an ionisation chamber filled with a liquid or solid, e.g. frozen liquid, dielectric [G01T 3/008](#)})
- M G01T 1/1603
 - • {with a combination of at least two different types of ~~detector~~ [detectors](#)} ([see provisionally also G01T 1/16](#))
- M G01T 1/1606
 - • {with other specified detectors not provided for in the other ~~sub-~~ [groups](#) [subgroups](#) of [G01T 1/16](#) ([see provisionally also G01T 1/16](#))}
- U G01T 1/161
 - • Applications in the field of nuclear medicine, e.g. in vivo counting {(apparatus for radiation diagnosis [A61B 6/00](#))}
- M G01T 1/163
 - • • Whole-body counters ~~{(hand or feet contamination measurement G01T 1/167; lung, brain, thyroid, kidney or the like counting G01T 1/16)}~~

Project: RP12802 (G01T)

- U G01T 1/164
 - • • Scintigraphy
- U G01T 1/166
 - • • • involving relative movement between detector and subject {(scanners in general without using scintigraphy [G01T 1/2964](#))}
- M G01T 1/1663
 - • • • • {Processing methods of scan data, e.g. involving contrast enhancement, background reduction, smoothing, motion correction, dual radio-isotope scanning, computer processing (for measuring spatial distribution of radiation [G01T 1/2992](#); general purpose image data processing [G06T 1/00](#); computerized tomography [G06T 11/003](#) [G06T 12/00](#)); Ancillary equipment (~~colour printers G01T 1/1666~~)}

Project: MP12754 (G01T)

- U G01T 1/17
 - • Circuit arrangements not adapted to a particular type of detector {(pulse-selection circuits [H03K](#), [G01R](#))}
- M G01T 1/171
 - • • {Compensation of dead-time counting losses ([see provisionally also G01T 1/17](#))}
- M G01T 1/172
 - • • with coincidence circuit arrangements ([G01T 1/178](#) takes precedence {; combination of detectors, [see see G01T 1/1603](#), [G01T 1/30](#), ~~G01T 1/361~~)}
- U G01T 1/20
 - • with scintillation detectors
- U G01T 1/202
 - • • the detector being a crystal
- M G01T 1/2023
 - • • • {Selection of materials ([see provisionally also G01T 1/202](#))}
- M G01T 1/2026
 - • • • {Well-type detectors ([see provisionally also G01T 1/202](#))}
- U G01T 1/203
 - • • the detector being made of plastics
- M G01T 1/2033
 - • • • {Selection of materials ([see provisionally also G01T 1/203](#))}
- M G01T 1/2036
 - • • • {Well-type detectors ([see provisionally also G01T 1/203](#))}

Project: RP12819 (G01T)

- U G01T 1/24
 - • with semiconductor detectors

- M G01T 1/242
 - • {Stacked detectors, e.g. for depth information (~~constructional or manufacturing details H01L 25/00~~ *constructional or manufacturing details H10W 90/00*)}
- M G01T 1/243
 - • {Modular detectors, e.g. arrays formed from self contained units (~~constructional or manufacturing details H01L 25/00~~ *constructional or manufacturing details H10W 90/00*)}

Project: RP12802 (G01T)

- U G01T 1/29
 - Measurement performed on radiation beams, e.g. position or section of the beam; Measurement of spatial distribution of radiation
- U G01T 1/2914
 - {Measurement of spatial distribution of radiation}
- M G01T 1/2992
 - • {Radioisotope data or image processing not related to a particular imaging system; Off-line processing of pictures, e.g. rescanners (for measuring radiation intensity [G01T 1/1663](#); digital computing or data processing equipment or methods specially adapted for nuclear physics or nuclear engineering [G06F 15/00](#); general purpose image data processing [G06T 1/00](#); computerized tomography ~~G06T 11/003~~ *G06T 12/00*)}

Project: MP12754 (G01T)

- U G01T 1/36
 - Measuring spectral distribution of X-rays or of nuclear radiation {spectrometry (pulse selection circuits per se [H03K](#); investigation of materials by radiation diffraction [G01N 23/20](#); spectrometer tubes [H01J 49/00](#))}
- M G01T 1/361
 - • {with a combination of detectors of different types, e.g. anti-Compton spectrometers (intensity measurement with a combination of detectors [G01T 1/1603](#); ~~with coincidence circuit G01T 1/172~~; ~~se provisionally also G01T 1/36~~)}

NOTE

{G01T 1/361 takes precedence over G01T 1/362.}

- M G01T 1/362
 - • {with scintillation detectors (~~see provisionally also G01T 1/36, G01T 1/20~~)}
- M G01T 1/365
 - • {with ionisation detectors, e.g. proportional counter (~~see provisionally also G01T 1/36~~)}
- M G01T 1/366
 - • {with semi-conductor detectors (~~see provisionally also G01T 1/36~~)}
- M G01T 1/367
 - • {with resistance detectors (~~see provisionally also G01T 1/36~~)}
- M G01T 1/368
 - • {with secondary-emission detectors (~~see provisionally G01T 1/36~~)}

U G01T 3/00**Measuring neutron radiation ([G01T 5/00](#) takes precedence)**

- U G01T 3/001
 - {Spectrometry}
- M G01T 3/005
 - • {Time-of-flight spectrometers (~~see provisionally also G01T 3/00~~)}

U G01T 5/00**Recording of movements or tracks of particles (spark chambers [H01J 47/00](#)); Processing or analysis of such tracks**

- M G01T 5/002
 - {using a combination of several movement of track recording devices (~~detectors associated with recording chambers and only serving to trigger these chambers, see the appropriate groups of the chamber, e.g. G01T 5/04 - G01T 5/08; see provisionally also G01T 5/00 and other sub-groups~~)}

Project: RP12800 (G01T)

- M G01T 5/08
 - Scintillation chambers (discharge tubes [H01J 40/00](#), [H01J 47/00](#); ~~semiconductor devices H01L~~)

Project: MP12754 (G01W)

M G01W **METEOROLOGY** (~~influencing weather conditions A01G 15/00; dispersing fog E01H 13/00; instruments for measuring single variable in general, see the appropriate subclass of G01, e.g. G01K, G01L; obtaining meteorological information by radar G01S 13/95~~*radar, sonar, lidar or analogous systems, designed for meteorological use G01S 13/95, G01S 15/88, G01S 17/95*)

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: RP10462-F (G02B)

U G02B 6/00 **Light guides; Structural details of arrangements comprising light guides and other optical elements, e.g. couplings**

U G02B 6/02 • Optical fibres with cladding {with or without a coating}

M G02B 6/02395 • • {Glass optical fibre with a protective coating, e.g. two layer polymer coating deposited directly on a silica cladding surface during fibre manufacture ([G02B 6/02052](#), [G02B 6/02057](#), [G02B 6/024](#), [G02B 6/032](#), [G02B 6/105](#), [G02B 6/14](#) take precedence; coating on fibre gratings [G02B 6/02104](#); multilayer core or cladding [G02B 6/036](#); reinforcing splice joints [G02B 6/2558](#); optical cables, i.e. comprising protective structures external to the protective coating such as a jacket or plural coated optical fibres [G02B 6/44](#); coating of glass to obtain optical fibres [C03C 25/104](#))}

WARNING

~~Group G02B 6/02395 is incomplete pending reclassification of documents from group G02B 6/4401.~~

~~Groups G02B 6/4401 and G02B 6/02395 should be considered in order to perform a complete search.~~

Project: RP12800 (G02B)

U G02B 6/10 • of the optical waveguide type ([G02B 6/02](#), [G02B 6/24](#) take precedence; devices or arrangements for the control of light by electric, magnetic, electro-magnetic or acoustic means [G02F 1/00](#); transferring the modulation of modulated light [G02F 2/00](#); optical logic elements [G02F 3/00](#); optical analogue/digital converters [G02F 7/00](#))

U G02B 6/12 • • of the integrated circuit kind (electric integrated circuits [H10B](#), [H10D 84/00](#) - [H10D 89/00](#), [H10F 19/00](#), [H10F 39/00](#), [H10H 29/00](#), [H10K 19/00](#), [H10K 39/00](#), [H10K 59/00](#), [H10N 19/00](#), [H10N 39/00](#), [H10N 59/00](#), [H10N 69/00](#), [H10N 79/00](#), [H10N 89/00](#))

U G02B 6/13 • • Integrated optical circuits characterised by the manufacturing method

M G02B 6/131 • • • {by using epitaxial growth (~~epitaxial growth for semiconductors H01L 21/02365~~*epitaxial growth for semiconductors H10P 14/20*)}

Project: MP12754 (G02B)

U G02B 6/24 • Coupling light guides

U G02B 6/26 • • Optical coupling means ([G02B 6/36](#), [G02B 6/42](#) take precedence)

U G02B 6/28 • • • having data bus means, i.e. plural waveguides interconnected and providing an inherently bidirectional system by mixing and splitting signals

U G02B 6/293 • • • with wavelength selective means

U G02B 6/29331 • • • • {operating by evanescent wave coupling}

- M G02B 6/29332 {Wavelength selective couplers, i.e. based on evanescent coupling between light guides, e.g. fused fibre couplers with transverse coupling between fibres having different propagation constant wavelength dependency (~~non-wavelength-selective light guide couplers G02B-6/28~~)}

Project: RP10462-F (G02B)

- U G02B 6/36 . . Mechanical coupling means ([G02B 6/255](#), [G02B 6/42](#) take precedence)
- U G02B 6/38 . . . having fibre to fibre mating means
- U G02B 6/3807 {Dismountable connectors, i.e. comprising plugs}
- M G02B 6/3897 {Connectors fixed to housings, casing, frames or circuit boards ([G02B 6/44528](#) takes precedence)}

WARNING

Group G02B-6/3897 is impacted by reclassification into group G02B-6/44528.

Groups G02B-6/3897 and G02B-6/44528 should be considered in order to perform a complete search.

Project: RP12819 (G02B)

- U G02B 6/42 . . Coupling light guides with opto-electronic elements
- NOTE
- {In this group, the following expression is used with the meaning indicated: }
- {"opto-electronic elements" includes light emitting elements, e.g. lasers or LED's, as well as light receiving elements, e.g. photodiodes or phototransistors.}
- U G02B 6/4201 . . . {Packages, e.g. shape, construction, internal or external details}
- U G02B 6/4219 {Mechanical fixtures for holding or positioning the elements relative to each other in the couplings; Alignment methods for the elements, e.g. measuring or observing methods especially used therefor}
- U G02B 6/4228 {Passive alignment, i.e. without a detection of the degree of coupling or the position of the elements ([G02B 6/4234](#) takes precedence)}
- M G02B 6/4232 {using the surface tension of fluid solder to align the elements, e.g. solder bump techniques (~~flip-chip mounting techniques in assembly of semiconductor devices H01L 24/81~~ *flip-chip mounting techniques in assembly of semiconductor devices H10W 72/072*)}
- U G02B 6/4249 {comprising arrays of active devices and fibres}
- M G02B 6/425 {Optical features (~~hybrid LED arrays H01L 25/0753~~; semiconductor laser arrays [H01S 5/40](#); *hybrid LED arrays H10W 90/00*)}
- U G02B 6/4266 {Thermal aspects, temperature control or temperature monitoring (thermal aspect of electrical circuits [H05K 7/20](#), [H05K 5/0213](#), temperature control in general [G05D 23/19](#))}
- M G02B 6/4268 {Cooling (~~of semiconductor devices H01L 23/24~~; *of instruments G12B 15/00*; of electric apparatus [H05K 7/20](#); ~~of instruments G12B 15/00~~; *of semiconductor devices H10W 76/47*)}

Project: RP10462-F (G02B)

- U G02B 6/44 . . Mechanical structures for providing tensile strength and external protection for fibres, e.g. optical transmission cables (cables incorporating electric conductors and optical fibres {where features relating to the optical fibres are not of interest} [H01B 11/22](#))

M	G02B 6/4401	<ul style="list-style-type: none"> • {Optical cables (glass fibres with a protective coating G02B 6/02395)} <p>WARNING Group G02B 6/4401 is impacted by reclassification into group G02B 6/02395. Groups G02B 6/4401 and G02B 6/02395 should be considered in order to perform a complete search.</p>
U	G02B 6/4415	<ul style="list-style-type: none"> • {Cables for special applications (G02B 6/4429, G02B 6/4439, G02B 6/4479 take precedence)}
M	G02B 6/4416	<ul style="list-style-type: none"> • {Heterogeneous cables} <p>WARNING Group G02B 6/4416 is impacted by reclassification into group G02B 6/44265. Groups G02B 6/4416 and G02B 6/44265 should be considered in order to perform a complete search.</p>
M	G02B 6/44265	<ul style="list-style-type: none"> • {Fibre-to-antenna cables; Auxiliary devices thereof} <p>WARNING Group G02B 6/44265 is incomplete pending reclassification of documents from group G02B 6/4416. Groups G02B 6/4416 and G02B 6/44265 should be considered in order to perform a complete search.</p>
M	G02B 6/4429	<ul style="list-style-type: none"> • {Means specially adapted for strengthening or protecting the cables} <p>WARNING Group G02B 6/4429 is impacted by reclassification into groups G02B 6/44382, G02B 6/44384 and G02B 6/44386. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	G02B 6/443	<ul style="list-style-type: none"> • {Protective covering} <p>WARNING Group G02B 6/443 is impacted by reclassification into group G02B 6/4431. Groups G02B 6/443 and G02B 6/4431 should be considered in order to perform a complete search.</p>
M	G02B 6/4431	<ul style="list-style-type: none"> • {with provision in the protective covering, e.g. weak line, for gaining access to one or more fibres, e.g. for branching or tapping (break-out terminations G02B 6/4471)} <p>WARNING Group G02B 6/4431 is incomplete pending reclassification of documents from group G02B 6/443. Groups G02B 6/443 and G02B 6/4431 should be considered in order to perform a complete search.</p>
M	G02B 6/44382	<ul style="list-style-type: none"> • {the means comprising hydrogen absorbing materials (G02B 6/4439, G02B 6/4479 take precedence)} <p>WARNING Group G02B 6/44382 is incomplete pending reclassification of documents from group G02B 6/4429. Groups G02B 6/4429 and G02B 6/44382 should be considered in order to perform a complete search.</p>

M	G02B 6/44384	<ul style="list-style-type: none"> • • • {the means comprising water blocking or hydrophobic materials (G02B 6/4439, G02B 6/4479 take precedence)} <p><u>WARNING</u> Group G02B 6/44384 is incomplete pending reclassification of documents from group G02B 6/4429. Groups G02B 6/4429 and G02B 6/44384 should be considered in order to perform a complete search.</p>
M	G02B 6/44386	<ul style="list-style-type: none"> • • • {Freeze-prevention means (G02B 6/4439, G02B 6/4479 take precedence)} <p><u>WARNING</u> Group G02B 6/44386 is incomplete pending reclassification of documents from group G02B 6/4429. Groups G02B 6/4429 and G02B 6/44386 should be considered in order to perform a complete search.</p>
U	G02B 6/4439	<ul style="list-style-type: none"> • • {Auxiliary devices}
U	G02B 6/444	<ul style="list-style-type: none"> • • • {Systems or boxes with surplus lengths}
M	G02B 6/4441	<ul style="list-style-type: none"> • • • • {Boxes} <p><u>WARNING</u> Group G02B 6/4441 is impacted by reclassification into group G02B 6/44515. Groups G02B 6/4441 and G02B 6/44515 should be considered in order to perform a complete search.</p>
M	G02B 6/4446	<ul style="list-style-type: none"> • • • • {Cable boxes, e.g. splicing boxes with two or more multi fibre cables} <p><u>WARNING</u> Group G02B 6/4446 is impacted by reclassification into group G02B 6/44465. Groups G02B 6/4446 and G02B 6/44465 should be considered in order to perform a complete search.</p>
M	G02B 6/44465	<ul style="list-style-type: none"> • • • • • {Seals} <p><u>WARNING</u> Group G02B 6/44465 is incomplete pending reclassification of documents from group G02B 6/4446. Groups G02B 6/4446 and G02B 6/44465 should be considered in order to perform a complete search.</p>
M	G02B 6/44515	<ul style="list-style-type: none"> • • • • {Fibre drop terminals with surplus length (without surplus length G02B 6/4472)} <p><u>WARNING</u> Group G02B 6/44515 is incomplete pending reclassification of documents from group G02B 6/4441. Groups G02B 6/4441 and G02B 6/44515 should be considered in order to perform a complete search.</p>
M	G02B 6/4452	<ul style="list-style-type: none"> • • • • {Distribution frames} <p><u>WARNING</u> Group G02B 6/4452 is impacted by reclassification into groups G02B 6/44524, G02B 6/44526, G02B 6/44528 and G02B 6/44529. All groups listed in this Warning should be considered in order to perform a complete search.</p>

- M G02B 6/44524 {with frame parts or auxiliary devices mounted on the frame and collectively not covering a whole width of the frame or rack (cassettes [G02B 6/4453](#))}
- WARNING
Group G02B 6/44524 is incomplete pending reclassification of documents from group G02B 6/4452.-
Groups G02B 6/4452 and G02B 6/44524 should be considered in order to perform a complete search.
- M G02B 6/44526 {Panels or rackmounts covering a whole width of the frame or rack}
- WARNING
Group G02B 6/44526 is incomplete pending reclassification of documents from group G02B 6/4452.-
Groups G02B 6/4452 and G02B 6/44526 should be considered in order to perform a complete search.
- M G02B 6/44528 {Patch-cords; Connector arrangements in the system or in the box (routing arrangements [H04Q 1/00](#))}
- WARNING
Group G02B 6/44528 is incomplete pending reclassification of documents from groups G02B 6/3897 and G02B 6/4452.-
Groups G02B 6/3897, G02B 6/4452 and G02B 6/44528 should be considered in order to perform a complete search.
- M G02B 6/44529 {Optical means for identifying patch-cords}
- WARNING
Group G02B 6/44529 is incomplete pending reclassification of documents from group G02B 6/4452.-
Groups G02B 6/4452 and G02B 6/44529 should be considered in order to perform a complete search.
- M G02B 6/4471 . . . {Terminating devices (demountable connectors [G02B 6/3807](#)); Cable clamps}
- WARNING
Group G02B 6/4471 is impacted by reclassification into groups G02B 6/44715, G02B 6/44765 and G02B 6/44775.-
All groups listed in this Warning should be considered in order to perform a complete search.
- M G02B 6/44715 {Fan-out devices}
- WARNING
Group G02B 6/44715 is incomplete pending reclassification of documents from group G02B 6/4471.-
Groups G02B 6/4471 and G02B 6/44715 should be considered in order to perform a complete search.
- M G02B 6/44765 {with means for strain-relieving to exterior cable layers}
- WARNING
Group G02B 6/44765 is incomplete pending reclassification of documents from group G02B 6/4471.-
Groups G02B 6/4471 and G02B 6/44765 should be considered in order to perform a complete search.

M	G02B 6/4477	<ul style="list-style-type: none"> • • • {with means for strain-relieving to interior strengths element} <p><u>WARNING</u> Group G02B 6/4477 is impacted by reclassification into group G02B 6/44775. Groups G02B 6/4477 and G02B 6/44775 should be considered in order to perform a complete search.</p>
M	G02B 6/44775	<ul style="list-style-type: none"> • • • {Cable seals e.g. feed-through (cable seals integrated to the box seals G02B 6/4444; pulling eyes G02B 6/44465)} <p><u>WARNING</u> Group G02B 6/44775 is incomplete pending reclassification of documents from groups G02B 6/4471 and G02B 6/4477. Groups G02B 6/4471, G02B 6/4477 and G02B 6/44775 should be considered in order to perform a complete search.</p>
M	G02B 6/4478	<ul style="list-style-type: none"> • • • {Bending relief means} <p><u>WARNING</u> Group G02B 6/4478 is impacted by reclassification into group G02B 6/44785. Groups G02B 6/4478 and G02B 6/44785 should be considered in order to perform a complete search.</p>
M	G02B 6/44785	<ul style="list-style-type: none"> • • • {Cable clamps} <p><u>WARNING</u> Group G02B 6/44785 is incomplete pending reclassification of documents from group G02B 6/4478. Groups G02B 6/4478 and G02B 6/44785 should be considered in order to perform a complete search.</p>
M	G02B 6/46	<ul style="list-style-type: none"> • Processes or apparatus adapted for installing {or repairing} optical fibres or optical cables (installation of cables containing electric conductors and optical fibres H02G) <p><u>WARNING</u> Group G02B 6/46 is impacted by reclassification into groups G02B 6/47, G02B 6/475, G02B 6/477, G02B 6/56, G02B 6/562, G02B 6/564, G02B 6/566 and G02B 6/567. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	G02B 6/47	<ul style="list-style-type: none"> • {Installation in buildings} <p><u>WARNING</u> Groups G02B 6/47, G02B 6/475 and G02B 6/477 are incomplete pending reclassification of documents from group G02B 6/46. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	G02B 6/50	<ul style="list-style-type: none"> • Underground or underwater installation; Installation through tubing, conduits or ducts <p><u>WARNING</u> Group G02B 6/50 is impacted by reclassification into group G02B 6/501. Groups G02B 6/50 and G02B 6/501 should be considered in order to perform a complete search.</p>

- M G02B 6/501 • • • {underground installation of connection boxes}
- WARNING
Group G02B 6/501 is incomplete pending reclassification of documents from group G02B 6/50.
Groups G02B 6/50 and G02B 6/501 should be considered in order to perform a complete search.
- M G02B 6/54 • • • using mechanical means, e.g. pulling or pushing devices
- WARNING
Group G02B 6/54 is impacted by reclassification into group G02B 6/545.
Groups G02B 6/54 and G02B 6/545 should be considered in order to perform a complete search.
- M G02B 6/545 • • • {Pulling eyes ([G02B 6/475](#) takes precedence)}
- WARNING
Group G02B 6/545 is incomplete pending reclassification of documents from group G02B 6/54.
Groups G02B 6/54 and G02B 6/545 should be considered in order to perform a complete search.
- M G02B 6/56 • • {Processes for repairing optical cables}
- WARNING
Groups G02B 6/56, G02B 6/562, G02B 6/564, G02B 6/566 and G02B 6/567 are incomplete pending reclassification of documents from group G02B 6/46.
All groups listed in this Warning should be considered in order to perform a complete search.

Project: MP12840 (G02B)

- U G02B 30/00 **Optical systems or apparatus for producing three-dimensional [3D] effects, e.g. stereoscopic images (in microscopes [G02B 21/22](#))**
- U G02B 30/20 • by providing first and second parallax images to an observer's left and right eyes
- M G02B 30/34 • • Stereoscopes providing a stereoscopic pair of separated images corresponding to parallaxically displaced views of the same object, e.g. **3D three-dimensional [3D]** slide viewers
- M G02B 30/50 • the image being built up from image elements distributed over a **3D three-dimensional [3D]** volume, e.g. voxels
- M G02B 30/52 • • the **3D three-dimensional [3D]** volume being constructed from a stack or sequence of **2D two-dimensional [2D]** planes, e.g. depth sampling systems
- M G02B 30/54 • • the **3D three-dimensional [3D]** volume being generated by moving a **2D two-dimensional [2D]** surface, e.g. by vibrating or rotating the 2D surface

Project: MP12822 (G02C)

- U G02C 11/00 **Non-optical adjuncts; Attachment thereof ([G02C 7/16](#) takes precedence)**
- M G02C 11/06 • Hearing aids (~~construction of hearing aids H04R 25/00~~ **construction of electric hearing aids [H04R 25/00](#)**)

Project: MP12708 (G03B)

- U G03B 2215/00 **Special procedures for taking photographs; Apparatus therefor**
- U G03B 2215/05 • Combinations of cameras with electronic flash units
- U G03B 2215/0514 • • Separate unit

- M G03B 2215/0557 . . . Multiple units, e.g. ~~slave-unit~~*leader-follower systems*

Project: MP12823 (G03C)

- U G03C 1/00 **Photosensitive materials (photosensitive materials for multicolour processes [G03C 7/00](#); for diffusion transfer processes [G03C 8/00](#); photosensitive glass [C03C 4/04](#))**
- U G03C 1/005 . Silver halide emulsions; Preparation thereof; Physical treatment thereof; Incorporation of additives therein (catalytic amounts of silver halide in dry silver systems {or thermographic systems using noble metal compounds} [G03C 1/494](#))
- M G03C 1/025 . . Physical treatment of emulsions, e.g. by ~~ultrasonics~~*ultrasounds*, refrigeration; ~~or~~ pressure (coating; ~~or~~ drying [G03C 1/74](#))
- M G03C 2001/0257 . . . {~~Ultrasonic~~*Ultrasound*}

Project: MP12754 (G03C)

- U G03C 7/00 **Multicolour photographic processes or agents therefor; Regeneration of such processing agents; Photosensitive materials for multicolour processes (diffusion transfer processes [G03C 8/00](#))**
- U G03C 7/30 . Colour processes using colour-coupling substances; Materials therefor; Preparing or processing such materials
- M G03C 7/392 . . Additives (~~G03C 7/30~~*G03C 7/305* - [G03C 7/32](#) take precedence)

Project: MP12840 (G03C)

- U G03C 9/00 **Stereo-photographic or similar processes**
- M G03C 9/08 . ~~Producing~~*producing* three-dimensional [*3D*] images

Project: RP12800 (G03F)

- M G03F 7/00 **Photomechanical, e.g. photolithographic, production of textured or patterned surfaces, e.g. printing surfaces; Materials therefor, e.g. comprising photoresists; Apparatus specially adapted therefor (using photoresist structures for special production processes, see the relevant places, e.g. [B44C](#), ~~H01L~~*H10P 76/00*, e.g. ~~H01L 21/00~~, [H05K](#))**

Project: RP12819 (G03F)

- U G03F 9/00 **Registration or positioning of originals, masks, frames, photographic sheets or textured or patterned surfaces, e.g. automatically ([G03F 7/22](#) takes precedence; preparation of photographic masks [G03F 1/00](#); within photographic printing apparatus for making copies [G03B 27/00](#))**
- U G03F 9/70 . {for microlithography (measuring printed patterns for monitoring overlay [G03F 7/70633](#) or focus [G03F 7/70641](#); projection system adjustment [G03F 7/70258](#); position control [G03F 7/70775](#))}
- M G03F 9/7073 . . {Alignment marks and their environment (marks specific to masks [G03F 1/42](#); marks specific to molds or stamps [G03F 7/0002](#); overlay marks [G03F 7/70633](#); ~~marks applied to semiconductor devices~~ [H01L 23/544](#); *marks applied to semiconductor devices* [H10W 46/00](#))}

Project: MP12811 (G03G)

M G03G

ELECTROGRAPHY; ELECTROPHOTOGRAPHY; MAGNETOGRAPHY
~~(information storage based on relative movement between record carrier and transducer G11B; static stores with means for writing-in or reading-out information G11C; recording of television signals H04N 5/76)~~

NOTES1. This subclass covers:

- the production of permanent directly-visible pictures in conformity with an original picture or document, using an intermediate imagewise distribution of an electric or magnetic quantity, such as a charge pattern, an electric conductivity pattern, or a magnetic pattern;
- the production of permanent directly-visible pictures using an intermediate imagewise distribution of an electric or magnetic quantity, when the origin and the way of generating said intermediate distribution are not relevant.

2. This subclass does not cover:

- use of electric signals for the transmission of the picture information from the original to the reproduction, i.e. pictorial communication, which is covered by subclass [H04N](#);
- production of pictures by heat patterns exclusively, not using an electrostatic or magnetic pattern, which is covered by group [B41M 5/00](#);
- production of prints by transferring ink from a printing form to a printing surface, without physical contact and using the force of an electrostatic field, which is covered by subclass [B41M](#);
- selective printing mechanisms characterised by the selective supply of electric current, or the selective application of magnetism or radiation, to a printing material or impression-transfer material, which are covered by groups [B41J 2/385](#), [B41J 2/435](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

M G03G 5/00

Recording--members for original recording by exposure, e.g. to light, to heat, or to electrons; Manufacture thereof; Selection of materials therefor
~~(recording surfaces for measuring apparatus G01D 15/34; photosensitive materials for photographic purposes G03C)~~

M G03G 5/14

• Inert intermediate or cover layers for charge-receiving layers ([G03G 5/04](#) takes precedence for photoconductive, charge-generation or charge-transporting layers [G03G 5/04](#))

M G03G 7/00

Selection of materials for use in image-receiving members, i.e. for reversal by physical contact; Manufacture thereof ~~(photosensitive materials for photographic purposes G03C)~~

U G03G 13/00

Electrographic processes using a charge pattern ([G03G 15/00](#), [G03G 16/00](#), [G03G 17/00](#) take precedence)

NOTE

Group [G03G 15/00](#) also deals with processes in so far as they are characterised by the use or manipulation of apparatus classifiable per se in group [G03G 15/00](#) and therefor takes precedence

M G03G 13/02

• Sensitising, i.e. laying-down a uniform charge ~~(devices for corona discharge per se H01T 19/00)~~

U G03G 13/04

• Exposing, i.e. imagewise exposure by optically projecting the original image on a photoconductive recording material

- M G03G 13/045
- Charging or discharging distinct portions of the charge pattern on the recording material, e.g. discharging non-image areas; *or* contrast enhancement ([G03G 13/34](#), [G03G 15/36](#), [G03G 21/06](#) take precedence)
- M G03G 13/05
- Imagewise charging, i.e. laying-down a charge in the configuration of an original image using a modulated stream of charged particles, e.g. of corona ions, modulated by a photoconductive control screen bearing a charge pattern or by optically activated charging means (~~using charging means controlled by electric image signals B41J~~)
- M G03G 15/00
- Apparatus for electrographic processes using a charge pattern ([G03G 16/00](#), [G03G 17/00](#) take precedence; ~~xerographic printers for data processors per se G06K 15/14~~)**
- M G03G 15/01
- for producing multicoloured copies ~~{{colour correction in photography G03C; colour correction in printing plate production}}~~
- M G03G 15/05
- for imagewise charging, e.g. photoconductive control screen; *or* optically activated charging means ~~(charging means controlled by electric image signals B41J)~~
- U G03G 17/00
- Electrographic processes using patterns other than charge patterns, e.g. an electric conductivity pattern; Processes involving a migration, e.g. photoelectrophoresis, photoelectrosolography; Processes involving a selective transfer, e.g. electrophoto-adhesive processes; Apparatus essentially involving a single such process**
- M G03G 17/005
- {Radiation field photography, e.g. Kirlian photography, colour-discharge photography ~~(recording electrical waveforms in general G01R 13/04, e.g. G01R 13/12 - G01R 13/14)~~}

Project: MP12823 (G03H)

- M G03H 3/00
- Holographic processes or apparatus using ultrasonic, sonic or infrasonic waves for obtaining holograms; Processes or apparatus for obtaining an optical image from them ([G03H 1/22](#) takes precedence; ~~acoustic non-destructive testing using holographic methods G01N 29/0663; seismology using acoustic vibrations G01V 1/00; non-holographic methods for visualizing acoustic waves G10K 15/00~~)**

Project: MP12816 (G04C)

- M G04C
- ELECTROMECHANICAL CLOCKS OR WATCHES ~~(mechanical parts of clocks or watches in general G04B; electronic time-pieces with no moving parts, electronic circuitry for producing timing pulses G04G)~~**

NOTE

This subclass covers electric features of mechanically-driven clocks or watches, such as electric winding of such clocks or the provision of electric contacts thereon.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

- M G04C 1/00
- Winding mechanical clocks electrically ~~(winding mechanically G04B 3/00; electrical winding of spring driven arrangements for grammophones G11B 19/20)~~**
- M G04C 1/04
- by electric motors with rotating or with reciprocating movement ~~{{(in general H02K 33/00)}~~
- M G04C 1/10
- Protection against overwinding ~~(in mechanical clocks or watches G04B 1/20; G04B 3/06, G04B 3/10; {G04B 5/24, G04B 9/02})~~

M	G04C 3/00	Electromechanical clocks or watches independent of other time-pieces and in which the movement is maintained by electric means {{(synchronisation G04C 11/00)}} clocks driven by synchronous motors G04C 15/00}}
M	G04C 3/001	• {Electromechanical switches for setting or display (in general H01H) }
U	G04C 3/02	• wherein movement is regulated by a pendulum
M	G04C 3/033	• • using torsion pendulums; using conical pendulums (construction thereof G04B 17/00)
M	G04C 3/0335	• • • {using conical pendulums (construction thereof G04B 17/30) }
M	G04C 3/04	• wherein movement is regulated by a balance {{(construction thereof G04B 17/063)}}
U	G04C 3/08	• wherein movement is regulated by a mechanical oscillator other than a pendulum or balance, e.g. by a tuning fork {, e.g. electrostatically}
U	G04C 3/10	• • driven by electromagnetic means
U	G04C 3/101	• • • {constructional details}
M	G04C 3/104	• • • • {of the pawl or the ratched-wheel ratchet wheel } (in general G04B 11/04; G04C 11/005)
M	G04C 3/105	• • • • {pawl and ratched-ratchet wheel being magnetically coupled}
M	G04C 3/16	• incorporating an electro-dynamic continuously rotating motor (G04C 3/02 - G04C 3/12 take precedence; clocks driven by synchronous motors G04C 15/00; {apparatus which can be set and started to measure off predetermined or adjustably fixed time intervals with electric driving means, e.g. incorporating clocks G04F 3/06, G04F 3/08; electromechanical stop watches G04F 8/00})
M	G04C 3/165	• • {comprising a mechanical regulating device influencing the electromotor (constructional details of the mechanical regulating device G04B 17/00) }
M	G04C 9/00	Electrically-actuated devices for setting the time-indicating means (of secondary clocks G04C 13/03; radio-controlled time-pieces G04R)
M	G04C 9/04	• by blocking the driving means {{(see provisionally G04C 9/00)}}
M	G04C 9/06	• by decoupling the driving means (combined with blocking means G04C 9/04 {{(see provisionally G04C 9/00)}})
M	G04C 9/08	• by electric drive, {{(i.e. for mechanical clocks; see provisionally G04C 9/00)}}
M	G04C 10/00	Arrangements of electric power supplies in time -pieces {{(circuits G04G 19/00; mounting Mounting, assembling of components of electromechanical watches G04C 3/008, of electronic watches G04G 17/00)}}
M	G04C 10/04	• with means for indicating the condition of the power supply {{(in general G01R 31/36)}}
M	G04C 11/00	Synchronisation of independently-driven clocks (radio-controlled time-pieces G04R)
M	G04C 11/04	• over a line (transmitting time signals over telephone networks H04M 11/06 {; time setting G04C 9/00})
U	G04C 13/00	Driving mechanisms for clocks by primary clocks
U	G04C 13/02	• Circuit arrangements; Electric clock installations
U	G04C 13/021	• • {primary-secondary systems using transmission of singular pulses for driving directly secondary clocks step by step (G04C 13/03 takes precedence)}
M	G04C 13/023	• • • {via existing transmission lines (transmitting time signals over telephone networks H04M 11/06) }
U	G04C 13/08	• Secondary clocks actuated intermittently

- M G04C 13/10
- by electromechanical step-advancing mechanisms {(independent clocks or watches incorporating a stepping motor [G04C 3/14](#); [stepping-motors-in-general H02K-33/00](#))}
- M G04C 17/00 **Indicating the time optically by electric means ([G04C 19/00](#) takes precedence; [by mechanical means G04B 19/00](#), [G04B 19/20](#))**
- M G04C 17/0091
- {Combined electro-optical and electro-mechanical displays ([see provisionally also G04G 9/0082](#))}
- M G04C 21/00 **Producing acoustic time signals by electrical means ~~{{for mechanical clocks or watches G04B 21/08, G04B 25/00}}~~**
- M G04C 21/02
- Constructional details ([G04C 21/04](#), [G04C 21/16](#) take precedence ~~{sound producing devices in general G10K, e.g. G10K-1/00}~~)
- M G04C 21/04
- Indicating the time of the day ~~{acoustic indication of time G04B 21/00}~~
- M G04C 23/00 **Clocks with attached or built-in means operating any device at preselected times or after preselected time-intervals (if restricted to producing acoustic time signals by electrical means [G04C 21/00](#); [mechanical alarm clocks G04B 23/02](#); [apparatus which can be set and started to measure off predetermined intervals G04F 3/06](#); [time or time-programme switches which automatically terminate their operation after the programme is completed H01H 43/00](#))**

Project: MP12836 (G04F)

- U G04F 7/00 **Apparatus for measuring unknown time intervals by non-electric means (using fluidic means [G04F 13/06](#))**
- U G04F 7/04
- using a mechanical oscillator
- M G04F 7/06
- running only during the time interval to be measured, e.g. [stop-watch](#)[stopwatches](#)
- U G04F 8/00 **Apparatus for measuring unknown time intervals by electromechanical means**
- M G04F 8/006
- {running only during the time interval to be measured, e.g. [stop-watch](#)[stopwatches](#)}

Project: MP12828 (G05B)

- M G05B 9/00 **Safety arrangements ([G05B 7/00](#) takes precedence; safety arrangements in [programme](#)[program](#)-control systems [G05B 19/048](#), [G05B 19/406](#))**
- M G05B 19/00 **[Programme](#)[Program](#)-control systems**
- U G05B 19/02
- electric
- M G05B 19/04
- [Programme](#)[Program](#) control other than numerical control, i.e. in sequence controllers or logic controllers ([G05B 19/418](#) takes precedence)
- M G05B 19/0405
- {[Programme](#)[Program](#)-control specially adapted for machine tool control and not otherwise provided for}
- U G05B 19/06
- using cams, discs, rods, drums or the like
- M G05B 19/063
- {for sequential [programme](#)[program](#)-control without delivering a reference value}
- M G05B 19/07
- where the [programme](#)[program](#) is defined in the fixed connection of electrical elements, e.g. potentiometers, counters; [or](#) [transistors](#)
- U G05B 19/10
- using selector switches
- M G05B 19/102
- {for input of [programme](#)[program](#) steps, i.e. setting up sequence}
- M G05B 19/106
- {for selecting a [programme](#)[program](#), variable or parameter}

- M G05B 19/18
 - • Numerical control [NC], i.e. automatically operating machines, in particular machine tools, e.g. in a manufacturing environment, so as to execute positioning, movement or co-ordinated operations by means of **programmeprogram** data in numerical form (**G05B 19/418** takes precedence)
- U G05B 19/406
 - • • characterised by monitoring or safety (**G05B 19/19** takes precedence)
- M G05B 19/4068
 - • • • Verifying part **programmeprogram** on screen, by drawing or other means
- U G05B 19/408
 - • • characterised by data handling or data format, e.g. reading, buffering or conversion of data
- M G05B 19/4083
 - • • • {Adapting **programmeprogram**, configuration}
- M G05B 19/4093
 - • • characterised by part programming, e.g. entry of geometrical information as taken from a technical drawing, combining this with machining and material information to obtain control information, named part **programmeprogram**, for the NC machine

Project: MP12840 (G05B)

- U G05B 19/4097
 - • • characterised by using design data to control NC machines, e.g. CAD/CAM (**G05B 19/4093** takes precedence)
- M G05B 19/4099
 - • • • Surface or curve machining, making **3Dthree-dimensional [3D]** objects, e.g. desktop manufacturing

Project: MP12828 (G05B)

- M G05B 19/4155
 - • • characterised by **programmeprogram** execution, i.e. part **programmeprogram** or machine function execution, e.g. selection of a **programmeprogram**
- U G05B 19/418
 - • Total factory control, i.e. centrally controlling a plurality of machines, e.g. direct or distributed numerical control [DNC], flexible manufacturing systems [FMS], integrated manufacturing systems [IMS] or computer integrated manufacturing [CIM]
- M G05B 19/41835
 - • • {characterised by **programmeprogram** execution}
- M G05B 19/42
 - • Recording and playback systems, i.e. in which the **programmeprogram** is recorded from a cycle of operations, e.g. the cycle of operations being manually controlled, after which this record is played back on the same machine
- M G05B 19/4202
 - • • {preparation of the **programmeprogram** medium using a drawing, a model}
- M G05B 23/00**
Testing or monitoring of control systems or parts thereof (monitoring of programme-control systems G05B 19/048, G05B 19/406** **monitoring of program-control systems G05B 19/048, G05B 19/406**)**

Project: MP12708 (G05B)

- U G05B 2219/00** **Program-control systems**
- U G05B 2219/10
 - Plc systems
- U G05B 2219/12
 - • Plc mp multi processor system
- M G05B 2219/1201
 - • • Each plc can act as **masterleader**, flying **masterleader**
- M G05B 2219/1215
 - • • **Master-slaveLeader-follower** system
- M G05B 2219/1216
 - • • Interlock problem, avoid sending data to **slave-when-slavefollower when follower** processes data
- U G05B 2219/15
 - • Plc structure of the system
- M G05B 2219/15006
 - • • Set configuration from **masterleader** control station
- U G05B 2219/20
 - Pc systems
- U G05B 2219/21
 - • Pc I-O input output

- M G05B 2219/21005 . . . Several **slave****follower** modules connected to same I-O of **master****leader**, multiplexed by **master****leader**
- M G05B 2219/21039 . . . **Slaves****Followers**, modules in daisy chain, each handles control data, transmits to next
- M G05B 2219/21074 . . . **Master****Leader** has keyboard to enter address of called **slave****follower**
- M G05B 2219/21075 . . . Initialise each module random, count down, if zero **master****leader** sets address
- M G05B 2219/21079 . . . Allocate at start up also to each controlled device a code for the **master****leader**
- U G05B 2219/22 . . . Pc multi processor system
- M G05B 2219/2221 . . . Only common memory in host, **master****leader**, no local memory in **slave****follower**, local controller
- M G05B 2219/2228 . . . **Master****Leader** detects and configures **slaves****followers**
- M G05B 2219/2229 . . . Multiprocessing, change over from **master****slave****leader****-follower** to peer-~~to~~-peer, no **master****leader**
- M G05B 2219/2231 . . . **Master****slave****Leader****-follower**
- M G05B 2219/2232 . . . **Master****Leader** executes modified program on **slave****follower** demand
- M G05B 2219/2233 . . . Each **slave****follower** can control several other **slaves****followers**
- M G05B 2219/2234 . . . Each **slave****follower** can function in **stand-alone if master****standalone if leader** fails
- M G05B 2219/2235 . . . Each **slave****follower** has library of states during which operation is permitted to start
- M G05B 2219/2236 . . . **Master****Leader** determines critical time when each of **slaves****followers** must be controlled
- M G05B 2219/2237 . . . Selection of **master-or-slave****leader or follower**
- M G05B 2219/2238 . . . Several **masters****leaders** at same time
- U G05B 2219/23 . . . Pc programming
- M G05B 2219/23465 . . . **Master****Leader** processor blocks input of data to **slaves****followers**
- U G05B 2219/24 . . . Pc safety
- M G05B 2219/24183 . . . If error, spare unit takes over, message to **master****leader**, confirm new configuration
- U G05B 2219/25 . . . Pc structure of the system
- M G05B 2219/25048 . . . **Master****Leader** clock and several frequency dividers, for motion and sequence control
- M G05B 2219/25049 . . . **Master****Leader** processor gives timing information to **slaves****followers**
- M G05B 2219/25085 . . . Several function expansion units for **master****leader**, main unit, universal system

Project: Unknown (G05B)

- M G05B 2219/25186 . . . Bluetooth®

Project: MP12708 (G05B)

- M G05B 2219/25212 . . . **Master****Leader** address node, node answers ready, **master****leader** sends command, node executes it
- M G05B 2219/25223 . . . **Slave****Follower** has registers to indicate **master****leader**, acknowledge, transfer address, read write
- M G05B 2219/25477 . . . **Master****Leader** waits for signal from **slave**, **slave****follower**, **follower** active thereafter, during limited time

U	G05B 2219/30	• Nc systems
U	G05B 2219/31	• • From computer integrated manufacturing till monitoring
M	G05B 2219/31179	• • • Master Leader sends message with address of slave follower to all slaves ; slave followers, follower answers, interrupt
M	G05B 2219/31207	• • • Master Leader sends global files to autonomous controllers, feedback of process status
M	G05B 2219/31209	• • • Master Leader actuator sensor interface has priority over host, build into host
M	G05B 2219/31229	• • • Supervisor, master leader, workstation controller, automation, machine control
M	G05B 2219/31248	• • • Multiple data link layer masters leaders, if one fails, other takes over
M	G05B 2219/31379	• • • Master Leader monitors controllers, updates production progress, allocates resources
M	G05B 2219/31448	• • • Display at central computer, slave follower displays for each machine unit
U	G05B 2219/32	• Operator till task planning
M	G05B 2219/32051	• • • Central control, modify program slave follower computers as function of production demand from host
M	G05B 2219/32052	• • • Lookup table, identify job to be executed by master-or-slave leader or follower
U	G05B 2219/33	• Director till display
M	G05B 2219/33063	• • • Generic coordination, master leader agent to data manager agent to tasks to active agent
M	G05B 2219/33149	• • • Publisher subscriber, publisher, master leader broadcasts data to slaves followers, subscriber
M	G05B 2219/33163	• • • Multichannel master main bus
M	G05B 2219/33168	• • • Two bus , master buses, main bus and local servo bus
M	G05B 2219/33241	• • • Compare results from two masters leaders on two busses, if not equal shut down machines
M	G05B 2219/33339	• • • Controller with lowest operation rate is selected as master leader
M	G05B 2219/33341	• • • Peer-to-peer, change master leader if overloaded
M	G05B 2219/33342	• • • Master-slave Leader-follower, supervisor, front end and slave follower processor, hierarchical structure
M	G05B 2219/33343	• • • Each slave follower stores communication program to be used by master leader, exchangeability
M	G05B 2219/33344	• • • Each slave follower has several processors operating in parallel
M	G05B 2219/33345	• • • Several master leader modules, connection modules and slave follower modules
M	G05B 2219/33346	• • • Only memory of master leader module stores all position programs of slaves followers
M	G05B 2219/33347	• • • Master Leader sends servo address, speed, kind of interpolation to slave follower
U	G05B 2219/34	• Director, elements to supervisory
M	G05B 2219/34446	• • • No change of operation mode when slave follower axis is out of synchronisation
U	G05B 2219/36	• Nc in input of data, input key till input tape
M	G05B 2219/36454	• • • Master-slave Leader-follower, director agent, operator replication
U	G05B 2219/39	• Robotics, robotics to robotics hand
M	G05B 2219/39122	• • • Follower, slave follower mirrors leader, master leader

M	G05B 2219/39139	<ul style="list-style-type: none"> • • Produce program of slave follower from path of master leader and desired relative position
M	G05B 2219/39141	<ul style="list-style-type: none"> • • Slave Follower program has no taught positions, receives position from master leader, convert from master leader
M	G05B 2219/39142	<ul style="list-style-type: none"> • • Moving time between positions in slave follower program coordinated online with master leader
M	G05B 2219/39145	<ul style="list-style-type: none"> • • Slave Follower path is the same as master leader path and superposed desired relative movement
M	G05B 2219/39312	<ul style="list-style-type: none"> • • Double neural network for tracking, slave follower microprocessor for servo control
U	G05B 2219/40	<ul style="list-style-type: none"> • • Robotics, robotics mapping to robotics vision
M	G05B 2219/40133	<ul style="list-style-type: none"> • • Force sensation of slave follower converted to movement of chair for operator
M	G05B 2219/40134	<ul style="list-style-type: none"> • • Force sensation of slave follower converted to vibration for operator
M	G05B 2219/40135	<ul style="list-style-type: none"> • • Slave Follower force converted to shape display, actuated by fingers, surface is force image
M	G05B 2219/40138	<ul style="list-style-type: none"> • • Scaled feedback of forces from slave to master and master to slave follower to leader and leader to follower
M	G05B 2219/40139	<ul style="list-style-type: none"> • • Force from slave follower converted to a digital display--like fingers and object
M	G05B 2219/40144	<ul style="list-style-type: none"> • • Force sensation feedback from slave follower
M	G05B 2219/40145	<ul style="list-style-type: none"> • • Force sensation of slave follower converted to audio signal for operator
M	G05B 2219/40146	<ul style="list-style-type: none"> • • Telepresence, teletaction, sensor feedback from slave follower to operator
M	G05B 2219/40182	<ul style="list-style-type: none"> • • Master Leader has different configuration than slave follower manipulator
M	G05B 2219/40186	<ul style="list-style-type: none"> • • Reachability control, permits slave follower to reach commanded position
M	G05B 2219/40187	<ul style="list-style-type: none"> • • Indexed position control, master leader controls only small part of slave follower space
M	G05B 2219/40188	<ul style="list-style-type: none"> • • Position control with scaling, master leader small movement, slave follower large movement
M	G05B 2219/40268	<ul style="list-style-type: none"> • • Master Leader attached to tip of macro manipulator, controls slave follower micromanipulator
M	G05B 2219/40399	<ul style="list-style-type: none"> • • Selection of master-slave leader-follower operation mode
M	G05B 2219/40401	<ul style="list-style-type: none"> • • Convert workspace of master leader to workspace of slave follower
M	G05B 2219/40402	<ul style="list-style-type: none"> • • Control button on master leader for quick movement, for fine slow movement
M	G05B 2219/40403	<ul style="list-style-type: none"> • • Master Leader for walk through, slave follower uses data for motion control and simulation
M	G05B 2219/40404	<ul style="list-style-type: none"> • • Separate master leader controls macro and microslave microfollower manipulator
M	G05B 2219/40405	<ul style="list-style-type: none"> • • Master-slave Leader-follower position control
M	G05B 2219/40406	<ul style="list-style-type: none"> • • Master-slave Leader-follower rate control
M	G05B 2219/40407	<ul style="list-style-type: none"> • • Master-slave, master Leader-follower, leader is replica of slave follower
U	G05B 2219/41	<ul style="list-style-type: none"> • • Servomotor, servo controller till figures
M	G05B 2219/41407	<ul style="list-style-type: none"> • • Master Leader changes resistor, slave follower restores value in order to follow master leader
U	G05B 2219/42	<ul style="list-style-type: none"> • • Servomotor, servo controller kind till VSS
M	G05B 2219/42184	<ul style="list-style-type: none"> • • Master-slave Leader-follower with feedforward for compensation of contour error

- M G05B 2219/42185 . . . ~~Master-slave~~*Leader-follower* with contour controller
- M G05B 2219/42186 . . . ~~Master-slave~~*Leader-follower*, motion proportional to axis
- M G05B 2219/42188 . . . ~~Slave~~*Follower* controlled as function of reference and actual position and derived speed of ~~master~~*leader*
- M G05B 2219/42191 . . . Adjust proportionality factor to optimize ~~slave~~*follower* axis movement
- M G05B 2219/42335 . . . If one ~~slave~~*follower* axis out of synchronisation, synchronise all other axes to that one
- U G05B 2219/49 . . . Nc machine tool, till multiple
- M G05B 2219/49379 . . . Key input path, move one axis manually, other axis ~~slave~~*follower* controlled by program
- U G05B 2219/50 . . . Machine tool, machine tool null till machine tool work handling
- M G05B 2219/50219 . . . ~~Slave~~*Follower* spindle is driven at half the torque of main spindle for synchronism

Project: MP12840 (G05D)

- M G05D 1/43 . . . Control of position or course in two dimensions *[2D]*
- M G05D 1/46 . . . Control of position or course in three dimensions *[3D]*

Project: MP12828 (G05G)

- M G05G 1/00 Controlling members, e.g. knobs or handles; Assemblies or arrangements thereof; Indicating position of controlling members (~~{means for preventing; limiting or returning the movements of parts of a control mechanism G05G 5/00; providing feel, e.g. means to create a counterforce G05G 5/03; specially adapted for programme control G05G 21/00; vibration damping G05G 25/02;}~~ joysticks *G05G 9/04*; steering wheels for motor vehicles *B62D*)

NOTE

In this group, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

- M G05G 21/00 Mechanical apparatus for control of a series of operations, i.e. ~~programme~~*program* control, e.g. involving a set of cams (*G05G 5/02* takes precedence)

Project: MP12774 (G06E)

- M G06E ~~OPTICAL COMPUTING DEVICES; {COMPUTING DEVICES USING OTHER RADIATIONS WITH SIMILAR PROPERTIES}~~*OPTICAL COMPUTING DEVICES* (~~optical logic elements per se G02F 3/00;~~ digital storage using optical elements *G11C 13/04*)

NOTES

1. This subclass covers all devices in which at least one computing function is performed by optical means.
2. If other aspects, for example mechanical, fluid pressure or electrical computing, are of interest, classification is also made in the relevant subclass for such aspects.

- U G06E 3/00 Devices not provided for in group *G06E 1/00*, e.g. for processing analogue or hybrid data

- M G06E 3/001 • {Analogue devices in which mathematical operations are carried out with the aid of optical or electro-optical elements (~~optical elements per se G02B; electro-, magneto- or acousto-optics, non-linear optics G02F 1/00; graph reading G06K 11/00~~)}

Project: MP12805 (G06F)

- U G06F 1/00 Details not covered by groups [G06F 3/00](#) - [G06F 13/00](#) and [G06F 21/00](#) (architectures of general purpose stored program computers [G06F 15/76](#))**
- U G06F 1/16 • Constructional details or arrangements
- U G06F 1/18 • • Packaging or power distribution
- U G06F 1/181 • • • {Enclosures (for portable computers [G06F 1/1613](#))}
- U G06F 1/182 • • • • {with special features, e.g. for use in industrial environments; grounding or shielding against radio frequency interference [RFI] or electromagnetic interference [EMI]}
- M G06F 1/183 • • • {Internal mounting support structures, e.g. for [supporting](#) printed circuit boards; ~~internal connecting means (for buses G06F 13/409)~~}
- M G06F 1/184 • • • • {Mounting of motherboards}
- M G06F 1/185 • • • • {Mounting of expansion boards}
- M G06F 1/186 • • • • • {Securing of expansion boards in correspondence to slots provided at the computer enclosure}
- M G06F 1/187 • • • • {Mounting of fixed ~~and/or~~ removable disk drives}
- M G06F 1/188 • • • • {Mounting of power supply units}

Project: MP12840 (G06F)

- U G06F 3/00 Input arrangements for transferring data to be processed into a form capable of being handled by the computer; Output arrangements for transferring data from processing unit to output unit, e.g. interface arrangements**
- U G06F 3/01 • Input arrangements or combined input and output arrangements for interaction between user and computer ([G06F 3/16](#) takes precedence)
- U G06F 3/03 • • Arrangements for converting the position or the displacement of a member into a coded form
- NOTE**
In this group, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.
- U G06F 3/033 • • • Pointing devices displaced or positioned by the user {, e.g. mice, trackballs, pens or joysticks}; Accessories therefor (digitisers characterised by the transducing means [G06F 3/041](#))
- M G06F 3/0346 • • • • with detection of the device orientation or free movement in a [3D three-dimensional \[3D\]](#) space, e.g. 3D mice, 6-DOF [six degrees of freedom] pointers using gyroscopes, accelerometers or tilt-sensors
- M G06F 3/0354 • • • • with detection of [2D two-dimensional \[2D\]](#) relative movements between the device, or an operating part thereof, and a plane or surface, e.g. 2D mice, trackballs, pens or pucks
- M G06F 3/0362 • • • • with detection of [1D one-dimensional \[1D\]](#) translations or rotations of an operating part of the device, e.g. scroll wheels, sliders, knobs, rollers or belts

- U G06F 3/048
- • Interaction techniques based on graphical user interfaces [GUI]
- NOTE
This group covers subject matter where the focus is placed on the way the user can interact with the displayed data. The mere presence of a standard GUI in the context of the disclosure of a specific software application or a specific device capable of processing data related to its specific function, should be in general classified in the appropriate subclasses related to those software applications or specific devices.
- U G06F 3/0481
- • • based on specific properties of the displayed interaction object or a metaphor-based environment, e.g. interaction with desktop elements like windows or icons, or assisted by a cursor's changing behaviour or appearance
- M G06F 3/04815
- • • • Interaction with a metaphor-based environment or interaction object displayed as three-dimensional *[3D]*, e.g. changing the user viewpoint with respect to the environment or object

Project: MP12828 (G06F)

- U G06F 3/12
- Digital output to print unit {, e.g. line printer, chain printer}
- U G06F 3/1297
- • {Printer code translation, conversion, emulation, compression; Configuration of printer parameters}
- M G06F 3/1298
- • • {Printer language recognition, e.g. *programme**program* control language, page description language}

Project: MP12708 (G06F)

- U G06F 9/00
- Arrangements for program control, e.g. control units (program control for peripheral devices *G06F 13/10*)**
- U G06F 9/06
- using stored programs, i.e. using an internal store of processing equipment to receive or retain programs
- U G06F 9/30
- • Arrangements for executing machine instructions, e.g. instruction decode (for executing microinstructions *G06F 9/22*)
- U G06F 9/38
- • • Concurrent instruction execution, e.g. pipeline or look ahead
- M G06F 9/3877
- • • • {using a *slave**secondary* processor, e.g. coprocessor (peripheral processor *G06F 13/12*; *vector-processor* *G06F 15/8053*)}
- M G06F 2009/3883
- • • • • {Two-engine architectures, i.e. stand-alone processor acting as a *slave**secondary* processor}

Project: MP12726 (G06F)

- M G06F 11/14
- • Error detection or correction of the data by redundancy in *operation**operations* (*G06F 11/16 takes precedence* *error detection or correction of the data by redundancy in hardware* *G06F 11/16*)
- M G06F 11/1446
- • • • {Point-in-time backing up or restoration of persistent data}
- M G06F 11/1448
- • • • • {Management of the data involved in backup or backup restore}
- M G06F 11/1451
- • • • • • {by selection of backup contents}
- M G06F 11/1453
- • • • • • • {using de-duplication of the data}
- M G06F 11/1456
- • • • • • • {Hardware arrangements for backup}
- M G06F 11/1458
- • • • • • • {Management of the backup or restore process}
- M G06F 11/1461
- • • • • • • {Backup scheduling policy}
- M G06F 11/1464
- • • • • • • {for networked environments}
- M G06F 11/1466
- • • • • • • {to make the backup process non-disruptive}

- M G06F 11/1469 {Backup restoration techniques}
- M G06F 11/1471 {involving logging of persistent data for recovery}
- M G06F 11/1474 {in transactions (~~G06F 16/20 takes precedence~~ *updating of structured data in databases G06F 16/23*)}
- M G06F 11/1479 {Generic software techniques for error detection or fault masking}
- M G06F 11/1482 {~~by means of middleware or OS functionality~~ *using middleware or operating system [OS] functionalities*}
- M G06F 11/1487 {using N-version programming}
- M G06F 11/1489 {~~through~~ *using* recovery blocks}
- M G06F 11/1492 {~~by~~ *using* run-time replication performed by the application software}, e.g. *N-modular type*}
- M G06F 11/1497 {~~Details of time~~ *Time* redundant execution *of software* on a single processing unit}

Project: MP12708 (G06F)

- U G06F 11/22 Detection or location of defective computer hardware by testing during standby operation or during idle time, e.g. start-up testing
- U G06F 11/2205 {using arrangements specific to the hardware being tested}
- U G06F 11/2236 {to test CPU or processors}
- M G06F 11/2242 {in multi-processor systems, e.g. one processor becoming the ~~test master~~ *primary tester* ([G06F 11/2736](#) takes precedence)}

Project: MP12726 (G06F)

- U G06F 11/30 Monitoring
- M G06F 11/3055 {Monitoring arrangements for monitoring the status of the computing system or of the computing system component, e.g. monitoring if the computing system is on, off, available, not available (error or fault processing without redundancy [G06F 11/0703](#); error detection or correction by redundancy in data representation [G06F 11/08](#); error detection or correction *of the data* by redundancy in ~~operation~~ *operations* [G06F 11/14](#); error detection or correction by redundancy in hardware [G06F 11/16](#))}

Project: MP12828 (G06F)

- U G06F 13/00 **Interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units (interface circuits for specific input/output devices [G06F 3/00](#) {; multiprogram control therefor [G06F 9/46](#)}; multiprocessor systems [G06F 15/16](#))**
- U G06F 13/10 Program control for peripheral devices ([G06F 13/14](#) - [G06F 13/42](#) take precedence)
- M G06F 13/102 {where the ~~programme~~ *program* performs an interfacing function, e.g. device driver ([G06F 13/105](#) takes precedence; ~~scheduling within device drivers~~ [G06F 9/52](#); contention policies within device drivers [G06F 9/4881](#); *scheduling within device drivers* [G06F 9/52](#))}
- M G06F 13/105 {where the ~~programme~~ *program* performs an input/output emulation function}
- U G06F 15/00 **Digital computers in general (details [G06F 1/00](#) – [G06F 13/00](#)); Data processing equipment in general**
- U G06F 15/76 Architectures of general purpose stored program computers (with program plugboard [G06F 15/08](#); multicomputers [G06F 15/16](#))
- M G06F 2015/761 {Indexing scheme relating to architectures of general purpose stored ~~programme~~ *program* computers}

Project: MP12726 (G06F)

- | | | |
|---|-------------|--|
| U | G06F 16/00 | Information retrieval; Database structures therefor; File system structures therefor |
| U | G06F 16/10 | • File systems; File servers |
| M | G06F 16/11 | • • File system administration, e.g. details of archiving or snapshots (file-system backup-G06F 11/14 <i>error detection or correction of the data by redundancy in operations G06F 11/14</i>) |
| M | G06F 16/113 | • • • {Details of archiving (lifecycle management in storage systems G06F 3/0649; backup-systems G06F 11/1446 <i>; point-in-time backing up or restoration of persistent data G06F 11/1446</i>)} |
| M | G06F 16/122 | • • • {using management policies (backup-systems G06F 11/1446; point-in-time backing up or restoration of persistent data G06F 11/1446 <i>; file migration policies for HSM systems G06F 16/185</i>)} |
| M | G06F 16/128 | • • • {Details of file system snapshots on the file-level, e.g. snapshot creation, administration, deletion (use of snapshots for error detection or correction G06F 11/14, G06F 11/16 <i>error detection or correction of the data by redundancy in operations or in hardware G06F 11/14, G06F 11/16</i>)} |
| U | G06F 16/17 | • • Details of further file system functions |
| M | G06F 16/174 | • • • Redundancy elimination performed by the file system (management of the data involved in backup or backup restore using de-duplication of the data G06F 11/14 <i>error detection or correction of the data by redundancy in operations G06F 11/14</i>) |

Project: MP12828 (G06F)

- | | | |
|---|------------|---|
| U | G06F 16/70 | • of video data
<u>NOTE</u>
In groups G06F 16/70 , G06F 16/71 , G06F 16/73 , G06F 16/732 , G06F 16/7328 , G06F 16/7335 , G06F 16/7343 , G06F 16/735 , G06F 16/738 , G06F 16/739 , G06F 16/74 , G06F 16/743 , G06F 16/745 , G06F 16/78 and G06F 16/75 , subject matter relevant to retrieval characterised by using metadata, when it is determined to be novel and non-obvious, must also be classified in groups G06F 16/78 , G06F 16/783 , G06F 16/7834 , G06F 16/7837 , G06F 16/784 , G06F 16/7844 , G06F 16/7847 , G06F 16/785 , G06F 16/7854 , G06F 16/7857 , G06F 16/786 , G06F 16/7864 , G06F 16/7867 and G06F 16/787 .
<u>WARNING</u>
Group G06F 16/70 is impacted by reclassification into group G06F 16/75 . Groups G06F 16/70 and G06F 16/75 should be considered in order to perform a complete search. |
| M | G06F 16/74 | • • Browsing; Visualisation therefor (end-user interfaces for requesting or interacting with video content, e.g. video on demand interfaces or electronic program <i>programme</i> guides, H04N 21/472) |

Project: MP12840 (G06F)

- | | | |
|---|-------------|---|
| U | G06F 40/00 | Handling natural language data (speech analysis or synthesis, speech recognition G10L) |
| U | G06F 40/10 | • Text processing (natural language analysis G06F 40/20 ; semantic analysis G06F 40/30 ; processing or translation of natural language G06F 40/40) |
| U | G06F 40/166 | • • Editing, e.g. inserting or deleting |
| M | G06F 40/183 | • • • Tabulation, i.e. one-dimensional [1D] positioning |

U G06F 2113/00 Details relating to the application field**WARNING**

Groups [G06F 2113/00](#) - [G06F 2113/28](#) are incomplete pending reclassification of documents from groups [G06F 30/00](#), [G06F 30/17](#), [G06F 30/18](#), [G06F 30/20](#), [G06F 30/23](#), [G06F 30/30](#), [G06F 30/327](#), [G06F 30/33](#), [G06F 30/3312](#), [G06F 30/34](#), [G06F 30/36](#), [G06F 30/39](#), [G06F 30/392](#), and [G06F 30/394](#).

All groups listed in this Warning should be considered in order to perform a complete search.

M G06F 2113/10 • Additive manufacturing, e.g. ~~3D~~*three-dimensional* [3D] printing

Project: RP12813 (G06G)**M G06G ANALOGUE COMPUTERS (analogue optical computing devices [G06E 3/00](#))****WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme:

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

G06G 7/625 covered by [G06G 7/627](#)

M G06G 1/00 **Hand-manipulated computing devices (~~planimeters~~ [G01B 5/26](#))**

M G06G 5/00 **Devices in which the computing operation is performed by means of fluid-pressure elements (~~such elements in general~~ [F15G](#))**

U G06G 7/00 Devices in which the computing operation is performed by varying electric or magnetic quantities

M G06G 7/04 • Input or output devices (~~graph readers~~ [G06K 11/00](#); ~~function plotters, co-ordinate plotters~~ [G06K 15/22](#), [G09G 3/001](#))

M G06G 7/12 • Arrangements for performing computing operations, e.g. ~~{operational amplifiers}~~ *amplifiers specially adapted therefor* (~~amplifiers in general~~ [H03F](#); ~~{adapted for telemeasuring or for indicating or recording the results of the measurement~~ [G01D 1/10](#), [G01D 1/16](#); ~~for fuzzy computing~~ [G06N 7/02](#))

U G06G 7/16 • • for multiplication or division ~~{([G06G 7/19](#) and [G06G 7/24](#) take precedence; measuring electric power [G01R 21/00](#))}~~

M G06G 7/164 • • using means for evaluating powers, e.g. quarter square multiplier (*for evaluating powers* [G06G 7/20](#))

M G06G 7/19 • • for forming integrals of products, e.g. Fourier integrals, Laplace integrals; *or* correlation integrals; for analysis or synthesis of functions using orthogonal functions (~~Fourier or spectrum analysis~~ [G01R 23/16](#); ~~sound analysis or synthesis~~ [G10L](#))

M G06G 7/20 • • for evaluating powers, roots, polynomes, mean square values; *or* standard deviation ([G06G 7/122](#), [G06G 7/28](#) take precedence; ~~gamma correction in television systems~~ [H04N 5/20](#), [H04N 9/69](#))

M G06G 7/26 • • Arbitrary function generators ~~{(using Fourier series or other orthogonal functions [G06G 7/19](#); using curve followers [G06K 11/02](#) using orthogonal functions, e.g. Fourier series, [G06G 7/19](#))}~~

U G06G 7/32 • • for solving of equations {or inequations; for matrices}

U G06G 7/38 • • • of differential or integral equations

M G06G 7/40 • • • of partial differential equations {of field or wave equations} (*simulating specific devices* [G06G 7/48](#) *analogue computers for specific processes, systems or devices, e.g. simulators, [G06G 7/48](#)*)

U G06G 7/48 • Analogue computers for specific processes, systems or devices, e.g. simulators

- C G06G 7/62
- • for electric systems or apparatus ~~{{G06G 7/78 takes precedence}}~~
- NOTE
This group covers only computers specially adapted for electronic systems or devices
- WARNING
Group G06G 7/62 is impacted by reclassification into group G06G 7/627. Groups G06G 7/62 and G06G 7/627 should be considered in order to perform a complete search.
- N G06G 7/623
- • • {for filters; for delay lines}
- D G06G 7/625
- • • for filters; for delay lines ~~{{measuring characteristics of electric networks, e.g. plotting Nyquist diagram G01R 27/28}}~~
 - <administratively transferred to [G06G 7/623](#)>
- N G06G 7/627
- • • {for impedance networks, e.g. determining response, poles or zeros or Nyquist diagram}
- WARNING
Group [G06G 7/627](#) is incomplete pending reclassification of documents from group [G06G 7/62](#). Groups [G06G 7/62](#) and [G06G 7/627](#) should be considered in order to perform a complete search.
- U G06G 7/70
- • for vehicles, e.g. to determine permissible loading of ships {, centre of gravity, necessary fuel}
- M G06G 7/72
- • • Flight ~~simulator~~ *simulators* ~~(Link trainers G09B 9/00)~~

Project: MP12827 (G06J)

- M G06J
- HYBRID COMPUTING ARRANGEMENTS (optical hybrid computing devices [G06E 3/00](#); ~~{{fuzzy computing G06N 7/02}}~~; ~~neural networks for image data processing G06T~~; ~~analog/digital conversion, in general H03M 1/00~~)**
- NOTE
In this subclass, the following expression is used with the meaning indicated:
- "hybrid computing arrangement" is an arrangement in which part of the computation is digital and part is analogue.
- WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
- M G06J 1/00
- Hybrid computing arrangements ~~(digitally-programmed analogue computers G06G 7/06)~~**
- M G06J 1/02
- Differential analysers ~~{{digital differential analysers and other computing arrangements using incremental quantity representation G06F 7/64}}~~

Project: RP12800 (G06K)

- U G06K 7/00
- Methods or arrangements for sensing record carriers, {e.g. for reading patterns} (methods or arrangements for marking the record carrier in digital fashion [G06K 1/00](#); pattern recognition [G06F 18/00](#); arrangements for image or video recognition or understanding [G06V 10/00](#); character recognition, recognising digital ink or document-oriented image-based pattern recognition [G06V 30/00](#))**
- U G06K 7/10
- by electromagnetic radiation, e.g. optical sensing; by corpuscular radiation

- U G06K 7/10544 • • {by scanning of the records by radiation in the optical part of the electromagnetic spectrum}
- U G06K 7/10821 • • • {further details of bar or optical code scanning devices}
- M G06K 7/10841 • • • • {Particularities of the light-sensitive elements (~~semiconductor devices~~ ~~H01L~~ semiconductor devices H10)}

Project: MP12817 (G06M)

- M G06M** **COUNTING MECHANISMS; COUNTING OF OBJECTS NOT OTHERWISE PROVIDED FOR (~~counting by measuring volume or weight of articles to be counted G01F, G01G; computers G06C - G06J; counting electric pulses H03K; counting characters, words or messages in switching networks for transmission of digital information H04L 12/08~~)**

NOTE

This subclass covers:

- stepping or continuously-moving mechanical counters operated through one or more inputs applied to the lowest order mechanically or electrically;
- counting systems involving applications of either mechanical, electrical, or electronic counters.

WARNING

{In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

- U G06M 1/00** **Design features of general application**
- M G06M 1/02 • Housing (~~for measuring instruments in general G01D~~)
- M G06M 1/028 • • {Arbors, drum fixing and adjusting means (~~arbor-fixing means F16C 17/08~~)}
- U G06M 1/08 • for actuating the drive
- M G06M 1/083 • • {by mechanical means (~~counting of stacked objects G06M 9/00~~)}
- M G06M 1/086 • • • {including barriers (~~counting of conveyed objects G06M 7/00~~)}
- U G06M 1/22 • for visual indication of the result of count on counting mechanisms, e.g. by window with magnifying lens
- M G06M 1/24 • • Drums; Dials; Pointers (~~for measuring instruments in general G01D; (for time-measuring instruments G04B 19/00, including drums G04B 19/21; G04C 19/04; date indicating G04B 19/24)~~)
- M G06M 3/00** **Counters with additional facilities (~~generating electric pulses at random intervals H03K 3/84~~)**
- M G06M 3/02 • for performing an operation at a predetermined value of the count, e.g. arresting a machine (~~{G06M 3/04 takes precedence}~~)
- M G06M 3/06 • for printing or separately displaying result of count (~~display systems G09~~)
- M G06M 3/10 • for counting denominations with unequal numbers in each stage, e.g. degrees and minutes of angle (~~transfer mechanism therefor G06M 1/20~~)
- M G06M 7/00 - G06M 15/00** **Counting of objects (~~in machines for shaping metal without removing material B21C 51/00; in printing machines or presses B41F 33/02; in office copying machines B41L 39/02; of axles of rail vehicles B61L 1/16; in packaging machines B65B 65/08; of objects conveyed through a pipe or tube B65G 51/36; entry or exit registers G07C 9/00~~)**
- U G06M 11/00** **Counting of objects distributed at random, e.g. on a surface**
- U G06M 11/02 • using an electron beam scanning a surface line by line, e.g. of blood cells on a substrate
- M G06M 11/04 • • with provision for distinguishing between different sizes of objects (~~investigating particle size in general G01N 15/00~~)

Project: RP12814 (G06Q)

U	G06Q 10/00	Administration; Management
Q	G06Q 10/40	<ul style="list-style-type: none"> • Business processes related to social networking or social networking services <p><u>WARNING</u></p> <p>Group G06Q 10/40 is impacted by reclassification into groups G06Q 10/42, G06Q 10/44, G06Q 10/46 and G06Q 10/48.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>
N	G06Q 10/42	<ul style="list-style-type: none"> • Determination of affinities or common interests between users <p><u>WARNING</u></p> <p>Group G06Q 10/42 is incomplete pending reclassification of documents from group G06Q 10/40.</p> <p>Groups G06Q 10/40 and G06Q 10/42 should be considered in order to perform a complete search.</p>
N	G06Q 10/44	<ul style="list-style-type: none"> • Identification of trends within social networks, e.g. identification of trending topics <p><u>WARNING</u></p> <p>Group G06Q 10/44 is incomplete pending reclassification of documents from group G06Q 10/40.</p> <p>Groups G06Q 10/40 and G06Q 10/44 should be considered in order to perform a complete search.</p>
N	G06Q 10/46	<ul style="list-style-type: none"> • Determination of level of influence of users within social networking services <p><u>WARNING</u></p> <p>Group G06Q 10/46 is incomplete pending reclassification of documents from group G06Q 10/40.</p> <p>Groups G06Q 10/40 and G06Q 10/46 should be considered in order to perform a complete search.</p>
N	G06Q 10/48	<ul style="list-style-type: none"> • using social graphs <p><u>WARNING</u></p> <p>Group G06Q 10/48 is incomplete pending reclassification of documents from group G06Q 10/40.</p> <p>Groups G06Q 10/40 and G06Q 10/48 should be considered in order to perform a complete search.</p>

Project: Unknown (G06Q)

U	G06Q 30/00	Commerce
U	G06Q 30/06	<ul style="list-style-type: none"> • Buying, selling or leasing transactions
U	G06Q 30/0601	<ul style="list-style-type: none"> • Electronic shopping [e-shopping]
U	G06Q 30/0641	<ul style="list-style-type: none"> • {utilising user interfaces specially adapted for shopping} <p><u>WARNING</u></p> <p>Group G06Q 30/0641 is impacted by reclassification into groups G06Q 30/0643, G06Q 30/06431, G06Q 30/06432, G06Q 30/06433, G06Q 30/06434, G06Q 30/06435, G06Q 30/0644, G06Q 30/06442 and G06Q 30/06444.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>

- M G06Q 30/0643 . . . {~~graphically~~*graphically* representing goods, e.g. 3D product representation}
- WARNING
 Group [G06Q 30/0643](#) is incomplete pending reclassification of documents from group [G06Q 30/0641](#). Group [G06Q 30/0643](#) is also impacted by reclassification into groups [G06Q 30/06431](#), [G06Q 30/06432](#), [G06Q 30/06433](#), [G06Q 30/06434](#), [G06Q 30/06435](#), [G06Q 30/0644](#), [G06Q 30/06442](#), [G06Q 30/06443](#) and [G06Q 30/06444](#).
 All groups listed in this Warning should be considered in order to perform a complete search.

Project: RP12814 (G06Q)

- U G06Q 50/00 **Information and communication technology [ICT] specially adapted for implementation of business processes of specific business sectors, e.g. utilities or tourism (healthcare informatics [G16H](#))**
- WARNING
 Group [G06Q 50/00](#) is impacted by reclassification into groups [G06Q 50/02](#), [G06Q 50/06](#) and [G06Q 50/22](#).
 All groups listed in this Warning should be considered in order to perform a complete search.

- D G06Q 50/01 . {~~Social networking~~
 <administratively transferred to [G06Q 10/40](#)>

Project: MP12721 (G06Q)

- M G06Q 50/50 . Business processes related to the communications industry (~~metering or billing arrangements H04L 12/14~~; *charging, metering or billing arrangements specially adapted for data communications H04L 12/14*; telephonic communication involving automatic or semi-automatic exchanges [H04M 3/00](#); arrangements for metering, time-control or time indication [H04M 15/00](#); prepayment telephone systems [H04M 17/00](#); accounting or billing for wireless communication networks [H04W 4/24](#))
- WARNING
 Group [G06Q 50/50](#) is incomplete pending reclassification of documents from group [G06Q 50/40](#).
 Groups [G06Q 50/40](#) and [G06Q 50/50](#) should be considered in order to perform a complete search.

Project: MP12840 (G06T)

- U G06T 3/00 **Geometric image transformations in the plane of the image**
- U G06T 3/06 . Topological mapping of higher dimensional structures onto lower dimensional surfaces
- M G06T 3/067 . . Reshaping or unfolding ~~3D~~*three-dimensional [3D]* tree structures onto ~~2D~~*two-dimensional [2D]* planes

Project: RP12802 (G06T)

- M G06T 11/00 **~~2D [Two-Dimensional]~~*Two-dimensional [2D]* image generation**
- D G06T 11/001 . {~~Texturing; Colouring; Generation of texture or colour (inpainting G06T 5/77)~~
 <administratively transferred to [G06T 11/10](#)>
- D G06T 11/003 . {~~Reconstruction from projections, e.g. tomography~~
 <administratively transferred to [G06T 12/00](#)>

D	G06T 11/005	<ul style="list-style-type: none"> • {Specific pre-processing for tomographic reconstruction, e.g. calibration, source positioning, rebinning, scatter correction, retrospective gating} <p><administratively transferred to G06T 12/10></p>
D	G06T 11/006	<ul style="list-style-type: none"> • {Inverse problem, transformation from projection-space into object-space, e.g. transform methods, back-projection, algebraic methods} <p><administratively transferred to G06T 12/20></p>
D	G06T 11/008	<ul style="list-style-type: none"> • {Specific post-processing after tomographic reconstruction, e.g. voxelisation, metal artifact correction} <p><administratively transferred to G06T 12/30></p>
N	G06T 11/10	<ul style="list-style-type: none"> • Texturing; Colouring; Generation of textures or colours (retouching, inpainting or scratch removal G06T 5/77)
M	G06T 11/20	<ul style="list-style-type: none"> • Drawing from basic elements, e.g. lines or circles
D	G06T 11/203	<ul style="list-style-type: none"> • {Drawing of straight lines or curves} <p><administratively transferred to G06T 11/23></p>
D	G06T 11/206	<ul style="list-style-type: none"> • {Drawing of charts or graphs} <p><administratively transferred to G06T 11/26></p>
N	G06T 11/23	<ul style="list-style-type: none"> • using straight lines or curves
N	G06T 11/26	<ul style="list-style-type: none"> • Drawing of charts or graphs
M	G06T 11/40	<ul style="list-style-type: none"> • Filling a planar surface surfaces by adding surface attributes, e.g. colour or texture adding colours or textures
C	G06T 11/60	<ul style="list-style-type: none"> • Editing figures and text Creating or editing images; Combining figures or images with text <p><u>WARNING</u> Group G06T 11/60 is incomplete pending reclassification of documents from group G06T 11/80. Group G06T 11/60 is also impacted by reclassification into group G06T 11/65. Groups G06T 11/60, G06T 11/80 and G06T 11/65 should be considered in order to perform a complete search.</p>
N	G06T 11/65	<ul style="list-style-type: none"> • on geographic maps <p><u>WARNING</u> Group G06T 11/65 is incomplete pending reclassification of documents from groups G06T 11/60 and G06T 11/80. Groups G06T 11/60, G06T 11/80 and G06T 11/65 should be considered in order to perform a complete search.</p>
F	G06T 11/80 (Frozen)	<ul style="list-style-type: none"> • {Creating or modifying a manually drawn or painted image using a manual input device, e.g. mouse, light pen, direction keys on keyboard} <p><u>WARNING</u> Group G06T 11/80 is no longer used for the classification of documents as of January 1, 2026. The content of this group is being reclassified into groups G06T 11/60 and G06T 11/65. Groups G06T 11/80, G06T 11/60 and G06T 11/65 should be considered in order to perform a complete search.</p>
N	G06T 12/00	Tomographic reconstruction from projections
N	G06T 12/10	<ul style="list-style-type: none"> • Image preprocessing, e.g. calibration, positioning of sources or scatter correction
N	G06T 12/20	<ul style="list-style-type: none"> • Inverse problem, i.e. transformations from projection space into object space
N	G06T 12/30	<ul style="list-style-type: none"> • Image post-processing, e.g. metal artefact correction

Project: MP12840 (G06T)

U	G06T 13/00	Animation
M	G06T 13/20	• 3D [Three-Dimensional <i>Three-dimensional</i> [3D]] animation
M	G06T 13/80	• 2D [Two-Dimensional <i>Two-dimensional</i> [2D]] animation, e.g. using sprites
M	G06T 15/00	3D [Three-Dimensional <i>Three-dimensional</i> [3D]] image rendering
M	G06T 17/00	Three- dimensional [3D] modelling, e.g. data description of 3D objects for <i>computer graphics</i>
M	G06T 19/00	Manipulating 3D <i>three-dimensional</i> [3D] models or images for computer graphics
M	G06T 19/20	• Editing of 3D <i>three-dimensional</i> [3D] images, e.g. changing shapes or colours, aligning objects or positioning parts

Project: MP12828 (G06V)

U	G06V 20/00	Scenes; Scene-specific elements (control of digital cameras H04N 23/60)
		<u>NOTE</u>
		In this group, the following term is used with the meaning indicated:
		• "scene" is a visual representation of the world or of some elements of it, as captured by a sensor or generated by a computer.
U	G06V 20/60	• Type of objects
U	G06V 20/62	• • Text, e.g. of license plates, overlay texts or captions on TV images
M	G06V 20/635	• • • {Overlay text, e.g. embedded captions in a TV program <i>programme</i> }

Project: MP12840 (G06V)

M	G06V 20/64	• • Three-dimensional [<i>3D</i>] objects
M	G06V 30/00	Character recognition; Recognising digital ink; Document-oriented image-based pattern recognition (scanning, transmission or reproduction of documents or the like H04N 1/00)
		<u>NOTE</u>
		This group <u>covers</u> recognition of characters or digital ink, where the characters or the digital ink can include representations in three dimensions [<i>3D</i>], e.g. as written by performing gestures in the air.
U	G06V 30/10	• Character recognition
U	G06V 30/22	• • characterised by the type of writing
M	G06V 30/228	• • • of three-dimensional [<i>3D</i>] handwriting, e.g. writing in the air

Project: MP12754 (G07B)

U	G07B 15/00	Arrangements or apparatus for collecting fares, tolls or entrance fees at one or more control points (handling coins or valuable papers, e.g. banknotes, G07D ; apparatus for vending or hiring articles or services activated by coins, credit cards, paper currency or the like G07F 7/00 , G07F 17/00)
		<u>NOTES</u>
		1. Data processing aspects of payment systems or protocols relating to toll, entrance fee or fare collection, e.g. in road pricing or congestion charging, are also classified in G06Q 20/00 .
		2. { This group covers also:
		• car rental systems;

- systems for reserving and using access tickets, e.g. check-in systems

M G07B 15/02

- taking into account a variable factor such as distance or time, e.g. for passenger transport, parking systems or car rental systems ([G07B 15/06](#) takes precedence; taximeters [G07B 13/00](#); parking meters per se [G07F 17/24](#); ~~car rental systems per se G07B 15/00~~)

Project: MP12708 (G07F)

U G07F 17/00 **Coin-freed apparatus for hiring articles; Coin-freed facilities or services**

U G07F 17/32

- for games, toys, sports, or amusements

U G07F 17/3202

- {Hardware aspects of a gaming system, e.g. components, construction, architecture thereof}

M G07F 17/3223

- • {Architectural aspects of a gaming system, e.g. internal configuration, ~~master/slave~~[leader-follower](#), wireless communication}

Project: MP12820 (G07G)

M G07G **REGISTERING THE RECEIPT OF CASH, VALUABLES, OR TOKENS** ~~(digital computing in general G06C, G06F)~~

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme:

M G07G 1/00 **Cash registers** ~~(alarm indicators G07G 3/00)~~

M G07G 1/01

- Details for indicating ~~(displaying information in general G09F, G09G)~~

M G07G 1/12

- electronically operated ~~(digital data processing aspects G06Q 20/00)~~

M G07G 1/14

- • Systems including one or more distant stations co-operating with a central processing unit ~~(data transmission in general H04L; telemetry systems for selectively calling a substation from a main station H04Q 9/00)~~

M G07G 5/00 **Receipt-giving machines** ~~(cash registers giving receipts G07G 1/00)~~

Project: MP12822 (G08B)

M G08B **SIGNALLING ~~OR~~ [SYSTEMS](#), e.g. [PERSONAL](#) CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS**

NOTES

1. This subclass covers also means for identifying or incapacitating burglars or the like.
2. This subclass does not cover:
 - the mere provision of an audible or visible signalling device on measuring or switching apparatus;
 - alarm systems for indicating that a specific variable has exceeded, or fallen below, a predetermined value, which are covered by the relevant subclasses of class [G01](#) for the measurement of that variable.
 - alarms for specific processes or types of machines or apparatus, which are covered by the relevant subclasses for the processes, machines, or apparatus.
3. In this subclass, the following term is used with the meaning indicated:
 - "systems" may cover also devices peculiar thereto.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

M	G08B 3/00	Audible signalling systems, e.g. audible personal calling systems ; Audible personal calling systems
M	G08B 5/00	Visible signalling systems, e.g. visible personal calling systems ; or remote indication of seats occupied
M	G08B 6/00	Tactile signalling systems, e.g. tactile personal calling systems
M	G08B 7/00	Signalling systems according to more than one two or more of groups G08B 3/00 - G08B 6/00 ; Personal calling systems according to more than one of groups G08B 3/00 - G08B 6/00

Project: MP12708 (G08B)

U	G08B 13/00	Burglar, theft or intruder alarms
U	G08B 13/18	• Actuation by interference with heat, light, or radiation of shorter wavelength; Actuation by intruding sources of heat, light, or radiation of shorter wavelength
U	G08B 13/189	• • using passive radiation detection systems
U	G08B 13/194	• • • using image scanning and comparing systems
U	G08B 13/196	• • • • using television cameras
U	G08B 13/19639	• • • • • {Details of the system layout}
U	G08B 13/19641	• • • • • {Multiple cameras having overlapping views on a single scene}
M	G08B 13/19643	• • • • • {wherein the cameras play different roles, e.g. different resolution, different camera type, master-slave camera different control type }

Project: Unknown (G08B)

U	G08B 21/00	Alarms responsive to a single specified undesired or abnormal condition and not otherwise provided for
U	G08B 21/02	• Alarms for ensuring the safety of persons
U	G08B 21/0202	• • {Child monitoring systems using a transmitter-receiver system carried by the parent and the child}
M	G08B 21/0277	• • • {Communication between units on a local network, e.g. Bluetooth®, piconet, zigbee Zigbee® , Wireless Personal Area Networks [WPAN]}
U	G08B 25/00	Alarm systems in which the location of the alarm condition is signalled to a central station, e.g. fire or police telegraphic systems
M	G08B 25/004	• {Alarm propagated along alternative communication path or using alternative communication medium according to a hierarchy of available ways to communicate, e.g. if Wi-Fi® not available use GSM}

Project: MP12828 (G09B)

U	G09B 7/00	Electrically-operated teaching apparatus or devices working with questions and answers (mechanically operated G09B 3/00; computing arrangements G06F)
U	G09B 7/02	• of the type wherein the student is expected to construct an answer to the question which is presented or wherein the machine gives an answer to the question presented by a student
M	G09B 7/04	• • characterised by modifying the teaching programme program in response to a wrong answer, e.g. repeating the question; or supplying a further explanation
U	G09B 7/06	• of the multiple-choice answer-type, i.e. where a given question is provided with a series of answers and a choice has to be made from the answers
M	G09B 7/08	• • characterised by modifying the teaching programme program in response to a wrong answer, e.g. repeating the question; or supplying further information

- U G09B 7/10 • • wherein a set of answers is common to a plurality of questions
- M G09B 7/12 • • • characterised by modifying the teaching ~~programme~~*program* in response to a wrong answer, e.g. repeating the question; *or* supplying further information

Project: MP12754 (G09B)

- U G09B 21/00 **Teaching, or communicating with, the blind, deaf or mute (audible presentation of material to be studied [G09B 5/04](#); devices or methods for replacing direct visual or auditory perception by another kind of perception [A61F 9/08](#), [A61F 11/04](#); audible indication of meter readings or of colour [G01D 7/12](#); watches for blind persons [G04B 25/02](#); speech analysis, speech recognition [G10L](#); sound-recording or reproducing, *per se* [G11B](#))**
- M G09B 21/009 • {Teaching or communicating with deaf persons ([G09B 21/04](#) takes precedence; ~~deaf and dumb persons G09B 21/00~~)}

Project: MP12840 (G09F)

- U G09F 1/00 **Cardboard or like show-cards of foldable or flexible material**
- U G09F 1/04 • Folded cards
- M G09F 1/06 • • to be erected in three dimensions [*3D*] ([G09F 1/08](#) takes precedence)

Project: RP12800 (G09G)

- M G09G **ARRANGEMENTS OR CIRCUITS FOR CONTROL OF INDICATING DEVICES USING STATIC MEANS TO PRESENT VARIABLE INFORMATION (arrangements for transferring data between digital computers and displays [G06F 3/14](#); static indicating arrangements comprising an association of a number of separate sources or light control cells [G09F 9/00](#); static indicating arrangements comprising integral associations of a number of light sources [H01J](#), [H01K](#), ~~H01L~~*H10H*, [H05B 33/12](#); scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission, details thereof [H04N 1/00](#))**

NOTES

1. This subclass covers indicator consoles, i.e. arrangements or circuits for processing control signals to achieve the display, e.g. for the calling up, reception, storage, regeneration, coding, decoding, addressing of control signals.
2. This subclass does not cover the structural details of the indicating devices, such as panels or tubes *per se*, or assemblies of individual light sources, which are covered by the relevant subclasses, e.g. ~~G02F~~, ~~G09F~~, [H01J](#), [H01K](#), ~~H01L~~*H05B*, ~~H10H~~, ~~H10K~~, ~~G02F~~, ~~G09F~~, ~~H05B~~.
3. Contrary to subclass [H04N](#), in which are classified display devices capable of representing continuous brightness value scales, this subclass is limited to devices using only a discrete number of brightness values, e.g. visible/non-visible.
4. The visual effect may be produced by a luminescent screen scanned by an electron beam, directly by controlled light sources, by projection of light, from controlled light sources onto characters, symbols, or elements thereof drawn on a support, or by electric, magnetic, or acoustic control of the parameters of light rays from an independent source.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: MP12828 (G10H)

- U G10H 7/00** Instruments in which the tones are synthesised from a data store, e.g. computer organs
- M G10H 7/002** • {using a common processing for different operations or calculations, and a set of microinstructions-~~(programme)~~, e.g. *programs*, to control the sequence thereof}

Project: Unknown (G10H)

- M G10H 2220/355** • • • Geolocation input, i.e. control of musical parameters based on location or geographic position, e.g. provided by GPS, ~~WiFi~~*Wi-Fi*® network location databases or mobile phone base station position databases
- U G10H 2240/00** Data organisation or data communication aspects, specifically adapted for electrophonic musical tools or instruments
- U G10H 2240/171** • Transmission of musical instrument data, control or status information; Transmission, remote access or control of music data for electrophonic musical instruments
- U G10H 2240/281** • • Protocol or standard connector for transmission of analog or digital data to or from an electrophonic musical instrument
- M G10H 2240/321** • • • Bluetooth®

Project: MP12754 (G11B)

- U G11B 5/00** Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor ([G11B 11/00](#) {and [G11B 13/00](#)} take precedence)
- NOTE
Subgroups [G11B 5/02](#) - [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) - [G11B 5/016](#)
- U G11B 5/127** • Structure or manufacture of heads, e.g. inductive
- U G11B 5/31** • • using thin films {([G11B 5/1274](#), [G11B 5/1278](#), [G11B 5/1874](#), [G11B 5/1875](#), [G11B 5/33](#), [G11B 5/49](#) take precedence; magnetic thin film structures [H01F 10/00](#))}
- M G11B 5/3176** • • • {Structure of heads comprising at least in the transducing gap regions two magnetic thin films disposed respectively at both sides of the gaps ([G11B 5/2455](#), [G11B 5/265](#) take precedence; ~~composite magnetic head structures, e.g. "Metal-In-Gap" heads are classified in G11B 5/127 or G11B 5/187 and subgroups~~)}
- U G11B 5/48** • Disposition or mounting of heads {or head supports} relative to record carriers {(mounting of head within housing [G11B 5/105](#)); arrangements of heads, e.g. for scanning the record carrier to increase the relative speed (driving of both record carriers and head [G11B 15/18](#); guiding record carriers [G11B 15/60](#); head selecting circuits [G11B 15/12](#))}
- U G11B 5/58** • • with provision for moving the head for the purpose of maintaining alignment of the head relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following {(spacing means incorporated in the head structure [G11B 5/187](#), [G11B 5/255](#), [G11B 5/3106](#))}
- U G11B 5/584** • • • for track following on tapes
- U G11B 5/588** • • • • by controlling the position of the rotating heads (by controlling the speed of the record carrier [G11B 15/467](#); by controlling speed of the heads [G11B 15/473](#); {by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement [G11B 15/1841](#)})

- M G11B 5/592 using bimorph elements supporting the heads ~~{{see provisional also G11B 5/588}}~~

Project: MP12840 (G11B)

- U G11B 7/00 **Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation {by modifying optical properties or the physical structure}, reproducing using an optical beam at lower power {by sensing optical properties}; Record carriers therefor (G11B 11/00, G11B 13/00 take precedence)**
- U G11B 7/24 . Record carriers characterised by shape, structure or physical properties, or by the selection of the material (characterised by the arrangement of information on the carrier [G11B 7/007](#))
- U G11B 7/2403 . . Layers; Shape, structure or physical properties thereof
- U G11B 7/24035 . . . Recording layers (substrates also used as recording layers [G11B 7/24047](#))
- M G11B 7/24044 for storing optical interference patterns, e.g. holograms; for storing data in three dimensions [\[3D\]](#), e.g. volume storage ([G11B 7/24038](#) takes precedence)

Project: MP12828 (G11B)

- U G11B 20/00 **Signal processing not specific to the method of recording or reproducing; Circuits therefor**
- U G11B 20/10 . Digital recording or reproducing
- U G11B 20/12 . . Formatting, e.g. arrangement of data block or words on the record carriers {{within interface between computers and data recorders [G06F 3/06](#)}}
- U G11B 20/1201 . . . {on tapes}
- U G11B 20/1202 {with longitudinal tracks only}
- M G11B 20/1205 {for discontinuous data, e.g. digital information signals, ~~computer programme~~ [or computer program](#) data}
- U G11B 20/1207 {with transverse tracks only}
- M G11B 20/1209 {for discontinuous data, e.g. digital information signals, ~~computer programme~~ [or computer program](#) data}
- U G11B 20/1211 {with different data track configurations (longitudinal control tracks with transverse user data tracks [G11B 20/1207](#))}
- M G11B 20/1214 {for discontinuous data, e.g. digital information signals, ~~computer programme~~ [or computer program](#) data}
- U G11B 20/1217 . . . {on discs}
- M G11B 20/1252 {for discontinuous data, e.g. digital information signals, ~~computer programme~~ [or computer program](#) data}

Project: MP12754 (G11B)

- U G11B 23/00 **Record carriers not specific to the method of recording or reproducing; Accessories, e.g. containers, specially adapted for co-operation with the recording or reproducing apparatus {; Intermediate mediums; Apparatus or processes specially adapted for their manufacture (processes involving a single technical art and for which provision exists elsewhere, [see the relevant class](#), e.g. [B29](#), [B41M](#), [B05D](#), [C08L](#), [F16N](#))}**

NOTE

In group [G11B 23/00](#), recording or reproducing apparatus does not include the record carriers.

- U G11B 23/02 • Containers; Storing means {both adapted to cooperate with the recording or reproducing means}
- U G11B 23/04 • • Magazines; Cassettes {for webs or filaments}(G11B 23/12 takes precedence {; cassettes with sealing or locking means G11B 23/28; dummy cassettes for locking in the drive G11B 33/005})
- U G11B 23/08 • • • for housing webs or filaments having two distinct ends
- U G11B 23/087 • • • • using two different reels or cores
- U G11B 23/08707 • • • • • {Details}
- M G11B 23/08721 • • • • • {Brakes for tapes or tape reels-~~(G11B-23/08707 takes precedence)~~}
- U G11B 27/00 Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel**
- U G11B 27/10 • Indexing; Addressing; Timing or synchronising; Measuring tape travel
- U G11B 27/11 • • by using information not detectable on the record carrier
- U G11B 27/13 • • • the information being derived from movement of the record carrier, e.g. using tachometer
- M G11B 27/15 • • • • using mechanical sensing means-~~{{see provisionally also G11B 27/13}}~~
- M G11B 27/17 • • • • using electrical sensing means-~~{{see provisionally also G11B 27/13}}~~

Project: MP12840 (G11C)

- U G11C 11/00 Digital stores characterised by the use of particular electric or magnetic storage elements; Storage elements therefor (G11C 14/00 - G11C 21/00 take precedence)**
- NOTE
- Group G11C 11/56 takes precedence over groups G11C 11/02 - G11C 11/54. {This Note corresponds to IPC Note (1) relating to G11C 11/02 - G11C 11/56.}
- U G11C 11/02 • using magnetic elements
- U G11C 11/06 • • using single-aperture storage elements, e.g. ring core; using multi-aperture plates in which each individual aperture forms a storage element
- U G11C 11/061 • • • using elements with single aperture or magnetic loop for storage, one element per bit, and for destructive read-out {(contains no documents, see G11C 11/06007, G11C 11/06014, G11C 11/06021, G11C 11/06028)}
- M G11C 11/063 • • • • bit-organised, such as ~~2-1/2D~~, ~~3D-2L/2D-organisation~~ or ~~three-dimensional [3D]~~-organisation, i.e. for selection of an element by means of at least two coincident partial currents both for reading and for writing {(contains no documents; see G11C 11/06035 G11C 11/06035 takes precedence)}
- M G11C 11/065 • • • • word-organised, such as ~~2D-two-dimensional [2D]~~-organisation, or linear selection, i.e. for selection of all the elements of a word by means of a single full current for reading {(contains no documents; see G11C 11/06042 G11C 11/06042 takes precedence)}
- U G11C 19/00 Digital stores in which the information is moved stepwise, e.g. shift registers**
- M G11C 19/38 • two-dimensional [2D], e.g. horizontal and vertical shift registers

Project: MP12840 (G16B)

- M G16B 15/00 ICT specially adapted for analysing two-dimensional [2D] or three-dimensional [3D] molecular structures, e.g. structural or functional relations or structure alignment**

Project: MP12731 (G16Y)

M G16Y

INFORMATION AND COMMUNICATION TECHNOLOGY SPECIALLY
ADAPTED FOR THE INTERNET OF THINGS [IoT]

NOTES

1. This subclass is for obligatory secondary classification in the sense of paragraph 107bis of the Guide to the IPC. Therefore, the classification symbols of this subclass are not listed first when assigned to patent documents. Secondary classification symbols may be assigned for either invention information or additional information, as appropriate.

~~1.~~ 2. This subclass covers inter-networking of physical objects ("things") that embed technology enabling the things to sense and collect information from their internal state or their external environment, wherein the information is processed by the things or by other devices, e.g. servers, to be output to the things, to other things or to other devices, and enabling these things to be connected to the Internet either directly or indirectly.

- "Directly connected to Internet" means that a thing possesses a network address of the Internet address space, which is used to communicate over the Internet.

- "Indirectly connected to Internet" means that a thing is connected to a proxy device, which possesses a network address of the Internet address space and which communicates over the Internet on behalf of the thing.

- A network address of the Internet address space is an address uniquely identifying a device in the Internet.

- "Directly connected to Internet" means that a thing possesses a network address of the Internet address space, which is used to communicate over the Internet.
- "Indirectly connected to Internet" means that a thing is connected to a proxy device, which possesses a network address of the Internet address space and which communicates over the Internet on behalf of the thing.
- A network address of the Internet address space is an address uniquely identifying a device in the Internet.

~~2.~~ This subclass does not cover:

- Mere monitoring, e.g. security cameras, or mere controlling, e.g. remote control arrangements.
- Generic computing and communicating devices, e.g. computers or telephones

3. This subclass does not cover:

- mere monitoring, e.g. security cameras, or mere controlling, e.g. remote control arrangements;

- generic computing and communicating devices, e.g. computers or telephones.

~~3.~~ 4. This subclass is intended to enable a complementary search of subject matter related to IoT by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore, this subclass covers aspects of IoT (e.g. detection or navigation) that might also be entirely or partially covered elsewhere in the ~~IPC~~ **CPC**.

~~4.~~ This subclass is for obligatory supplementary classification of subject matter already classified as such in other classification places, when the subject matter contains an aspect of IoT.

~~5.~~ The classification symbols of this subclass are not listed first when assigned to patent documents.

~~6.~~ 5. No systematic reclassification was done when this subclass was introduced. When searching using the symbols of this subclass it should be noted that many documents published before 2020 are not classified in subclass G16Y.

Project: RP12722 (G21K)

M G21K **TECHNIQUES FOR HANDLING OF PARTICLES OR IONISING RADIATION NOT OTHERWISE PROVIDED FOR; IRRADIATION DEVICES; GAMMA RAY OR X-RAY MICROSCOPES**

NOTE

In this subclass, the following term is used with the meaning indicated:

"particle" means a molecular, atomic or subatomic particle

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[G21K 3/00](#) covered by [G21K 1/10](#)

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

M G21K 1/00 **Arrangements for handling particles or ionising radiation, e.g. focusing or moderating ~~(production or acceleration of neutrons, electrically-charged particles, neutral molecular beams or neutral atomic beams H05H 3/00-H05H 15/00)~~**

D G21K 1/003 • {Manipulation of charged particles by using radiation pressure, e.g. optical levitation ~~(acceleration of charged particles H05H 5/00, H05H 7/00, H05H 9/00, H05H 11/00, H05H 13/00)~~}

<administratively transferred to [G21K 1/20](#)>

D G21K 1/006 • {Manipulation of neutral particles by using radiation pressure, e.g. optical levitation ~~(production or acceleration of neutral particles H05H 3/00)~~}

<administratively transferred to [G21K 1/30](#)>

Project: MP12754 (G21K)

U G21K 1/06 • using diffraction, refraction or reflection, e.g. monochromators ([G21K 1/10](#), [G21K 7/00](#) take precedence)

M G21K 1/067 • {using surface reflection, e.g. grazing incidence mirrors, gratings (multilayer mirrors [G21K 1/062](#); ~~crystal optics G21K 1/06~~)}

Project: RP12722 (G21K)

U G21K 1/16 • using polarising devices, e.g. for obtaining a polarised beam {(ion sources, ion guns [H01J 27/02](#); polarised targets for producing nuclear reactions [H05H 6/005](#))}

N G21K 1/20 • *for confining charged particles or handling confined charged particles, e.g. ion traps*

N G21K 1/30 • *for confining neutral particles or handling confined neutral particles, e.g. atom traps*

Project: MP12252 (H01C)

M H01C 1/14 • Terminals or tapping points ~~{or electrodes}~~ specially adapted for resistors ~~(in general H01R)~~; Arrangements of terminals or tapping points ~~{or electrodes}~~ on resistors

- U H01C 7/00** Non-adjustable resistors formed as one or more layers or coatings; Non-adjustable resistors made from powdered conducting material or powdered semi-conducting material with or without insulating material (consisting of loose powdered or granular material [H01C 8/00](#); resistors having potential barriers, e.g. field-effect resistors, [H10D 1/40](#) - [H10D 1/43](#), [H10K 10/10](#); semiconductor devices sensitive to electromagnetic or corpuscular radiation, e.g. photoresistors, [H10F 30/00](#); magnetic field controlled resistors [H10N 50/10](#); bulk negative resistance effect devices [H10N 80/00](#))
- M H01C 7/02 • having positive temperature coefficient ~~{{ceramics G04B}}~~
- M H01C 7/021 • • {formed **as one with two** or more layers ~~or coatings~~}
- M H01C 7/04 • having negative temperature coefficient ~~{{thermometers using resistive elements G01K 7/16}}~~

NOTE

{In groups [H01C 7/043](#) - [H01C 7/049](#), the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.}

- M H01C 7/041 • • {formed **as one with two** or more layers ~~or coatings~~}
- M H01C 7/049 • • {mainly consisting of organic or organo-metal substances ~~(H01C 7/041 takes precedence)}~~}
- U H01C 7/10 • voltage responsive, i.e. varistors
- M H01C 7/12 • • Overvoltage protection resistors ~~{{series resistors structurally associated with spark gaps H01T 1/16}}~~; **Arresters**
- M H01C 7/13 • current ~~-~~ responsive

NOTE

Groups [H01C 7/02](#) - [H01C 7/13](#) take precedence over groups [H01C 7/18](#) - [H01C 7/22](#).

- U H01C 13/00** **Resistors not provided for elsewhere**
- M H01C 13/02 • Structural combinations of resistors ~~(impedance networks per se H03H)~~
- U H01C 17/00** **Apparatus or processes specially adapted for manufacturing resistors (providing fillings for housings or enclosures [H01C 1/02](#); reducing insulation surrounding a resistor to powder [H01C 1/03](#); manufacture of thermally variable resistors [H01C 7/02](#), [H01C 7/04](#))**
- M H01C 17/02 • adapted for manufacturing resistors with envelope or housing (*apparatus or processes for filling or compressing insulating material in heating element tubes H05B 3/52*)
- U H01C 17/06 • adapted for coating resistive material on a base
- U H01C 17/065 • • by thick film techniques, e.g. serigraphy
- M H01C 17/06506 • • • {Precursor compositions therefor, e.g. pastes, inks, glass frits *or green body*}
- M H01C 17/075 • • by thin ~~-~~ film techniques ~~{{H01C 17/20 takes precedence}}~~
- U H01C 17/22 • adapted for trimming
- U H01C 17/24 • • by removing or adding resistive material ([H01C 17/23](#), [H01C 17/232](#), [H01C 17/235](#) take precedence)
- M H01C 17/242 • • • by laser ~~{{trimming by laser in general B23K 26/351}}~~

Project: MP12823 (H01C)

- M H01C 17/245 • • • by mechanical means, e.g. sand ~~-~~ blasting, cutting; *or* ultrasonic treatment

Project: MP12828 (H01H)

- M H01H 43/00** Time or time-programme switches providing a choice of time-intervals for executing one or more switching actions and automatically terminating their **operations****operation** after the programme is completed
- U H01H 43/10** • with timing of actuation of contacts due to a part rotating at substantially constant speed
- U H01H 43/106** • {Manual programme selecting means}
- M H01H 2043/107** • • {Bidirectional selecting means, e.g. the **program****programme** selecting knob being turnable in both directions}

Project: RP12819 (H01H)

- U H01H 85/00** Protective devices in which the current flows through a part of fusible material and this current is interrupted by displacement of the fusible material when this current becomes excessive (switches actuated by melting of fusible material [H01H 37/76](#); disposition or arrangement of fuses on boards [H02B 1/18](#))
- U H01H 85/02** • Details
- M H01H 85/0241** • {Structural association of a fuse and another component or apparatus (switches with built-in fuses [H01H 9/10](#), spark-gap arresters [H01H 85/44](#), transformers and inductances [H01F 27/402](#), capacitors [H01G 2/14](#), lamps [H01K 1/66](#), semiconductors [H01L 23/5256](#)[H10W 20/493](#) or [H01L 23/62](#)[H10W 42/80](#))}

Project: MP12828 (H01H)

- U H01H 2231/00** Applications
- M H01H 2231/016** • Control panel; Graphic display; **Programme****Program** control

Project: MP12732 (H01J)

- M H01J** **ELECTRIC DISCHARGE TUBES OR DISCHARGE LAMPS (spark-gaps [H01T](#); ~~arc lamps with consumable electrodes~~ [H05B](#); **electric arc lamps** [H05B 31/00](#); particle accelerators [H05H](#))**

NOTES

1. This subclass covers only devices for producing, influencing, or using a flow of electrons or ions, e.g. for controlling, indicating, or switching of electric current, counting electric pulses, producing light or other electromagnetic oscillations, such as X-rays, or for separating or analysing radiation or particles, and having a closed or substantially closed casing containing a chosen gas, vapour, or vacuum, upon the pressure and nature of which the characteristics of the device depend. Light sources using a combination (other than covered by group [H01J 61/96](#) of this subclass) of discharge and other kinds of light generation are dealt with in [H05B 35/00](#).
2. In this subclass, groups [H01J 1/00](#) - [H01J 7/00](#) relate only to:
 - i. details of an unspecified kind of discharge tube or lamp, or
 - ii. details mentioned in a specification as applicable to two or more kinds of tubes or lamps as defined by groups [H01J 11/00](#), [H01J 13/00](#), [H01J 15/00](#), [H01J 17/00](#), [H01J 21/00](#), [H01J 25/00](#), [H01J 27/00](#), [H01J 31/00](#), [H01J 33/00](#), [H01J 35/00](#), [H01J 37/00](#), [H01J 40/00](#), [H01J 41/00](#), [H01J 47/00](#), [H01J 49/00](#), [H01J 61/00](#), [H01J 63/00](#) or [H01J 65/00](#), hereinafter called basic kinds. A detail only described with reference to, or clearly only applicable to, tubes or lamps of a single basic kind is classified in the detail group appropriate to tubes or lamps of that basic kind, e.g. [H01J 17/04](#).
3. In this subclass, the following term is used with the meaning indicated:

- "lamp" includes tubes emitting ultraviolet or infrared light.

4. Attention is drawn to the definition of the expression "spark gaps" given in the Note following the title of subclass [H01T](#).

5. Apparatus or processes specially adapted for the manufacture of electric discharge tubes, discharge lamps, or parts thereof are classified in group [H01J 9/00](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

- | | | |
|---|------------|---|
| M | H01J 1/00 | Details of electrodes, of magnetic control means, of screens, or of the mounting or spacing thereof, common to two or more basic types of discharge tubes or lamps (details of electron-optical arrangements or of ion traps ion-optical arrangements H01J 3/00) |
| M | H01J 3/00 | Details of electron-optical or ion-optical arrangements or of ion-traps common to two or more basic types of discharge tubes or lamps |
| M | H01J 3/40 | • Traps <i>Arrangements</i> for removing or diverting unwanted particles, e.g. <i>for</i> negative ions; <i>or</i> fringing electrons; Arrangements for velocity or mass selection
{{(see provisionally also H01J 29/46 – H01J 29/84)}} |
| U | H01J 29/00 | Details of cathode-ray tubes or of electron-beam tubes of the types covered by group H01J 31/00 |
| M | H01J 29/84 | • Traps <i>Arrangements</i> for removing or diverting unwanted particles, e.g. <i>for</i> negative ions; <i>or</i> fringing electrons; Arrangements for velocity or mass selection |

Project: MP12823 (H01J)

- | | | |
|---|-------------|---|
| U | H01J 31/00 | Cathode ray tubes; Electron beam tubes (H01J 25/00, H01J 33/00, H01J 35/00, H01J 37/00 take precedence; details of cathode ray tubes or of electron beam tubes H01J 29/00) |
| U | H01J 31/08 | • having a screen on or from which an image or pattern is formed, picked up, converted, or stored |
| M | H01J 31/495 | • • Pick-up tubes adapted for an input of sonic, ultrasonic; or mechanical vibrations and having an electric output |

Project: MP12828 (H01J)

- | | | |
|---|--------------|---|
| M | H01J 37/302 | • • Controlling tubes by external information, e.g. programme <i>program</i> control (H01J 37/304 takes precedence) |
| M | H01J 37/3023 | • • • { Programme <i>Program</i> control} |

Project: RP12800 (H01L)**D H01L**

SEMICONDUCTOR DEVICES NOT COVERED BY CLASS H10 (use of semiconductor devices for measuring G01; resistors in general H01C; magnets, inductors or transformers H01F; capacitors in general H01G; electrolytic devices H01G 9/00; batteries or accumulators H01M; waveguides, resonators or lines of the waveguide type H01P; line connectors or current collectors H01R; stimulated-emission devices H01S; electromechanical resonators H03H; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R; electric light sources in general H05B; printed circuits, hybrid circuits, casings or constructional details of electrical apparatus, manufacture of assemblages of electrical components H05K; use of semiconductor devices in circuits having a particular application, see the subclass for the application)

NOTES

1. This subclass is residual to class H10.
2. This subclass covers:
 - a. semiconductor devices for rectifying, amplifying, oscillating or switching; their constructional details or arrangements; their assemblies or integrated devices; their manufacture or treatment;
 - b. semiconductor devices sensitive to radiation; their constructional details or arrangements; their assemblies or integrated devices; their manufacture or treatment;
 - c. semiconductor devices for light emission; their constructional details or arrangements; their assemblies or integrated devices; their manufacture or treatment;
 - d. processes or apparatus for the manufacture or treatment of semiconductor or solid-state devices where the type of device is not listed under bullets a to c, above, or not essential;
 - e. constructional details or arrangements of semiconductor or solid-state devices not covered by class H10 and not specific to types of devices listed under bullets a to c, above;
 - f. packaging or assembling of semiconductor or solid-state devices covered by this subclass or by class H10.
3. In this subclass, the following terms or expressions are used with the meaning indicated:
 - "wafer" means a slice of semiconductor or crystalline substrate material, which can be modified by impurity diffusion (doping), ion implantation or epitaxy, and whose active surface can be processed into arrays of discrete components or integrated circuits;
 - "solid state body" means the body of material within which, or at the surface of which, the physical effects characteristic of the device occur;
 - "electrode" is a region in or on the body of the device (other than the solid state body itself), which exerts an electrical influence on the solid state body, irrespective of whether or not an external electrical connection is made thereto. An electrode may include several portions and the term includes metallic regions which exert influence on the solid state body through an insulating region (e.g. capacitive coupling) and inductive coupling arrangements to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions, only those portions which exert an influence on the solid state body by virtue of their shape, size, or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be "arrangements for conducting electric current to or from the solid state body" or "interconnections between solid state components formed in or on a common substrate", i.e. leads;

- "device" means an electric circuit element; where an electric circuit element is one of a plurality of elements formed in or on a common substrate; it is referred to as a "component";
- "complete device" is a device in its fully assembled state which may or may not require further treatment, e.g. electroforming, before it is ready for use but which does not require the addition of further structural units;
- "parts" includes all structural units which are included in a complete device;
- "container" is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in intimate contact therewith is referred to as an "encapsulation";
- "integrated circuit" is a device where all components, e.g. diodes or resistors, are built up on a common substrate and form the device including interconnections between the components;
- "assembly" of a device is the building up of the device from its constructional units; the term covers the provision of fillings in containers.

4. In this subclass, both the process or apparatus for the manufacture or treatment of a device and the device itself are classified, whenever both of these are described sufficiently to be of interest.

5. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the Periodic Table of chemical elements the CPC refers. In this subclass, the system used is the 8-group system, indicated by Roman numerals in the Periodic Table thereunder.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

H01L 21/203	covered by	H01L 21/02631
H01L 21/205	covered by	H01L 21/0262
H01L 21/208	covered by	H01L 21/02623
H01L 21/301	covered by	H01L 21/30
H01L 21/36 - H01L 21/368	covered by	H01L 21/02107
H01L 21/58	covered by	H01L 24/80
H01L 21/66	covered by	H01L 22/00
H01L 21/98	covered by	H01L 25/50

2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.}

3. Due to the ongoing developments in class H10 and related subclasses, the information displayed in notes, references and definitions of this subclass may not be entirely accurate. For each specific subject matter referred to in this subclass, users are invited to consult the relevant place in class H10 and to consider the class H10 information as correct, in case of conflict.

D H01L 21/00

Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof

NOTE

{Due to the ongoing developments in class H10 and related subclasses, the information displayed in notes, references and definitions of this main group and indents may not be entirely accurate. For each specific subject matter referred to in this main group and indents, users are invited to consult the relevant place in class H10 and to consider the class H10 information as correct, in case of conflict}

<administratively transferred to [H10P 95/00](#)>

- D H01L 21/02 · Manufacture or treatment of semiconductor devices or of parts thereof
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/02002 · · {Preparing wafers}
NOTES
 1. {This group covers processes for manufacturing wafers prior to the fabrication of any device, i.e. between the sawing of ingots (covered by B28D) and the cleaning of substrates (covered by H01L 21/02041).}
 2. {This group does not cover:
 · simple use of grinding or polishing machines B24B
 · thermal smoothening H01L 21/324.
 }
 <administratively transferred to [H10P 90/00](#)>
- D H01L 21/02005 · · · {Preparing bulk and homogeneous wafers}
 <administratively transferred to [H10P 90/12](#)>
- D H01L 21/02008 · · · · {Multistep processes}
 <administratively transferred to [H10P 90/12](#)>
- D H01L 21/0201 · · · · · {Specific process step}
 <administratively transferred to [H10P 90/12](#)>
- D H01L 21/02013 · · · · · · {Grinding, lapping}
 <administratively transferred to [H10P 90/123](#)>
- D H01L 21/02016 · · · · · · {Backside treatment}
 <administratively transferred to [H10P 90/124](#)>
- D H01L 21/02019 · · · · · · {Chemical etching}
 <administratively transferred to [H10P 90/126](#)>
- D H01L 21/02021 · · · · · · {Edge treatment, chamfering}
 <administratively transferred to [H10P 90/128](#)>
- D H01L 21/02024 · · · · · · {Mirror polishing}
 <administratively transferred to [H10P 90/129](#)>
- D H01L 21/02027 · · · · {Setting crystal orientation}
 <administratively transferred to [H10P 90/14](#)>
- D H01L 21/0203 · · · · {Making porous regions on the surface}
 <administratively transferred to [H10P 90/15](#)>
- D H01L 21/02032 · · · · {by reclaiming or re-processing}
 <administratively transferred to [H10P 90/16](#)>
- D H01L 21/02035 · · · · {Shaping}
 <administratively transferred to [H10P 90/18](#)>
- D H01L 21/02041 · · {Cleaning}
 <administratively transferred to [H10P 70/00](#)>
- D H01L 21/02043 · · · {Cleaning before device manufacture, i.e. Begin-Of-Line process}
 <administratively transferred to [H10P 70/10](#)>
- D H01L 21/02046 · · · · {Dry cleaning only (H01L 21/02085 takes precedence)}
 <administratively transferred to [H10P 70/12](#)>
- D H01L 21/02049 · · · · · {with gaseous HF}
 <administratively transferred to [H10P 70/125](#)>

- D H01L 21/02052 . . . {Wet cleaning only (H01L 21/02085 takes precedence)}
<administratively transferred to [H10P 70/15](#)>
- D H01L 21/02054 . . . {combining dry and wet cleaning steps (H01L 21/02085 takes precedence)}
<administratively transferred to [H10P 70/18](#)>
- D H01L 21/02057 . . . {Cleaning during device manufacture}
<administratively transferred to [H10P 70/20](#)>
- D H01L 21/0206 . . . {during, before or after processing of insulating layers}
<administratively transferred to [H10P 70/23](#)>
- D H01L 21/02063 . . . {the processing being the formation of vias or contact holes}
<administratively transferred to [H10P 70/234](#)>
- D H01L 21/02065 . . . {the processing being a planarization of insulating layers}
<administratively transferred to [H10P 70/237](#)>
- D H01L 21/02068 . . . {during, before or after processing of conductive layers, e.g. polysilicon or amorphous silicon layers}
<administratively transferred to [H10P 70/27](#)>
- D H01L 21/02071 . . . {the processing being a delineation, e.g. RIE, of conductive layers}
<administratively transferred to [H10P 70/273](#)>
- D H01L 21/02074 . . . {the processing being a planarization of conductive layers}
<administratively transferred to [H10P 70/277](#)>
- D H01L 21/02076 . . . {Cleaning after the substrates have been singulated}
<administratively transferred to [H10P 70/30](#)>
- D H01L 21/02079 . . . {Cleaning for reclaiming}
<administratively transferred to [H10P 70/40](#)>
- D H01L 21/02082 . . . {product to be cleaned}
<administratively transferred to [H10P 70/50](#)>
- D H01L 21/02085 . . . {Cleaning of diamond}
<administratively transferred to [H10P 70/52](#)>
- D H01L 21/02087 . . . {Cleaning of wafer edges}
<administratively transferred to [H10P 70/54](#)>
- D H01L 21/0209 . . . {Cleaning of wafer backside}
<administratively transferred to [H10P 70/56](#)>
- D H01L 21/02093 . . . {Cleaning of porous materials}
<administratively transferred to [H10P 70/58](#)>
- D H01L 21/02096 . . . {only mechanical cleaning}
<administratively transferred to [H10P 70/60](#)>
- D H01L 21/02098 . . . {only involving lasers, e.g. laser ablation}
<administratively transferred to [H10P 70/70](#)>
- D H01L 21/02101 . . . {only involving supercritical fluids}
<administratively transferred to [H10P 70/80](#)>
- D H01L 21/02104 . . . {Forming layers (deposition in general C23C; crystal growth in general C30B)}
<administratively transferred to [H10P 14/00](#)>

- D H01L 21/02107 . . . {Forming insulating materials on a substrate}
<administratively transferred to [H10P 14/60](#)>
- D H01L 21/02109 . . . {characterised by the type of layer, e.g. type of material, porous/non-porous, pre-cursors, mixtures or laminates}
<administratively transferred to [H10P 14/66](#)>
- D H01L 21/02112 {characterised by the material of the layer}
NOTE
{Layers comprising sublayers, i.e. multi-layers, are additionally classified in H01L 21/022; porous layers are additionally classified in H01L 21/02203.}
<administratively transferred to [H10P 14/68](#)>
- D H01L 21/02115 {the material being carbon, e.g. alpha-C, diamond or hydrogen-doped carbon}
<administratively transferred to [H10P 14/6902](#)>
- D H01L 21/02118 {carbon based polymeric organic or inorganic material, e.g. polyimides, poly-cyclobutene or PVC (polymers per se C08G, photoresist per se G03F)}
<administratively transferred to [H10P 14/683](#)>
- D H01L 21/0212 {the material being fluoro-carbon compounds, e.g. (CF_x)_n, (CH_xF_y)_n or polytetrafluoroethylene}
<administratively transferred to [H10P 14/687](#)>
- D H01L 21/02123 {the material containing silicon}
<administratively transferred to [H10P 14/6903](#)>
- D H01L 21/02126 {the material containing Si, O, and at least one of H, N, C, F, or other non-metal elements, e.g. SiOC, SiOC:H or SiONC}
<administratively transferred to [H10P 14/6922](#)>
- D H01L 21/02129 {the material being boron or phosphorus-doped silicon oxides, e.g. BPSG, BSG or PSG}
NOTE
{Halogen, e.g. fluorine, containing BPSG, PSG, BSG, and the like, are additionally classified in H01L 21/02131.}
<administratively transferred to [H10P 14/6923](#)>
- D H01L 21/02131 {the material being halogen-doped silicon oxides, e.g. FSG}
<administratively transferred to [H10P 14/6924](#)>
- D H01L 21/02134 {the material comprising hydrogen silsesquioxane, e.g. HSQ}
<administratively transferred to [H10P 14/6925](#)>
- D H01L 21/02137 {the material comprising alkyl silsesquioxane, e.g. MSQ}
<administratively transferred to [H10P 14/6926](#)>
- D H01L 21/0214 {the material being a silicon oxynitride, e.g. SiON or SiON:H}
<administratively transferred to [H10P 14/6927](#)>
- D H01L 21/02142 {the material containing silicon and at least one metal element, e.g. metal-silicate based insulators or metal silicon oxynitrides}
<administratively transferred to [H10P 14/6928](#)>
- D H01L 21/02145 {the material containing aluminium, e.g. AlSiO_x}
<administratively transferred to [H10P 14/6929](#)>

- D H01L 21/02148 {the material containing hafnium, e.g. HfSiO_x or HfSiON }
<administratively transferred to [H10P 14/693](#)>
- D H01L 21/0215 {the material containing tantalum, e.g. TaSiO_x }
<administratively transferred to [H10P 14/6931](#)>
- D H01L 21/02153 {the material containing titanium, e.g. TiSiO_x }
<administratively transferred to [H10P 14/6932](#)>
- D H01L 21/02156 {the material containing at least one rare earth element, e.g. silicate of lanthanides, scandium or yttrium}
<administratively transferred to [H10P 14/6933](#)>
- D H01L 21/02159 {the material containing zirconium, e.g. ZrSiO_x }
<administratively transferred to [H10P 14/6934](#)>
- D H01L 21/02161 {the material containing more than one metal element}
<administratively transferred to [H10P 14/6936](#)>
- D H01L 21/02164 {the material being a silicon oxide, e.g. SiO_2 }
NOTE
{ The formation of silicon oxide layers is classified in this group regardless of the precursor or of the process of formation; in case of explicit statements on doping, on rest-groups, or on material components see H01L 21/02126 and subgroups; deposition of silicon oxide from organic precursors without further statements on film composition is classified here and in H01L 21/02205 and subgroups. }
<administratively transferred to [H10P 14/69215](#)>
- D H01L 21/02167 {the material being a silicon carbide not containing oxygen, e.g. SiC , SiC:H or silicon carbonitrides (H01L 21/02126 and H01L 21/0214 take precedence)}
<administratively transferred to [H10P 14/6905](#)>
- D H01L 21/0217 {the material being a silicon nitride not containing oxygen, e.g. SixNy or SixByNz (H01L 21/02126 and H01L 21/0214 take precedence)}
<administratively transferred to [H10P 14/69433](#)>
- D H01L 21/02172 {the material containing at least one metal element, e.g. metal oxides, metal nitrides, metal oxynitrides or metal carbides (materials containing silicon H01L 21/02123; metal silicates H01L 21/02142)}
<administratively transferred to [H10P 14/6938](#)>
- D H01L 21/02175 {characterised by the metal (H01L 21/02197 takes precedence)}
<administratively transferred to [H10P 14/6939](#)>
- D H01L 21/02178 {the material containing aluminium, e.g. Al_2O_3 }
<administratively transferred to [H10P 14/69391](#)>
- D H01L 21/02181 {the material containing hafnium, e.g. HfO_2 }
<administratively transferred to [H10P 14/69392](#)>
- D H01L 21/02183 {the material containing tantalum, e.g. Ta_2O_5 }
<administratively transferred to [H10P 14/69393](#)>
- D H01L 21/02186 {the material containing titanium, e.g. TiO_2 }
<administratively transferred to [H10P 14/69394](#)>

- D H01L 21/02189 {the material containing zirconium, e.g. ZrO_2 }
<administratively transferred to [H10P 14/69395](#)>
- D H01L 21/02192 {the material containing at least one rare earth metal element, e.g. oxides of lanthanides, scandium or yttrium}
<administratively transferred to [H10P 14/69396](#)>
- D H01L 21/02194 {the material containing more than one metal element}
<administratively transferred to [H10P 14/69397](#)>
- D H01L 21/02197 {the material having a perovskite structure, e.g. $BaTiO_3$ }
<administratively transferred to [H10P 14/69398](#)>
- D H01L 21/022 {the layer being a laminate, i.e. composed of sublayers, e.g. stacks of alternating high-k metal oxides (adhesion layers or buffer layers H01L 21/02304, H01L 21/02362)}
<administratively transferred to [H10P 14/662](#)>
- D H01L 21/02203 {the layer being porous}
<administratively transferred to [H10P 14/665](#)>
- D H01L 21/02205 {the layer being characterised by the precursor material for deposition}
<administratively transferred to [H10P 14/668](#)>
- D H01L 21/02208 {the precursor containing a compound comprising Si}
<administratively transferred to [H10P 14/6681](#)>
- D H01L 21/02211 {the compound being a silane, e.g. disilane, methylsilane or chlorosilane}
<administratively transferred to [H10P 14/6682](#)>
- D H01L 21/02214 {the compound comprising silicon and oxygen}
NOTE
{This group does not cover mixtures of a silane and oxygen.}
<administratively transferred to [H10P 14/6684](#)>
- D H01L 21/02216 {the compound being a molecule comprising at least one silicon-oxygen bond and the compound having hydrogen or an organic group attached to the silicon or oxygen, e.g. a siloxane}
<administratively transferred to [H10P 14/6686](#)>
- D H01L 21/02219 {the compound comprising silicon and nitrogen}
NOTE
{This group does not cover mixtures of silane and nitrogen.}
<administratively transferred to [H10P 14/6687](#)>
- D H01L 21/02222 {the compound being a silazane}
<administratively transferred to [H10P 14/6689](#)>
- D H01L 21/02225 {characterised by the process for the formation of the insulating layer}
<administratively transferred to [H10P 14/63](#)>
- D H01L 21/02227 {formation by a process other than a deposition process}
NOTE
{Subject matter classified in the range of H01L 21/0223 - H01L 21/02249 is additionally classified in H01L 21/02249, H01L 21/02255 and H01L 21/02252, depending on the type of reaction.}
<administratively transferred to [H10P 14/6302](#)>

- D H01L 21/0223 {formation by oxidation, e.g. oxidation of the substrate}
<administratively transferred to [H10P 14/6304](#)>
- D H01L 21/02233 {of the semiconductor substrate or a semiconductor layer}
<administratively transferred to [H10P 14/6306](#)>
- D H01L 21/02236 {group IV semiconductor}
<administratively transferred to [H10P 14/6308](#)>
- D H01L 21/02238 {silicon in uncombined form, i.e. pure silicon}
<administratively transferred to [H10P 14/6309](#)>
- D H01L 21/02241 {III-V semiconductor}
<administratively transferred to [H10P 14/6312](#)>
- D H01L 21/02244 {of a metallic layer}
<administratively transferred to [H10P 14/6314](#)>
- D H01L 21/02247 {formation by nitridation, e.g. nitridation of the substrate}
<administratively transferred to [H10P 14/6316](#)>
- D H01L 21/02249 {formation by combined oxidation and nitridation performed simultaneously}
<administratively transferred to [H10P 14/6318](#)>
- D H01L 21/02252 {formation by plasma treatment, e.g. plasma oxidation of the substrate (after treatment of an insulating film by plasma H01L 21/3105 and subgroups)}
<administratively transferred to [H10P 14/6319](#)>
- D H01L 21/02255 {formation by thermal treatment (H01L 21/02252 takes precedence; after treatment of an insulating film H01L 21/3105 and subgroups)}
<administratively transferred to [H10P 14/6322](#)>
- D H01L 21/02258 {formation by anodic treatment, e.g. anodic oxidation}
<administratively transferred to [H10P 14/6324](#)>
- D H01L 21/0226 {formation by a deposition process (per se C23C)}
<administratively transferred to [H10P 14/6326](#)>
- D H01L 21/02263 {deposition from the gas or vapour phase}
NOTE
{This group and subgroups also cover deposition methods in which the gas or vapour is produced by physical means, e.g. ablation from targets or heating of source material.}
<administratively transferred to [H10P 14/6328](#)>
- D H01L 21/02266 {deposition by physical ablation of a target, e.g. sputtering, reactive sputtering, physical vapour deposition or pulsed laser deposition}
<administratively transferred to [H10P 14/6329](#)>
- D H01L 21/02269 {deposition by thermal evaporation (H01L 21/02293 takes precedence)}
NOTE
{Subject matter relating to molecular beam epitaxy is classified in this group.}
<administratively transferred to [H10P 14/6332](#)>

- D H01L 21/02271 {deposition by decomposition or reaction of gaseous or vapour phase compounds, i.e. chemical vapour deposition (H01L 21/02266 takes precedence)}
<administratively transferred to [H10P 14/6334](#)>
- D H01L 21/02274 {in the presence of a plasma [PECVD]}
<administratively transferred to [H10P 14/6336](#)>
- D H01L 21/02277 {the reactions being activated by other means than plasma or thermal, e.g. photo-CVD}
<administratively transferred to [H10P 14/6338](#)>
- D H01L 21/0228 {deposition by cyclic CVD, e.g. ALD, ALE, pulsed CVD}
NOTE
{Subject matter relating to cyclic plasma CVD is additionally classified in H01L 21/02274.}
<administratively transferred to [H10P 14/6339](#)>
- D H01L 21/02282 {liquid deposition, e.g. spin-coating, sol-gel techniques, spray coating}
<administratively transferred to [H10P 14/6342](#)>
- D H01L 21/02285 {Langmuir-Blodgett techniques}
<administratively transferred to [H10P 14/6344](#)>
- D H01L 21/02288 {printing, e.g. ink-jet printing (per se B41J)}
<administratively transferred to [H10P 14/6346](#)>
- D H01L 21/0229 {liquid atomic layer deposition}
<administratively transferred to [H10P 14/6348](#)>
- D H01L 21/02293 {formation of epitaxial layers by a deposition process (epitaxial growth per se C30B)}
NOTE
{Formation of non-epitaxial layers by MBE, ALE, etc. is not covered by this group; for MBE see H01L 21/02269; for ALE see H01L 21/0228.}
<administratively transferred to [H10P 14/6349](#)>
- D H01L 21/02296 {characterised by the treatment performed before or after the formation of the layer (H01L 21/02227 and subgroups take precedence)}
NOTE
{This group and subgroups only cover processes which are directly linked to the layer formation; routine anneals, i.e. thermal treatment without further features like a special atmosphere, presence of a plasma, thermally induced chemical reactions, change of phase (crystal structure) etc. are not classified here; for cleaning see H01L 21/02041 and subgroups; for etching processes see H01L 21/311 and subgroups; for planarization processes see H01L 21/31051 and subgroups; for processes to repair etch damage see H01L 21/3105 and subgroups.}
<administratively transferred to [H10P 14/65](#)>
- D H01L 21/02299 {pre-treatment}
NOTE
{This group and subgroups cover treatments to improve adhesion or change the surface termination; for etching see H01L 21/306 and subgroups and H01L 21/311 and subgroups.
<administratively transferred to [H10P 14/6502](#)>

- D H01L 21/02301 {in-situ cleaning}
NOTE
 {Subject matter relating to the cleaning processes for semiconductor devices in general is covered by H01L 21/02041 and subgroups.}
 <administratively transferred to [H10P 14/6504](#)>
- D H01L 21/02304 {formation of intermediate layers, e.g. buffer layers, layers to improve adhesion, lattice match or diffusion barriers}
 <administratively transferred to [H10P 14/6506](#)>
- D H01L 21/02307 {treatment by exposure to a liquid}
 <administratively transferred to [H10P 14/6508](#)>
- D H01L 21/0231 {treatment by exposure to electromagnetic radiation, e.g. UV light}
 <administratively transferred to [H10P 14/6509](#)>
- D H01L 21/02312 {treatment by exposure to a gas or vapour}
 <administratively transferred to [H10P 14/6512](#)>
- D H01L 21/02315 {treatment by exposure to a plasma}
 <administratively transferred to [H10P 14/6514](#)>
- D H01L 21/02318 {post-treatment}
NOTE
 {This group only covers processes that are part of the layer formation; treatments which are performed after completion of the insulating layer are covered by H01L 21/3105 and subgroups.}
 <administratively transferred to [H10P 14/6516](#)>
- D H01L 21/02321 {introduction of substances into an already existing insulating layer (H01L 21/02227 and subgroups take precedence)}
NOTE
 {Processes like the introduction of phosphorus into silicon oxide by diffusion, or doping of an already existing insulating layer are covered by this group and subgroups; for the method of introduction, see H01L 21/02337, H01L 21/02343, H01L 21/02345 and subgroups.}
 <administratively transferred to [H10P 14/6518](#)>
- D H01L 21/02323 {introduction of oxygen}
 <administratively transferred to [H10P 14/6519](#)>
- D H01L 21/02326 {into a nitride layer, e.g. changing SiN to SiON}
 <administratively transferred to [H10P 14/6522](#)>
- D H01L 21/02329 {introduction of nitrogen}
 <administratively transferred to [H10P 14/6524](#)>
- D H01L 21/02332 {into an oxide layer, e.g. changing SiO to SiON}
 <administratively transferred to [H10P 14/6526](#)>
- D H01L 21/02334 {in-situ cleaning after layer formation, e.g. removing process residues}
NOTE
 {Subject matter relating to the cleaning processes for semiconductor devices in general is covered by H01L 21/02041 and subgroups.}
 <administratively transferred to [H10P 14/6528](#)>
- D H01L 21/02337 {treatment by exposure to a gas or vapour}
 <administratively transferred to [H10P 14/6529](#)>

D	H01L 21/0234	. . . . . {treatment by exposure to a plasma} <administratively transferred to H10P 14/6532 >
D	H01L 21/02343	. . . . . {treatment by exposure to a liquid} <administratively transferred to H10P 14/6534 >
D	H01L 21/02345	. . . . . {treatment by exposure to radiation, e.g. visible light} <administratively transferred to H10P 14/6536 >
D	H01L 21/02348	. . . . . {treatment by exposure to UV light} <administratively transferred to H10P 14/6538 >
D	H01L 21/02351	. . . . . {treatment by exposure to corpuscular radiation, e.g. exposure to electrons, alpha-particles, protons or ions} <administratively transferred to H10P 14/6539 >
D	H01L 21/02354	. . . . . {using a coherent radiation, e.g. a laser} <administratively transferred to H10P 14/6542 >
D	H01L 21/02356	. . . . . {treatment to change the morphology of the insulating layer, e.g. transformation of an amorphous layer into a crystalline layer} <administratively transferred to H10P 14/6544 >
D	H01L 21/02359	. . . . . {treatment to change the surface groups of the insulating layer} <administratively transferred to H10P 14/6546 >
D	H01L 21/02362	. . . . . {formation of intermediate layers, e.g. capping layers or diffusion barriers} <administratively transferred to H10P 14/6548 >
D	H01L 21/02365	. . . {Forming inorganic semiconducting materials on a substrate} <administratively transferred to H10P 14/20 >
D	H01L 21/02367	. . . . {Substrates} <administratively transferred to H10P 14/29 >
D	H01L 21/0237	. . . . . {Materials} <administratively transferred to H10P 14/2901 >
D	H01L 21/02373	. . . . . {Group 14 semiconducting materials} <administratively transferred to H10P 14/2902 >
D	H01L 21/02376	. . . . . {Carbon, e.g. diamond-like carbon} <administratively transferred to H10P 14/2903 >
D	H01L 21/02378	. . . . . {Silicon carbide} <administratively transferred to H10P 14/2904 >
D	H01L 21/02381	. . . . . {Silicon, silicon-germanium, germanium} <administratively transferred to H10P 14/2905 >
D	H01L 21/02384	. . . . . {including tin} <administratively transferred to H10P 14/2906 >
D	H01L 21/02387	. . . . . {Group 13/15 materials} <administratively transferred to H10P 14/2907 >
D	H01L 21/02389	. . . . . {Nitrides} <administratively transferred to H10P 14/2908 >
D	H01L 21/02392	. . . . . {Phosphides} <administratively transferred to H10P 14/2909 >

D	H01L 21/02395	. . . . . {Arsenides}	<administratively transferred to H10P 14/2911 >
D	H01L 21/02398	. . . . . {Antimonides}	<administratively transferred to H10P 14/2912 >
D	H01L 21/024	. . . . . {Group 12/16 materials}	<administratively transferred to H10P 14/2913 >
D	H01L 21/02403	. . . . . {Oxides}	<administratively transferred to H10P 14/2914 >
D	H01L 21/02406	. . . . . {Sulfides}	<administratively transferred to H10P 14/2915 >
D	H01L 21/02409	. . . . . {Selenides}	<administratively transferred to H10P 14/2916 >
D	H01L 21/02411	. . . . . {Tellurides}	<administratively transferred to H10P 14/2917 >
D	H01L 21/02414	. . . . . {Oxide-semiconducting materials not being Group 12/16 materials, e.g. ternary compounds}	<administratively transferred to H10P 14/2918 >
D	H01L 21/02417	. . . . . {Chalcogenide semiconducting materials not being oxides, e.g. ternary compounds}	<administratively transferred to H10P 14/2919 >
D	H01L 21/0242	. . . . . {Crystalline insulating materials}	<administratively transferred to H10P 14/2921 >
D	H01L 21/02422	. . . . . {Non-crystalline insulating materials, e.g. glass, polymers}	<administratively transferred to H10P 14/2922 >
D	H01L 21/02425	. . . . . {Conductive materials, e.g. metallic silicides}	<administratively transferred to H10P 14/2923 >
D	H01L 21/02428	. . . . . {Structure}	<administratively transferred to H10P 14/2924 >
D	H01L 21/0243	. . . . . {Surface structure}	<administratively transferred to H10P 14/2925 >
D	H01L 21/02433	. . . . . {Crystal orientation}	<administratively transferred to H10P 14/2926 >
D	H01L 21/02436	. . . . {Intermediate layers between substrates and deposited layers}	<administratively transferred to H10P 14/32 >
D	H01L 21/02439	. . . . . {Materials}	<administratively transferred to H10P 14/3202 >
D	H01L 21/02441	. . . . . {Group 14 semiconducting materials}	<administratively transferred to H10P 14/3204 >
D	H01L 21/02444	. . . . . {Carbon, e.g. diamond-like carbon}	<administratively transferred to H10P 14/3206 >
D	H01L 21/02447	. . . . . {Silicon carbide}	<administratively transferred to H10P 14/3208 >

D	H01L 21/0245	. . . . . {Silicon, silicon-germanium, germanium} <administratively transferred to H10P 14/3211 >
D	H01L 21/02452	. . . . . {including tin} <administratively transferred to H10P 14/3212 >
D	H01L 21/02455	. . . . . {Group 13/15 materials} <administratively transferred to H10P 14/3214 >
D	H01L 21/02458	. . . . . {Nitrides} <administratively transferred to H10P 14/3216 >
D	H01L 21/02461	. . . . . {Phosphides} <administratively transferred to H10P 14/3218 >
D	H01L 21/02463	. . . . . {Arsenides} <administratively transferred to H10P 14/3221 >
D	H01L 21/02466	. . . . . {Antimonides} <administratively transferred to H10P 14/3222 >
D	H01L 21/02469	. . . . . {Group 12/16 materials} <administratively transferred to H10P 14/3224 >
D	H01L 21/02472	. . . . . {Oxides} <administratively transferred to H10P 14/3226 >
D	H01L 21/02474	. . . . . {Sulfides} <administratively transferred to H10P 14/3228 >
D	H01L 21/02477	. . . . . {Selenides} <administratively transferred to H10P 14/3231 >
D	H01L 21/0248	. . . . . {Tellurides} <administratively transferred to H10P 14/3232 >
D	H01L 21/02483	. . . . . {Oxide-semiconducting materials not being Group 12/16 materials, e.g. ternary compounds} <administratively transferred to H10P 14/3234 >
D	H01L 21/02485	. . . . . {Other chalcogenide-semiconducting materials not being oxides, e.g. ternary compounds} <administratively transferred to H10P 14/3236 >
D	H01L 21/02488	. . . . . {Insulating materials} <administratively transferred to H10P 14/3238 >
D	H01L 21/02491	. . . . . {Conductive materials} <administratively transferred to H10P 14/3241 >
D	H01L 21/02494	. . . . . {Structure} <administratively transferred to H10P 14/3242 >
D	H01L 21/02496	. . . . . {Layer structure} <administratively transferred to H10P 14/3244 >
D	H01L 21/02499	. . . . . {Monolayers} <administratively transferred to H10P 14/3246 >
D	H01L 21/02502	. . . . . {consisting of two layers} <administratively transferred to H10P 14/3248 >

D	H01L 21/02505	. . . . . {consisting of more than two layers} <administratively transferred to H10P 14/3251 >
D	H01L 21/02507	. . . . . {Alternating layers, e.g. superlattice} <administratively transferred to H10P 14/3252 >
D	H01L 21/0251	. . . . . {Graded layers} <administratively transferred to H10P 14/3254 >
D	H01L 21/02513	. . . . . {Microstructure} <administratively transferred to H10P 14/3256 >
D	H01L 21/02516	. . . . . {Crystal orientation} <administratively transferred to H10P 14/3258 >
D	H01L 21/02518	. . . . {Deposited layers} <administratively transferred to H10P 14/34 >
D	H01L 21/02521	. . . . . {Materials} <administratively transferred to H10P 14/3402 >
D	H01L 21/02524	. . . . . {Group 14 semiconducting materials} <administratively transferred to H10P 14/3404 >
D	H01L 21/02527	. . . . . {Carbon, e.g. diamond-like carbon} <administratively transferred to H10P 14/3406 >
D	H01L 21/02529	. . . . . {Silicon carbide} <administratively transferred to H10P 14/3408 >
D	H01L 21/02532	. . . . . {Silicon, silicon germanium, germanium} <administratively transferred to H10P 14/3411 >
D	H01L 21/02535	. . . . . {including tin} <administratively transferred to H10P 14/3412 >
D	H01L 21/02538	. . . . . {Group 13/15 materials} <administratively transferred to H10P 14/3414 >
D	H01L 21/0254	. . . . . {Nitrides} <administratively transferred to H10P 14/3416 >
D	H01L 21/02543	. . . . . {Phosphides} <administratively transferred to H10P 14/3418 >
D	H01L 21/02546	. . . . . {Arsenides} <administratively transferred to H10P 14/3421 >
D	H01L 21/02549	. . . . . {Antimonides} <administratively transferred to H10P 14/3422 >
D	H01L 21/02551	. . . . . {Group 12/16 materials} <administratively transferred to H10P 14/3424 >
D	H01L 21/02554	. . . . . {Oxides} <administratively transferred to H10P 14/3426 >
D	H01L 21/02557	. . . . . {Sulfides} <administratively transferred to H10P 14/3428 >
D	H01L 21/0256	. . . . . {Selenides} <administratively transferred to H10P 14/3431 >

D	H01L 21/02562	. . . . . {Tellurides} <administratively transferred to H10P 14/3432 >
D	H01L 21/02565	. . . . . {Oxide semiconducting materials not being Group 12/16 materials, e.g. ternary compounds} <administratively transferred to H10P 14/3434 >
D	H01L 21/02568	. . . . . {Chalcogenide semiconducting materials not being oxides, e.g. ternary compounds} <administratively transferred to H10P 14/3436 >
D	H01L 21/0257	. . . . . {Doping during depositing} <administratively transferred to H10P 14/3438 >
D	H01L 21/02573	. . . . . {Conductivity type} <administratively transferred to H10P 14/3441 >
D	H01L 21/02576	. . . . . {N-type} <administratively transferred to H10P 14/3442 >
D	H01L 21/02579	. . . . . {P-type} <administratively transferred to H10P 14/3444 >
D	H01L 21/02581	. . . . . {Transition metal or rare earth elements} <administratively transferred to H10P 14/3446 >
D	H01L 21/02584	. . . . . {Delta-doping} <administratively transferred to H10P 14/3448 >
D	H01L 21/02587	. . . . . {Structure} <administratively transferred to H10P 14/3451 >
D	H01L 21/0259	. . . . . {Microstructure} <administratively transferred to H10P 14/3452 >
D	H01L 21/02592	. . . . . {amorphous} <administratively transferred to H10P 14/3454 >
D	H01L 21/02595	. . . . . {polycrystalline} <administratively transferred to H10P 14/3456 >
D	H01L 21/02598	. . . . . {monocrystalline} <administratively transferred to H10P 14/3458 >
D	H01L 21/02601	. . . . . {Nanoparticles (fullerenes H10K 85/211)} <administratively transferred to H10P 14/3461 >
D	H01L 21/02603	. . . . . {Nanowires} <administratively transferred to H10P 14/3462 >
D	H01L 21/02606	. . . . . {Nanotubes (carbon nanotubes H10K 85/211)} <administratively transferred to H10P 14/3464 >
D	H01L 21/02609	. . . . . {Crystal orientation} <administratively transferred to H10P 14/3466 >
D	H01L 21/02612	. . . . {Formation types} <administratively transferred to H10P 14/20 >
D	H01L 21/02614	. . . . . {Transformation of metal, e.g. oxidation, nitridation} <administratively transferred to H10P 14/203 >

D	H01L 21/02617	. . . . . {Deposition types}
		<administratively transferred to H10P 14/20 >
D	H01L 21/0262	. . . . . {Reduction or decomposition of gaseous compounds, e.g. CVD}
		<administratively transferred to H10P 14/24 >
D	H01L 21/02623	. . . . . {Liquid deposition}
		<administratively transferred to H10P 14/26 >
D	H01L 21/02625	. . . . . {using melted materials}
		<administratively transferred to H10P 14/263 >
D	H01L 21/02628	. . . . . {using solutions}
		<administratively transferred to H10P 14/265 >
D	H01L 21/02631	. . . . . {Physical deposition at reduced pressure, e.g. MBE, sputtering, evaporation}
		<administratively transferred to H10P 14/22 >
D	H01L 21/02634	. . . . . {Homoeptaxy}
		<administratively transferred to H10P 14/20 >
D	H01L 21/02636	. . . . . {Selective deposition, e.g. simultaneous growth of mono- and non-monocrystalline semiconductor materials}
		<administratively transferred to H10P 14/27 >
D	H01L 21/02639	. . . . . {Preparation of substrate for selective deposition}
		<administratively transferred to H10P 14/271 >
D	H01L 21/02642	. . . . . {Mask materials other than SiO ₂ or SiN}
		<administratively transferred to H10P 14/272 >
D	H01L 21/02645	. . . . . {Seed materials}
		<administratively transferred to H10P 14/274 >
D	H01L 21/02647	. . . . . {Lateral overgrowth}
		<administratively transferred to H10P 14/276 >
D	H01L 21/0265	. . . . . {Pendeoepitaxy}
		<administratively transferred to H10P 14/278 >
D	H01L 21/02653	. . . . . {Vapour-liquid-solid growth}
		<administratively transferred to H10P 14/279 >
D	H01L 21/02656	. . . . {Special treatments}
		<administratively transferred to H10P 14/20 >
D	H01L 21/02658	. . . . {Pretreatments (cleaning in general H01L 21/02041)}
		<administratively transferred to H10P 14/36 >
D	H01L 21/02661	. . . . . {In-situ cleaning}
		<administratively transferred to H10P 14/3602 >
D	H01L 21/02664	. . . . {Aftertreatments (planarisation in general H01L 21/304)}
		<administratively transferred to H10P 14/38 >
D	H01L 21/02667	. . . . . {Crystallisation or recrystallisation of non-monocrystalline semiconductor materials, e.g. regrowth}
		<administratively transferred to H10P 14/3802 >
D	H01L 21/02669	. . . . . {using crystallisation-inhibiting elements}
		<administratively transferred to H10P 14/3804 >

- D H01L 21/02672 {~~using crystallisation enhancing elements~~}
<administratively transferred to [H10P 14/3806](#)>
- D H01L 21/02675 {~~using laser beams~~}
<administratively transferred to [H10P 14/3808](#)>
- D H01L 21/02678 {~~Beam shaping, e.g. using a mask~~}
<administratively transferred to [H10P 14/381](#)>
- D H01L 21/0268 {~~Shape of mask~~}
<administratively transferred to [H10P 14/3812](#)>
- D H01L 21/02683 {~~Continuous wave laser beam~~}
<administratively transferred to [H10P 14/3814](#)>
- D H01L 21/02686 {~~Pulsed laser beam~~}
<administratively transferred to [H10P 14/3816](#)>
- D H01L 21/02689 {~~using particle beams~~}
<administratively transferred to [H10P 14/3818](#)>
- D H01L 21/02691 {~~Scanning of a beam~~}
<administratively transferred to [H10P 14/382](#)>
- D H01L 21/02694 {~~Controlling the interface between substrate and epitaxial layer, e.g. by ion implantation followed by annealing~~}
<administratively transferred to [H10P 14/3822](#)>
- D H01L 21/02697 . . . {~~Forming conducting materials on a substrate~~}
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/027 . . . Making masks on semiconductor bodies for further photolithographic processing not provided for in group H01L 21/18 or H01L 21/34
{~~(photographic masks or originals per se G03F 1/00; registration or positioning of photographic masks or originals G03F 9/00; photographic cameras G03B; control of position G05D 3/00)~~}
<administratively transferred to [H10P 76/00](#)>
- D H01L 21/0271 . . . {~~comprising organic layers~~}
<administratively transferred to [H10P 76/20](#)>
- D H01L 21/0272 {~~for lift-off processes~~}
<administratively transferred to [H10P 76/202](#)>
- D H01L 21/0273 {~~characterised by the treatment of photoresist layers~~}
<administratively transferred to [H10P 76/204](#)>
- D H01L 21/0274 {~~Photolithographic processes~~}
<administratively transferred to [H10P 76/2041](#)>
- D H01L 21/0275 {~~using lasers~~}
<administratively transferred to [H10P 76/2042](#)>
- D H01L 21/0276 {~~using an anti-reflective coating (anti-reflective coating for lithography in general G03F 7/09)~~}
<administratively transferred to [H10P 76/2043](#)>
- D H01L 21/0277 {~~Electrolithographic processes~~}
<administratively transferred to [H10P 76/2045](#)>
- D H01L 21/0278 {~~Röntgenlithographic or X-ray lithographic processes~~}
<administratively transferred to [H10P 76/2047](#)>

- D H01L 21/0279 {on lithographic processes}
<administratively transferred to [H10P 76/2049](#)>
- D H01L 21/033 . . . comprising inorganic layers
<administratively transferred to [H10P 76/40](#)>
- D H01L 21/0331 {for lift-off processes}
<administratively transferred to [H10P 76/403](#)>
- D H01L 21/0332 {characterised by their composition, e.g. multilayer masks, materials}
<administratively transferred to [H10P 76/405](#)>
- D H01L 21/0334 {characterised by their size, orientation, disposition, behaviour, shape, in horizontal or vertical plane}
<administratively transferred to [H10P 76/408](#)>
- D H01L 21/0335 {characterised by their behaviour during the process, e.g. soluble masks, redeposited masks}
<administratively transferred to [H10P 76/4083](#)>
- D H01L 21/0337 {characterised by the process involved to create the mask, e.g. lift-off masks, sidewalls, or to modify the mask, e.g. pre-treatment, post-treatment}
<administratively transferred to [H10P 76/4085](#)>
- D H01L 21/0338 {Process specially adapted to improve the resolution of the mask}
<administratively transferred to [H10P 76/4088](#)>
- D H01L 21/04 . . the devices having potential barriers, e.g. a PN junction, depletion layer or carrier concentration layer
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/0405 . . . {the devices having semiconductor bodies comprising semiconducting carbon, e.g. diamond, diamond-like carbon}
NOTE
{This group covers passivation.}
<administratively transferred to [H10D 62/8303](#)>
- D H01L 21/041 {Making n- or p-doped regions}
<administratively transferred to [H10P 95/92](#)>
- D H01L 21/0415 {using ion implantation}
<administratively transferred to [H10P 30/2044](#)>
- D H01L 21/042 {Changing their shape, e.g. forming recesses (etching of the semiconductor body H01L 21/302)}
<administratively transferred to [H10P 50/00](#)>
- D H01L 21/0425 {Making electrodes}
<administratively transferred to [H10D 64/0114](#)>
- D H01L 21/043 {Ohmic electrodes}
<administratively transferred to [H10D 64/0114](#)>
- D H01L 21/0435 {Schottky electrodes}
<administratively transferred to [H10D 64/0122](#)>
- D H01L 21/044 {Conductor-insulator-semiconductor electrodes}
<administratively transferred to [H10D 64/01364](#)>

- D H01L 21/0445 . . . {the devices having semiconductor bodies comprising crystalline silicon carbide}
<administratively transferred to [H10D 62/8325](#)>
- D H01L 21/045 . . . {passivating silicon carbide surfaces}
<administratively transferred to [H10D 62/8325](#)>
- D H01L 21/0455 . . . {Making n or p doped regions or layers, e.g. using diffusion}
<administratively transferred to [H10P 32/172](#)>
- D H01L 21/046 {using ion implantation}
NOTE
{Processes where ion implantation of boron and subsequent annealing does not produce a p-doped region are classified elsewhere, e.g. H01L 21/0445.}
<administratively transferred to [H10P 30/2042](#) and [H10P 30/21](#)>
- D H01L 21/0465 {using masks}
<administratively transferred to [H10P 30/22](#)>
- D H01L 21/047 {characterised by the angle between the ion beam and the crystal planes or the main crystal surface}
<administratively transferred to [H10P 30/2042](#) and [H10P 30/222](#)>
- D H01L 21/0475 {Changing the shape of the semiconductor body, e.g. forming recesses; etching of the semiconductor body H01L 21/302}
<administratively transferred to [H10P 50/00](#)>
- D H01L 21/048 {Making electrodes}
<administratively transferred to [H10D 64/0115](#)>
- D H01L 21/0485 {Ohmic electrodes}
<administratively transferred to [H10D 64/0115](#)>
- D H01L 21/049 {Conductor-insulator-semiconductor electrodes, e.g. MIS contacts}
<administratively transferred to [H10D 64/01366](#)>
- D H01L 21/0495 {Schottky electrodes}
<administratively transferred to [H10D 64/0123](#)>
- D H01L 21/18 . . . the devices having semiconductor bodies comprising elements of Group IV of the Periodic Table or $A_{III}B_V$ compounds with or without impurities, e.g. doping materials {(H01L 21/041 - H01L 21/0425, H01L 21/045 - H01L 21/048 take precedence)}
NOTE
This group covers also processes and apparatus which, by using the appropriate technology, are clearly suitable for manufacture or treatment of devices whose bodies comprise elements of Group IV of the Periodic Table or $A_{III}B_V$ compounds, even if the material used is not explicitly specified.
<administratively transferred to [H10P 10/00](#)>
- D H01L 21/182 {Intermixing or interdiffusion or disordering of III-V heterostructures, e.g. ILD}
<administratively transferred to [H10P 14/3824](#)>
- D H01L 21/185 {Joining of semiconductor bodies for junction formation}
<administratively transferred to [H10P 10/12](#)>
- D H01L 21/187 {by direct bonding}
<administratively transferred to [H10P 10/128](#)>

- D H01L 21/20 Deposition of semiconductor materials on a substrate, e.g. epitaxial growth {solid phase epitaxy}
<administratively transferred to [H10P 14/20](#)>
- D H01L 21/2003 {characterised by the substrate}
<administratively transferred to [H10P 14/29](#)>
- D H01L 21/2007 {Bonding of semiconductor wafers to insulating substrates or to semiconducting substrates using an intermediate insulating layer (H01L 21/2011 takes precedence; bonding of semiconductor wafers to semiconductor wafers for junction formation H01L 21/187)}
<administratively transferred to [H10P 90/1914](#)>
- D H01L 21/2011 {the substrate being of crystalline insulating material, e.g. sapphire}
<administratively transferred to [H10P 10/14](#)>
- D H01L 21/2015 {the substrate being of crystalline semiconductor material, e.g. lattice adaptation, heteroepitaxy}
<administratively transferred to [H10P 14/29](#)>
- D H01L 21/22 Diffusion of impurity materials, e.g. doping materials, electrode materials, into or out of a semiconductor body, or between semiconductor regions; {Interactions between two or more impurities; Redistribution of impurities}
<administratively transferred to [H10P 32/00](#)>
- D H01L 21/2205 {from the substrate during epitaxy, e.g. autodoping; Preventing or using autodoping}
<administratively transferred to [H10P 32/15](#)>
- D H01L 21/221 {of killers}
<administratively transferred to [H10P 32/18](#) and [H10P 32/171](#)>
- D H01L 21/2215 {in $A_{III}B_V$ compounds}
<administratively transferred to [H10P 32/18](#) and [H10P 32/174](#)>
- D H01L 21/222 {Lithium-drift}
<administratively transferred to [H10P 32/185](#)>
- D H01L 21/2225 {Diffusion sources}
<administratively transferred to [H10P 32/19](#)>
- D H01L 21/223 using diffusion into or out of a solid from or into a gaseous phase {(H01L 21/221 - H01L 21/222 take precedence; diffusion through an applied layer H01L 21/225)}
<administratively transferred to [H10P 32/12](#) and [H10P 32/171](#)>
- D H01L 21/2233 {Diffusion into or out of $A_{III}B_V$ compounds}
<administratively transferred to [H10P 32/12](#) and [H10P 32/174](#)>
- D H01L 21/2236 {from or into a plasma phase}
<administratively transferred to [H10P 32/1204](#)>
- D H01L 21/225 using diffusion into or out of a solid from or into a solid phase, e.g. a doped oxide layer {(H01L 21/221 - H01L 21/222 take precedence)}
<administratively transferred to [H10P 32/14](#)>

- D H01L 21/2251 {Diffusion into or out of group IV semiconductors}
NOTE
 {In groups H01L 21/2254 – H01L 21/2257 one should consider the main compositional parts of the applied layer just before the diffusion step}
 <administratively transferred to [H10P 32/14](#) and [H10P 32/171](#)>
- D H01L 21/2252 {using predeposition of impurities into the semiconductor surface, e.g. from a gaseous phase}
 <administratively transferred to [H10P 32/1404](#) and [H10P 32/171](#)>
- D H01L 21/2253 {by ion implantation}
 <administratively transferred to [H10P 32/1406](#) and [H10P 32/171](#)>
- D H01L 21/2254 {from or through or into an applied layer, e.g. photoresist, nitrides}
 <administratively transferred to [H10P 32/1408](#) and [H10P 32/171](#)>
- D H01L 21/2255 {the applied layer comprising oxides only, e.g. P_2O_5 , PSG, H_3BO_3 , doped oxides}
 <administratively transferred to [H10P 32/141](#) and [H10P 32/171](#)>
- D H01L 21/2256 {through the applied layer}
 <administratively transferred to [H10P 32/1412](#) and [H10P 32/171](#)>
- D H01L 21/2257 {the applied layer being silicon or silicide or SIPOS, e.g. polysilicon, porous silicon}
 <administratively transferred to [H10P 32/1414](#) and [H10P 32/171](#)>
- D H01L 21/2258 {Diffusion into or out of $A_{III}B_V$ compounds}
 <administratively transferred to [H10P 32/14](#) and [H10P 32/174](#)>
- D H01L 21/228 using diffusion into or out of a solid from or into a liquid phase, e.g. alloy diffusion processes {(H01L 21/221 – H01L 21/222 take precedence)}
 <administratively transferred to [H10P 32/16](#)>
- D H01L 21/24 Alloying of impurity materials, e.g. doping materials, electrode materials, with a semiconductor body {(H01L 21/182 takes precedence)}
 <administratively transferred to [H10P 95/50](#)>
- D H01L 21/242 {Alloying of doping materials with $A_{III}B_V$ compounds}
 <administratively transferred to [H10P 95/50](#)>
- D H01L 21/244 {Alloying of electrode materials}
 <administratively transferred to [H10P 95/50](#)>
- D H01L 21/246 {with $A_{III}B_V$ compounds}
 <administratively transferred to [H10P 95/50](#)>
- D H01L 21/248 {Apparatus specially adapted for the alloying}
 <administratively transferred to [H10P 95/50](#)>
- D H01L 21/26 Bombardment with radiation {(H01L 21/3105 takes precedence)}
 <administratively transferred to [H10P 34/00](#)>
- D H01L 21/2605 {using natural radiation, e.g. alpha, beta or gamma radiation}
 <administratively transferred to [H10P 34/10](#)>
- D H01L 21/261 to produce a nuclear reaction transmuted chemical elements
 <administratively transferred to [H10P 34/20](#)>

- D H01L 21/263 with high-energy radiation (H01L 21/261 takes precedence)
<administratively transferred to [H10P 34/40](#)>
- D H01L 21/2633 {for etching, e.g. sputter etching}
<administratively transferred to [H10P 50/20](#)>
- D H01L 21/2636 {for heating, e.g. electron beam heating}
<administratively transferred to [H10P 95/90](#)>
- D H01L 21/265 producing ion implantation
<administratively transferred to [H10P 30/20](#)>
- D H01L 21/26506 {in group IV semiconductors}
<administratively transferred to [H10P 30/204](#) and [H10P 30/208](#)>
- D H01L 21/26513 {of electrically active species}
<administratively transferred to [H10P 30/204](#) and [H10P 30/21](#)>
- D H01L 21/2652 {Through-implantation}
<administratively transferred to [H10P 30/204](#) and [H10P 30/212](#)>
- D H01L 21/26526 {Recoil-implantation}
<administratively transferred to [H10P 30/204](#) and [H10P 30/214](#)>
- D H01L 21/26533 {of electrically inactive species in silicon to make buried insulating layers}
<administratively transferred to [H10P 30/209](#)>
- D H01L 21/2654 {in A_{III}B_V compounds}
<administratively transferred to [H10P 30/206](#) and [H10P 30/208](#)>
- D H01L 21/26546 {of electrically active species}
<administratively transferred to [H10P 30/206](#) and [H10P 30/21](#)>
- D H01L 21/26553 {Through-implantation}
<administratively transferred to [H10P 30/206](#) and [H10P 30/212](#)>
- D H01L 21/2656 {characterised by the implantation of both electrically active and inactive species in the same semiconductor region to be doped}
<administratively transferred to [H10P 30/206](#) and [H10P 30/218](#)>
- D H01L 21/26566 {of a cluster, e.g. using a gas cluster ion beam}
<administratively transferred to [H10P 30/224](#)>
- D H01L 2021/26573 {in diamond}
<administratively transferred to [H10P 30/2044](#)>
- D H01L 21/2658 {of a molecular ion, e.g. decaborane}
<administratively transferred to [H10P 30/225](#)>
- D H01L 21/26586 {characterised by the angle between the ion beam and the crystal planes or the main crystal surface}
<administratively transferred to [H10P 30/222](#)>
- D H01L 21/26593 {at a temperature lower than room temperature}
<administratively transferred to [H10P 30/226](#)>
- D H01L 21/266 using masks {(H01L 21/26586 takes precedence)}
<administratively transferred to [H10P 30/22](#)>
- D H01L 21/268 using electromagnetic radiation, e.g. laser radiation
<administratively transferred to [H10P 34/42](#)>

- D H01L 21/2683 {using X-ray lasers}
<administratively transferred to [H10P 34/42](#)>
- D H01L 21/2686 {using incoherent radiation}
<administratively transferred to [H10P 34/422](#)>
- D H01L 21/28 Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in groups H01L 21/20 - H01L 21/268
<administratively transferred to [H10D 64/011](#)>
- D H01L 21/28008 {Making conductor-insulator-semiconductor electrodes}
<administratively transferred to [H10D 64/013](#)>
- D H01L 21/28017 {the insulator being formed after the semiconductor body, the semiconductor being silicon}
NOTE
{This group ~~covers~~ deposition of the insulators, including epitaxial insulators, and the conductors within the same process or chamber.}
<administratively transferred to [H10D 64/01302](#)>
- D H01L 21/28026 {characterised by the conductor (H01L 21/28176 takes precedence)}
NOTE
{When the final conductor comprises a superconductor, subject matter is not classified according to the subgroups H01L 21/28035 - H01L 21/28097. Instead, it is classified in H01L 21/28026.}
<administratively transferred to [H10D 64/01304](#)>
- D H01L 21/28035 {the final conductor layer next to the insulator being silicon, e.g. polysilicon, with or without impurities (H01L 21/28105 takes precedence)}
NOTE
{A very thin, e.g. silicon, adhesion or seed layer is not considered as the one next to the insulator.}
<administratively transferred to [H10D 64/01306](#)>
- D H01L 21/28044 {the conductor comprising at least another non-silicon conductive layer}
<administratively transferred to [H10D 64/01308](#)>
- D H01L 21/28052 {the conductor comprising a silicide layer formed by the silicidation reaction of silicon with a metal layer (formed by metal ion implantation H01L 21/28044)}
<administratively transferred to [H10D 64/0131](#)>
- D H01L 21/28061 {the conductor comprising a metal or metal silicide formed by deposition, e.g. sputter deposition, i.e. without a silicidation reaction (H01L 21/28052 takes precedence)}
NOTE
{To assess the coverage of groups H01L 21/28052 and H01L 21/28061, barrier layers, e.g. TaSiN, are not considered.}
<administratively transferred to [H10D 64/01312](#)>
- D H01L 21/2807 {the final conductor layer next to the insulator being Si or Ge or C and their alloys except Si}
<administratively transferred to [H10D 64/01314](#)>

- D H01L 21/28079 {the final conductor layer next to the insulator being a single metal, e.g. Ta, W, Mo, Al}
<administratively transferred to [H10D 64/01316](#)>
- D H01L 21/28088 {the final conductor layer next to the insulator being a composite, e.g. TiN}
<administratively transferred to [H10D 64/01318](#)>
- D H01L 21/28097 {the final conductor layer next to the insulator being a metallic silicide}
<administratively transferred to [H10D 64/0132](#)>
- D H01L 21/28105 {the final conductor next to the insulator having a lateral composition or doping variation, or being formed laterally by more than one deposition step}
<administratively transferred to [H10D 64/01322](#)>
- D H01L 21/28114 {characterised by the sectional shape, e.g. T, inverted-T}
NOTE
{Documents are also classified in groups H01L 21/28035 – H01L 21/28105 when the composition is also relevant.}
<administratively transferred to [H10D 64/01324](#)>
- D H01L 21/28123 {Lithography-related aspects, e.g. sub-lithography lengths; Isolation-related aspects, e.g. to solve problems arising at the crossing with the side of the device isolation; Planarisation aspects}
<administratively transferred to [H10D 64/01326](#)>
- D H01L 21/28132 {conducting part of electrode is defined by a sidewall spacer or a similar technique, e.g. oxidation under mask, plating}
<administratively transferred to [H10D 64/01328](#)>
- D H01L 21/28141 {insulating part of the electrode is defined by a sidewall spacer, e.g. dummy spacer, or a similar technique, e.g. oxidation under mask, plating}
<administratively transferred to [H10D 64/01334](#)>
- D H01L 21/2815 {part or whole of the electrode is a sidewall spacer or made by a similar technique, e.g. transformation under mask, plating}
<administratively transferred to [H10D 64/0133](#)>
- D H01L 21/28158 {Making the insulator}
<administratively transferred to [H10D 64/01332](#)>
- D H01L 21/28167 {on single crystalline silicon, e.g. using a liquid, i.e. chemical oxidation}
<administratively transferred to [H10D 64/01336](#)>
- D H01L 21/28176 {with a treatment, e.g. annealing, after the formation of the definitive gate conductor}
<administratively transferred to [H10D 64/01338](#)>
- D H01L 21/28185 {with a treatment, e.g. annealing, after the formation of the gate insulator and before the formation of the definitive gate conductor}
<administratively transferred to [H10D 64/0134](#)>
- D H01L 21/28194 {by deposition, e.g. evaporation, ALD, CVD, sputtering, laser deposition (H01L 21/28202 takes precedence)}
<administratively transferred to [H10D 64/01342](#)>

- D H01L 21/28202 {in a nitrogen-containing ambient, e.g. nitride deposition, growth, oxynitridation, NH_3 nitridation, N_2O oxidation, thermal nitridation, RTN, plasma nitridation, RPN}
<administratively transferred to [H10D 64/01344](#)>
- D H01L 21/28211 {in a gaseous ambient using an oxygen or a water vapour, e.g. RTO, possibly through a layer (H01L 21/28194 and H01L 21/28202 take precedence)}
NOTE
{Thin oxidation layers used as a barrier layer or as a buffer layer, e.g. before the formation of a high-k insulator, are classified here only if important per se.}
<administratively transferred to [H10D 64/01346](#)>
- D H01L 21/2822 {with substrate doping, e.g. N, Ge, C implantation, before formation of the insulator}
<administratively transferred to [H10D 64/01348](#)>
- D H01L 21/28229 {by deposition of a layer, e.g. metal, metal compound or polysilicon, followed by transformation thereof into an insulating layer}
<administratively transferred to [H10D 64/0135](#)>
- D H01L 21/28238 {with sacrificial oxide}
<administratively transferred to [H10D 64/01352](#)>
- D H01L 21/28247 {passivation or protection of the electrode, e.g. using re-oxidation}
<administratively transferred to [H10D 64/01354](#)>
- D H01L 21/28255 {the insulator being formed after the semiconductor body, the semiconductor belonging to Group IV and not being elemental silicon, e.g. Ge, SiGe, SiGeC}
<administratively transferred to [H10D 64/01356](#)>
- D H01L 21/28264 {the insulator being formed after the semiconductor body, the semiconductor being a III-V compound}
<administratively transferred to [H10D 64/01358](#)>
- D H01L 21/283 Deposition of conductive or insulating materials for electrodes {conducting electric current}
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/285 from a gas or vapour, e.g. condensation
<administratively transferred to [H10P 14/42](#)>
- D H01L 21/28506 {of conductive layers}
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/28512 {on semiconductor bodies comprising elements of Group IV of the Periodic Table}
<administratively transferred to [H10D 64/0111](#)>
- D H01L 21/28518 {the conductive layers comprising silicides (H01L 21/28537 takes precedence)}
<administratively transferred to [H10D 64/0112](#)>
- D H01L 21/28525 {the conductive layers comprising semiconducting material (H01L 21/28518, H01L 21/28537 take precedence)}
<administratively transferred to [H10D 64/0113](#)>

- D H01L 21/28531 {Making of side-wall contacts}
<administratively transferred to [H10D 64/0113](#)>
- D H01L 21/28537 {Deposition of Schottky electrodes}
<administratively transferred to [H10D 64/0121](#)>
- D H01L 21/2855 {by physical means, e.g. sputtering, evaporation
(H01L 21/28518 - H01L 21/28537 and H01L 21/28568 take precedence)}
<administratively transferred to [H10P 14/44](#)>
- D H01L 21/28556 {by chemical means, e.g. CVD, LPCVD, PECVD, laser CVD
(H01L 21/28518 - H01L 21/28537 and H01L 21/28568 take precedence)}
<administratively transferred to [H10P 14/43](#)>
- D H01L 21/28562 {Selective deposition}
<administratively transferred to [H10P 14/432](#)>
- D H01L 21/28568 {the conductive layers comprising transition metals
(H01L 21/28518 takes precedence)}
<administratively transferred to [H10P 14/418](#)>
- D H01L 21/28575 {on semiconductor bodies comprising $A_{III}B_V$ compounds}
<administratively transferred to [H10D 64/0116](#)>
- D H01L 21/28581 {Deposition of Schottky electrodes}
<administratively transferred to [H10D 64/0124](#)>
- D H01L 21/28587 {characterised by the sectional shape, e.g. T, inverted T}
<administratively transferred to [H10D 64/0125](#)>
- D H01L 21/28593 {asymmetrical sectional shape}
<administratively transferred to [H10D 64/0126](#)>
- D H01L 21/288 from a liquid, e.g. electrolytic deposition
<administratively transferred to [H10P 14/46](#)>
- D H01L 21/2885 {using an external electrical current, i.e. electro-deposition}
<administratively transferred to [H10P 14/47](#)>
- D H01L 21/30 Treatment of semiconductor bodies using processes or apparatus
not provided for in groups H01L 21/20 - H01L 21/26 (manufacture of
electrodes thereon H01L 21/28)
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/3003 {Hydrogenation or deuterisation, e.g. using atomic hydrogen from a
plasma}
<administratively transferred to [H10P 95/94](#)>
- D H01L 21/3006 {of $A_{III}B_V$ compounds}
<administratively transferred to [H10P 95/94](#)>
- D H01L 21/302 to change their surface physical characteristics or shape, e.g. etching,
polishing, cutting
<administratively transferred to [H10P 50/00](#)>
- D H01L 21/304 Mechanical treatment, e.g. grinding, polishing, cutting
{(H01L 21/30625 takes precedence)}
<administratively transferred to [H10P 52/00](#)>
- D H01L 21/3043 {Making grooves, e.g. cutting}
<administratively transferred to [H10P 52/00](#)>

- D H01L 21/3046 {using blasting, e.g. sand-blasting (H01L 21/2633 takes precedence)}
<administratively transferred to [H10P 52/00](#)>
- D H01L 21/306 Chemical or electrical treatment, e.g. electrolytic etching (to form insulating layers H01L 21/31)
<administratively transferred to [H10P 50/00](#)>
- D H01L 21/30604 {Chemical etching}
<administratively transferred to [H10P 50/642](#)>
- D H01L 21/30608 {Anisotropic liquid etching (H01L 21/3063 takes precedence)}
<administratively transferred to [H10P 50/644](#)>
- D H01L 21/30612 {Etching of $A_{III}B_V$ compounds}
<administratively transferred to [H10P 50/646](#)>
- D H01L 21/30617 {Anisotropic liquid etching}
<administratively transferred to [H10P 50/648](#)>
- D H01L 21/30621 {Vapour phase etching}
<administratively transferred to [H10P 50/246](#)>
- D H01L 21/30625 {With simultaneous mechanical treatment, e.g. mechanico-chemical polishing}
<administratively transferred to [H10P 52/402](#)>
- D H01L 21/3063 Electrolytic etching
<administratively transferred to [H10P 50/613](#)>
- D H01L 21/30635 {of $A_{III}B_V$ compounds}
<administratively transferred to [H10P 50/617](#)>
- D H01L 21/3065 Plasma etching; Reactive-ion etching
<administratively transferred to [H10P 50/242](#)>
- D H01L 21/30655 {comprising alternated and repeated etching and passivation steps, e.g. Bosch process}
<administratively transferred to [H10P 50/244](#)>
- D H01L 21/308 using masks (H01L 21/3063, H01L 21/3065 take precedence)
<administratively transferred to [H10P 50/691](#)>
- D H01L 21/3081 {characterised by their composition, e.g. multilayer masks, materials}
<administratively transferred to [H10P 50/692](#)>
- D H01L 21/3083 {characterised by their size, orientation, disposition, behaviour, shape, in horizontal or vertical plane}
<administratively transferred to [H10P 50/693](#)>
- D H01L 21/3085 {characterised by their behaviour during the process, e.g. soluble masks, redeposited masks}
<administratively transferred to [H10P 50/694](#)>
- D H01L 21/3086 {characterised by the process involved to create the mask, e.g. lift-off masks, sidewalls, or to modify the mask, e.g. pre-treatment, post-treatment}
<administratively transferred to [H10P 50/695](#)>
- D H01L 21/3088 {Process specially adapted to improve the resolution of the mask}
<administratively transferred to [H10P 50/696](#)>

- D H01L 21/31 to form insulating layers thereon, e.g. for masking or by using photolithographic techniques (encapsulating layers H01L 21/56); After treatment of these layers; Selection of materials for these layers
<administratively transferred to [H10P 14/60](#)>
- D H01L 21/3105 After-treatment
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/31051 {Planarisation of the insulating layers (H01L 21/31058 takes precedence)}
<administratively transferred to [H10P 95/06](#)>
- D H01L 21/31053 {involving a dielectric removal step}
<administratively transferred to [H10P 95/062](#)>
- D H01L 21/31055 {the removal being a chemical etching step, e.g. dry etching (etching *per se* H01L 21/311)}
<administratively transferred to [H10P 95/064](#)>
- D H01L 21/31056 {the removal being a selective chemical etching step, e.g. selective dry etching through a mask}
<administratively transferred to [H10P 95/066](#)>
- D H01L 21/31058 {of organic layers}
<administratively transferred to [H10P 95/08](#)>
- D H01L 21/311 Etching the insulating layers {by chemical or physical means (H01L 21/31058 takes precedence)}
<administratively transferred to [H10P 50/28](#)>
- D H01L 21/31105 {Etching inorganic layers}
<administratively transferred to [H10P 50/282](#)>
- D H01L 21/31111 {by chemical means}
<administratively transferred to [H10P 50/283](#)>
- D H01L 21/31116 {by dry-etching}
<administratively transferred to [H10P 50/283](#)>
- D H01L 21/31122 {of layers not containing Si, e.g. PZT, Al₂O₃}
<administratively transferred to [H10P 50/285](#)>
- D H01L 21/31127 {Etching organic layers}
<administratively transferred to [H10P 50/286](#)>
- D H01L 21/31133 {by chemical means}
<administratively transferred to [H10P 50/287](#)>
- D H01L 21/31138 {by dry-etching}
<administratively transferred to [H10P 50/287](#)>
- D H01L 21/31144 {using masks}
<administratively transferred to [H10P 50/73](#)>
- D H01L 21/3115 Doping the insulating layers
<administratively transferred to [H10P 32/20](#)>
- D H01L 21/31155 {by ion implantation}
<administratively transferred to [H10P 30/40](#)>

Project: MP0117-F (H01L)

- D H01L 21/312 —(Frozen) Organic layers, e.g. photoresist (H01L 21/3105, H01L 21/32 take precedence; {photoresists per se G03C})
- WARNING
Groups H01L 21/312 – H01L 21/3128 are no longer used for the classification of documents as of May 1, 2011. The content of these groups is being reclassified into groups H01L 21/02107 – H01L 21/02326.
Groups H01L 21/02107 – H01L 21/02326 should be considered in order to perform a complete search.
- D H01L 21/3121 —(Frozen) {Layers comprising organo-silicon compounds}
- D H01L 21/3122 —(Frozen) {layers comprising polysiloxane compounds}
- D H01L 21/3124 —(Frozen) {layers comprising hydrogen silsesquioxane}
- D H01L 21/3125 —(Frozen) {layers comprising silazane compounds}
- D H01L 21/3127 —(Frozen) {Layers comprising fluoro (hydro)carbon compounds, e.g. polytetrafluoroethylene}
- D H01L 21/3128 —(Frozen) {by Langmuir-Blodgett techniques}
- D H01L 21/314 —(Frozen) Inorganic layers (H01L 21/3105, H01L 21/32 take precedence)
- WARNING
Groups H01L 21/314 – H01L 21/3185 are no longer used for the classification of documents as of May 1, 2011. The content of these group is being reclassified into group H01L 21/02107 – H01L 21/02326.
Groups H01L 21/02107 – H01L 21/02326 should be considered in order to perform a complete search.
- D H01L 21/3141 —(Frozen) {Deposition using atomic layer deposition techniques [ALD]}
- D H01L 21/3142 —(Frozen) {of nano-laminates, e.g. alternating layers of Al₂O₃-HfO₂}
- D H01L 21/3143 —(Frozen) {composed of alternated layers or of mixtures of nitrides and oxides or of oxinitrides, e.g. formation of oxinitride by oxidation of nitride layers}
- D H01L 21/3144 —(Frozen) {on silicon}
- D H01L 21/3145 —(Frozen) {formed by deposition from a gas or vapour}
- D H01L 21/3146 —(Frozen) {Carbon layers, e.g. diamond-like layers}
- D H01L 21/3147 —(Frozen) {Epitaxial deposition of insulating materials}
- D H01L 21/3148 —(Frozen) {Silicon Carbide layers}
- D H01L 2021/3149 —(Frozen) {Langmuir-Blodgett techniques}

- D H01L 21/316 —(Frozen) composed of oxides or glassy oxides or oxide based glass
- WARNING
Group H01L 21/316 is no longer used for the classification of documents as of May 1, 2011. The content of this group is being reclassified into groups H01L 21/02107 – H01L 21/02326. Groups H01L 21/02107 – H01L 21/02326 should be considered in order to perform a complete search.
- D H01L 21/31604 —(Frozen) {Deposition from a gas or vapour (H01L 21/31691, H01L 21/31695 take precedence)}
- D H01L 21/31608 —(Frozen) {Deposition of SiO₂ (H01L 21/31625, H01L 21/31629 and H01L 21/31633 take precedence)}
- D H01L 21/31612 —(Frozen) {on a silicon body}
- D H01L 21/31616 —(Frozen) {Deposition of Al₂O₃}
- D H01L 21/3162 —(Frozen) {on a silicon body}
- D H01L 21/31625 —(Frozen) {Deposition of boron or phosphorus doped silicon oxide, e.g. BSG, PSG, BPSG}
- D H01L 21/31629 —(Frozen) {Deposition of halogen doped silicon oxide, e.g. fluorine doped silicon oxide}
- D H01L 21/31633 —(Frozen) {Deposition of carbon doped silicon oxide, e.g. SiOC}
- D H01L 21/31637 —(Frozen) {Deposition of Tantalum oxides, e.g. Ta₂O₅}
- D H01L 21/31641 —(Frozen) {Deposition of Zirconium oxides, e.g. ZrO₂}
- D H01L 21/31645 —(Frozen) {Deposition of Hafnium oxides, e.g. HfO₂}
- D H01L 21/3165 —(Frozen) {formed by oxidation (H01L 21/31691, H01L 21/31695 take precedence)}
- D H01L 21/31654 —(Frozen) {of semiconductor materials, e.g. the body itself}
- D H01L 21/31658 —(Frozen) {by thermal oxidation, e.g. of SiGe}
- D H01L 21/31662 —(Frozen) {of silicon in uncombined form}
- D H01L 21/31666 —(Frozen) {of AIII-BV compounds}
- D H01L 21/3167 —(Frozen) {of anodic oxidation}
- D H01L 21/31675 —(Frozen) {of silicon}
- D H01L 21/31679 —(Frozen) {of AIII-BV compounds}
- D H01L 21/31683 —(Frozen) {of metallic layers, e.g. Al deposited on the body, e.g. formation of multi-layer insulating structures}
- D H01L 21/31687 —(Frozen) {by anodic oxidation}

- D H01L 21/31691 {with perovskite structure}
—(Frozen)
- D H01L 21/31695 {Deposition of porous oxides or porous glassy oxides or oxide
—(Frozen) based porous glass}
- D H01L 21/318 composed of nitrides
—(Frozen)

WARNING

Group H01L 21/318 is no longer used for the classification of documents as of May 1, 2011. The content of this group is being reclassified into groups H01L 21/02107 – H01L 21/02326. Groups H01L 21/02107 – H01L 21/02326 should be considered in order to perform a complete search.

- D H01L 21/3185 {of silicon nitrides}
—(Frozen)

Project: RP12800 (H01L)

- D H01L 21/32 using masks
<administratively transferred to [H10P 14/61](#)>
- D H01L 21/3205 Deposition of non-insulating-, e.g. conductive- or resistive-, layers
on insulating layers; After treatment of these layers (manufacture of
electrodes H01L 21/28)
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/32051 {Deposition of metallic or metal-silicide layers}
<administratively transferred to [H10P 14/412](#)>
- D H01L 21/32053 {of metal-silicide layers}
<administratively transferred to [H10P 14/414](#)>
- D H01L 21/32055 {Deposition of semiconductive layers, e.g. poly- or amorphous
silicon layers}
<administratively transferred to [H10P 14/416](#)>
- D H01L 21/32056 {Deposition of conductive or semi-conductive organic layers
(H01L 21/32058 takes precedence)}
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/32058 {Deposition of superconductive layers}
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/321 After treatment
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/32105 {Oxidation of silicon-containing layers}
<administratively transferred to [H10P 14/6308](#)>
- D H01L 21/3211 {Nitridation of silicon-containing layers}
<administratively transferred to [H10P 14/6316](#)>
- D H01L 21/32115 {Planarisation}
<administratively transferred to [H10P 95/04](#)>
- D H01L 21/3212 {by chemical mechanical polishing [CMP]}
<administratively transferred to [H10P 52/403](#)>
- D H01L 21/32125 {by simultaneously passing an electrical current, i.e.
electrochemical mechanical polishing, e.g. ECMP}
<administratively transferred to [H10P 52/203](#)>

- D H01L 21/3213 Physical or chemical etching of the layers, e.g. to produce a patterned layer from a pre-deposited extensive layer
<administratively transferred to [H10P 50/00](#)>
- D H01L 21/32131 {by physical means only}
<administratively transferred to [H10P 50/262](#)>
- D H01L 21/32132 {of silicon-containing layers}
<administratively transferred to [H10P 50/263](#)>
- D H01L 21/32133 {by chemical means only}
<administratively transferred to [H10P 50/264](#)>
- D H01L 21/32134 {by liquid etching only}
<administratively transferred to [H10P 50/667](#)>
- D H01L 21/32135 {by vapour etching only}
<administratively transferred to [H10P 50/266](#)>
- D H01L 21/32136 {using plasmas}
<administratively transferred to [H10P 50/267](#)>
- D H01L 21/32137 {of silicon-containing layers}
<administratively transferred to [H10P 50/268](#)>
- D H01L 21/32138 {pre- or post-treatments, e.g. anti-corrosion processes}
<administratively transferred to [H10P 50/269](#)>
- D H01L 21/32139 {using masks}
<administratively transferred to [H10P 50/71](#)>
- D H01L 21/3215 Doping the layers
<administratively transferred to [H10P 32/30](#)>
- D H01L 21/32155 {Doping polycrystalline or amorphous silicon layers}
<administratively transferred to [H10P 32/302](#)>
- D H01L 21/322 to modify their internal properties, e.g. to produce internal imperfections
<administratively transferred to [H10P 36/00](#)>
- D H01L 21/3221 {of silicon bodies, e.g. for gettering}
<administratively transferred to [H10P 36/03](#)>
- D H01L 21/3223 {using cavities formed by hydrogen or noble gas ion implantation}
<administratively transferred to [H10P 95/405](#)>
- D H01L 21/3225 {Thermally inducing defects using oxygen present in the silicon body for intrinsic gettering (H01L 21/3226 takes precedence)}
NOTE
{Gettering using both extrinsic and intrinsic gettering techniques is classified in both H01L 21/3221 and H01L 21/3225.}
<administratively transferred to [H10P 36/20](#)>
- D H01L 21/3226 {of silicon on insulator}
<administratively transferred to [H10P 36/07](#)>
- D H01L 21/3228 {of $A_{III}B_V$ compounds, e.g. to make them semi-insulating}
<administratively transferred to [H10P 95/408](#)>

- D H01L 21/324 Thermal treatment for modifying the properties of semiconductor bodies, e.g. annealing, sintering (H01L 21/20 - H01L 21/288 and H01L 21/302 - H01L 21/322 take precedence)
<administratively transferred to [H10P 95/90](#)>
- D H01L 21/3242 {for the formation of PN junctions without addition of impurities (H01L 21/22 takes precedence)}
<administratively transferred to [H10P 95/902](#)>
- D H01L 21/3245 {of $A_{III}B_V$ compounds}
<administratively transferred to [H10P 95/904](#)>
- D H01L 21/3247 {for altering the shape, e.g. smoothing the surface}
WARNING
Group H01L 21/3247 is incomplete pending reclassification of documents from group H01L 21/324.
Groups H01L 21/324 and H01L 21/3247 should be considered in order to perform a complete search.
<administratively transferred to [H10P 95/906](#)>
- D H01L 21/326 Application of electric currents or fields, e.g. for electroforming (H01L 21/20 - H01L 21/288 and H01L 21/302 - H01L 21/324 take precedence)
<administratively transferred to [H10P 95/80](#)>
- D H01L 21/34 . . . the devices having semiconductor bodies not provided for in groups H01L 21/18, H10D 48/04 and H10D 48/07, with or without impurities, e.g. doping materials
<administratively transferred to [H10P 10/00](#)>
- D H01L 21/38 Diffusion of impurity materials, e.g. doping materials, electrode materials, into or out of a semiconductor body, or between semiconductor regions
<administratively transferred to [H10P 32/00](#)>
- D H01L 21/383 using diffusion into or out of a solid from or into a gaseous phase
<administratively transferred to [H10P 32/12](#) and [H10P 32/17](#)>
- D H01L 21/385 using diffusion into or out of a solid from or into a solid phase, e.g. a doped oxide layer
<administratively transferred to [H10P 32/14](#) and [H10P 32/17](#)>
- D H01L 21/388 using diffusion into or out of a solid from or into a liquid phase, e.g. alloy diffusion processes
<administratively transferred to [H10P 32/16](#) and [H10P 32/17](#)>
- D H01L 21/40 Alloying of impurity materials, e.g. doping materials, electrode materials, with a semiconductor body
<administratively transferred to [H10P 95/50](#)>
- D H01L 21/42 Bombardment with radiation
<administratively transferred to [H10P 34/00](#)>
- D H01L 21/423 with high-energy radiation
<administratively transferred to [H10P 34/40](#)>
- D H01L 21/425 producing ion implantation
<administratively transferred to [H10P 30/202](#)>
- D H01L 21/426 using masks
<administratively transferred to [H10P 30/22](#)>

- D H01L 21/428 using electromagnetic radiation, e.g. laser radiation
<administratively transferred to [H10P 34/42](#)>
- D H01L 21/44 Manufacture of electrodes on semiconductor bodies using processes or apparatus not provided for in groups H01L 21/38 - H01L 21/428
<administratively transferred to [H10D 64/011](#)>
- D H01L 21/441 Deposition of conductive or insulating materials for electrodes
<administratively transferred to [H10D 64/011](#)>
- D H01L 21/443 from a gas or vapour, e.g. condensation
<administratively transferred to [H10D 64/011](#)>
- D H01L 21/445 from a liquid, e.g. electrolytic deposition
<administratively transferred to [H10P 14/47](#)>
- D H01L 21/447 involving the application of pressure, e.g. thermo-compression bonding
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/449 involving the application of mechanical vibrations, e.g. ultrasonic vibrations
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/46 Treatment of semiconductor bodies using processes or apparatus not provided for in groups H01L 21/428 (manufacture of electrodes thereon H01L 21/44)
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/461 to change their surface physical characteristics or shape, e.g. etching, polishing, cutting
<administratively transferred to [H10P 50/00](#)>
- D H01L 21/463 Mechanical treatment, e.g. grinding, ultrasonic treatment
<administratively transferred to [H10P 52/00](#), [H10P 54/00](#), and [H10P 95/60](#) simultaneously>
- D H01L 21/465 Chemical or electrical treatment, e.g. electrolytic etching (to form insulating layers H01L 21/469)
<administratively transferred to [H10P 50/20](#), [H10P 52/00](#), and [H10P 95/70](#) simultaneously>
- D H01L 21/467 using masks
<administratively transferred to [H10P 50/69](#)>
- D H01L 21/469 to form insulating layers thereon, e.g. for masking or by using photolithographic techniques (encapsulating layers H01L 21/56); After-treatment of these layers
<administratively transferred to [H10P 14/60](#)>
- D H01L 21/47 Organic layers, e.g. photoresist (H01L 21/475, H01L 21/4757 take precedence)
<administratively transferred to [H10P 14/68](#)>
- D H01L 21/471 Inorganic layers (H01L 21/475, H01L 21/4757 take precedence)
<administratively transferred to [H10P 14/69](#)>
- D H01L 21/473 composed of oxides or glassy oxides or oxide based glass
<administratively transferred to [H10P 14/692](#)>
- D H01L 21/475 using masks
<administratively transferred to [H10P 14/61](#)>

- D H01L 21/4757 After-treatment
<administratively transferred to [H10P 50/28](#)>
- D H01L 21/47573 {Etching the layer}
<administratively transferred to [H10P 50/282](#)>
- D H01L 21/47576 {Doping the layer}
<administratively transferred to [H10P 30/40](#)>
- D H01L 21/4763 Deposition of non-insulating, e.g. conductive -, resistive -, layers on insulating layers; After-treatment of these layers (manufacture of electrodes H01L 21/28, {H01L 21/44})
<administratively transferred to [H10P 14/40](#)>
- D H01L 21/47635 {After-treatment of these layers}
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/477 Thermal treatment for modifying the properties of semiconductor bodies, e.g. annealing, sintering (H01L 21/38 - H01L 21/449 and H01L 21/461 - H01L 21/475 take precedence)
<administratively transferred to [H10P 95/90](#)>
- D H01L 21/479 Application of electric currents or fields, e.g. for electroforming (H01L 21/38 - H01L 21/449 and H01L 21/461 - H01L 21/475 take precedence)
<administratively transferred to [H10P 95/80](#)>

Project: RP12819 (H01L)

- D H01L 21/48 Manufacture or treatment of parts, e.g. containers, prior to assembly of the devices, using processes not provided for in a single one of the groups H01L 21/18 - H01L 21/326 or H10D 48/04 - H10D 48/07
NOTE
{In this group, the expression "treatment" covers also the removal of leads from parts.}
<administratively transferred to [H10W 99/00](#)>
- D H01L 21/4803 {Insulating or insulated parts, e.g. mountings, containers, diamond heatsinks (H01L 21/4846 takes precedence; printed circuit boards H05K 1/00)}
<administratively transferred to [H10W 99/00](#)>
- D H01L 21/4807 {Ceramic parts}
<administratively transferred to [H10W 99/00](#)>
- D H01L 21/481 {Insulating layers on insulating parts, with or without metallisation}
<administratively transferred to [H10W 99/00](#)>
- D H01L 21/4814 {Conductive parts}
<administratively transferred to [H10W 99/00](#)>
- D H01L 21/4817 {for containers, e.g. caps (H01L 21/4871 takes precedence)}
<administratively transferred to [H10W 76/01](#)>
- D H01L 21/4821 {Flat leads, e.g. lead frames with or without insulating supports}
<administratively transferred to [H10W 70/04](#)>
- D H01L 21/4825 {Connection or disconnection of other leads to or from flat leads, e.g. wires, bumps, other flat leads}
<administratively transferred to [H10W 70/041](#)>

- D H01L 21/4828 {Etching (etching for cleaning without patterning H01L 21/4835)}
<administratively transferred to [H10W 70/042](#)>
- D H01L 21/4832 {Etching a temporary substrate after encapsulation process to form leads}
<administratively transferred to [H10W 70/042](#)>
- D H01L 21/4835 {Cleaning, e.g. removing of solder}
<administratively transferred to [H10W 70/045](#)>
- D H01L 21/4839 {Assembly of a flat lead with an insulating support, e.g. for TAB}
<administratively transferred to [H10W 70/047](#)>
- D H01L 21/4842 {Mechanical treatment, e.g. punching, cutting, deforming, cold welding}
<administratively transferred to [H10W 70/048](#)>
- D H01L 21/4846 {Leads on or in insulating or insulated substrates, e.g. metallisation (H01L 21/4821 takes precedence; metallisation of ceramics in general C04B 41/51; printed circuits H05K 3/00)}
<administratively transferred to [H10W 70/05](#)>
- D H01L 21/485 {Adaptation of interconnections, e.g. engineering charges, repair techniques}
<administratively transferred to [H10W 70/092](#)>
- D H01L 21/4853 {Connection or disconnection of other leads to or from a metallisation, e.g. pins, wires, bumps}
<administratively transferred to [H10W 70/093](#)>
- D H01L 21/4857 {Multilayer substrates (multilayer metallisation on monolayer substrate H01L 21/4846)}
<administratively transferred to [H10W 70/05](#)>
- D H01L 21/486 {Via connections through the substrate with or without pins}
<administratively transferred to [H10W 70/095](#)>
- D H01L 21/4864 {Cleaning, e.g. removing of solder}
<administratively transferred to [H10W 70/097](#)>
- D H01L 21/4867 {Applying pastes or inks, e.g. screen printing (H01L 21/486 takes precedence)}
<administratively transferred to [H10W 70/098](#)>
- D H01L 21/4871 {Bases, plates or heatsinks}
<administratively transferred to [H10W 70/02](#)>
- D H01L 21/4875 {Connection or disconnection of other leads to or from bases or plates}
<administratively transferred to [H10W 70/023](#)>
- D H01L 21/4878 {Mechanical treatment, e.g. deforming}
<administratively transferred to [H10W 70/027](#)>
- D H01L 21/4882 {Assembly of heatsink parts}
<administratively transferred to [H10W 40/037](#)>
- D H01L 21/4885 {Wire-like parts or pins (wire ball formation B23K 20/00; methods related to connecting semiconductor or other solid state bodies H01L 24/00)}
<administratively transferred to [H10W 72/50](#)>

- D H01L 21/4889 {Connection or disconnection of other leads to or from wire-like parts, e.g. wires}
<administratively transferred to [H10W 72/075](#)>
- D H01L 21/4892 {Cleaning}
<administratively transferred to [H10W 72/01571](#)>
- D H01L 21/4896 {Mechanical treatment, e.g. cutting, bending}
<administratively transferred to [H10W 72/015](#)>
- D H01L 21/50 Assembly of semiconductor devices using processes or apparatus not provided for in a single one of the groups H01L 21/18 - H01L 21/326 or H10D 48/04 - H10D 48/07 {e.g. sealing of a cap to a base of a container}
- NOTE
{Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by H01L 24/00.}
<administratively transferred to [H10W 95/00](#)>
- D H01L 21/52 Mounting semiconductor bodies in containers
<administratively transferred to [H10W 72/071](#)>
- D H01L 21/54 Providing fillings in containers, e.g. gas fillings
<administratively transferred to [H10W 76/05](#)>
- D H01L 21/56 Encapsulations, e.g. encapsulation layers, coatings
<administratively transferred to [H10W 74/01](#)>
- D H01L 21/561 {Batch processing}
<administratively transferred to [H10W 74/014](#)>
- D H01L 21/563 {Encapsulation of active face of flip-chip device, e.g. underfilling or underencapsulation of flip-chip, encapsulation preform on chip or mounting substrate}
<administratively transferred to [H10W 74/012](#) and [H10W 74/15](#)>
- D H01L 21/565 {Moulds}
<administratively transferred to [H10W 74/016](#)>
- D H01L 21/566 {Release layers for moulds, e.g. release layers, layers against residue during moulding}
<administratively transferred to [H10W 74/017](#)>
- D H01L 21/568 {Temporary substrate used as encapsulation process aid (H01L 21/4832 and H01L 21/566 take precedence)}
<administratively transferred to [H10W 74/019](#)>
- D H01L 21/60 Attaching {or detaching} leads or other conductive members, to be used for carrying current to or from the device in operation
<administratively transferred to [H10W 72/071](#)>
- D H01L 2021/60007 {involving a soldering or an alloying process}
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2021/60015 {using plate connectors, e.g. layer, film}
<administratively transferred to [H10W 72/20](#)>
- D H01L 2021/60022 {using bump connectors, e.g. for flip chip mounting}
<administratively transferred to [H10W 72/072](#)>
- D H01L 2021/6003 {Apparatus therefor}
<administratively transferred to [H10W 72/0711](#)>

- D H01L 2021/60037 {Right-up bonding}
<administratively transferred to [H10W 72/07261](#)>
- D H01L 2021/60045 {Pre-treatment step of the bump connectors prior to bonding}
<administratively transferred to [H10W 72/07211](#)>
- D H01L 2021/60052 {Oxide removing step, e.g. flux, rosin}
<administratively transferred to [H10W 72/07211](#) and
[H10W 72/01271](#)>
- D H01L 2021/6006 {with temporary supporting member not part of an apparatus, e.g. removable coating, film or substrate}
<administratively transferred to [H10W 72/07204](#)>
- D H01L 2021/60067 {Aligning the bump connectors with the mounting substrate}
<administratively transferred to [H10W 72/07221](#)>
- D H01L 2021/60075 {involving active alignment, i.e. by apparatus steering, e.g. using alignment marks, sensors}
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2021/60082 {involving passive alignment, e.g. using surface energy, chemical reactions, thermal equilibrium}
<administratively transferred to [H10W 72/07221](#)>
- D H01L 2021/6009 {involving guiding structures, e.g. structures that are left at least partly in the bonded product, spacers}
<administratively transferred to [H10W 72/07227](#)>
- D H01L 2021/60097 {Applying energy, e.g. for the soldering or alloying process}
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2021/60105 {using electromagnetic radiation}
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2021/60112 {Coherent radiation, i.e. laser beam}
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2021/6012 {Incoherent radiation, e.g. polychromatic heating lamp}
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2021/60127 {Induction heating, i.e. eddy currents}
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2021/60135 {using convection, e.g. reflow oven}
<administratively transferred to [H10W 72/07234](#)>
- D H01L 2021/60142 {with a graded temperature profile}
<administratively transferred to [H10W 72/07234](#)>
- D H01L 2021/6015 {using conduction, e.g. chuck heater, thermocompression}
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2021/60157 {with a graded temperature profile}
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2021/60165 {using an electron beam}
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2021/60172 {using static pressure}
<administratively transferred to [H10W 72/07231](#)>

D	H01L 2021/6018	. . . . . {Unidirectional static pressure} <administratively transferred to H10W 72/07231 >
D	H01L 2021/60187	. . . . . {Isostatic pressure, e.g. degassing using vacuum or pressurised liquid} <administratively transferred to H10W 72/07231 >
D	H01L 2021/60195	. . . . . {using dynamic pressure, e.g. ultrasonic or thermosonic bonding} <administratively transferred to H10W 72/07231 >
D	H01L 2021/60202	. . . . . {using a protective atmosphere, e.g. with forming or shielding gas} <administratively transferred to H10W 72/07241 >
D	H01L 2021/6021	. . . . . {using an autocatalytic reaction} <administratively transferred to H10W 72/07231 >
D	H01L 2021/60217	. . . . . {Detaching bump connectors, e.g. after testing} <administratively transferred to H10W 72/072 >
D	H01L 2021/60225	. . . . . {Arrangement of bump connectors prior to mounting} <administratively transferred to H10W 72/072 and H10W 72/247 >
D	H01L 2021/60232	. . . . . {wherein the bump connectors are disposed only on the semiconductor chip} <administratively transferred to H10W 72/072 and H10W 72/247 >
D	H01L 2021/6024	. . . . . {wherein the bump connectors are disposed only on the mounting substrate} <administratively transferred to H10W 72/072 and H10W 72/247 >
D	H01L 2021/60247	. . . . . {wherein the bump connectors are disposed on both the semiconductor chip and the mounting substrate, e.g. bump to bump} <administratively transferred to H10W 72/072 and H10W 72/247 >
D	H01L 2021/60255	. . . . . {wherein the bump connectors are provided as prepeg, e.g. are provided in an insulating plate member} <administratively transferred to H10W 72/01212 >
D	H01L 2021/60262	. . . . . {Lateral distribution of bump connectors prior to mounting} <administratively transferred to H10W 72/072 and H10W 72/247 >
D	H01L 2021/6027	. . . . . {Mounting on semiconductor conductive members} <administratively transferred to H10W 72/07236 >
D	H01L 2021/60277	. . . . . {involving the use of conductive adhesives} <administratively transferred to H10W 72/30 >
D	H01L 2021/60285	. . . . . {involving the use of mechanical auxiliary parts without the use of an alloying or soldering process, e.g. pressure contacts} <administratively transferred to H10W 72/071 >
D	H01L 2021/60292	. . . . . {involving the use of an electron or laser beam} <administratively transferred to H10W 72/071 >
D	H01L 21/603	. . . . . involving the application of pressure, e.g. thermo-compression bonding (H01L 21/607 takes precedence) <administratively transferred to H10W 72/07232 >
D	H01L 21/607 involving the application of mechanical vibrations, e.g. ultrasonic vibrations <administratively transferred to H10W 72/07233 >

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- D H01L 21/62 . . the devices having no potential barriers
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/64 . Manufacture or treatment of solid state devices other than semiconductor devices, or of parts thereof, not peculiar to a single device provided for in subclasses H10F, H10H, H10K or H10N
<administratively transferred to [H10P 95/00](#)>
- D H01L 21/67 . Apparatus specially adapted for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus specially adapted for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components {; Apparatus not specifically provided for elsewhere (processes per se H01L 21/30, H01L 21/46, H01L 23/00; simple temporary support means, e.g. using adhesives, electric or magnetic means H01L 21/68, H01L 21/302; apparatus for manufacturing arrangements for connecting or disconnecting semiconductor or solid-state bodies and for methods related thereto H01L 24/74;)}

NOTE
{In this subgroup the term substrate designates a semiconductor or electric solid state device or component, or a wafer.}
<administratively transferred to [H10P 72/00](#)>
- D H01L 21/67005 . . {Apparatus not specifically provided for elsewhere (processes per se H01L 21/30, H01L 21/46, H01L 23/00; simple temporary support means, e.g. using adhesives, electric or magnetic means H01L 21/68, H01L 21/302)}
<administratively transferred to [H10P 72/00](#)>
- D H01L 21/67011 . . . {Apparatus for manufacture or treatment (processes H01L 21/30, H01L 21/46; for production or after-treatment of single crystals or homogeneous polycrystalline material C30B 35/00)}
<administratively transferred to [H10P 72/04](#)>
- D H01L 21/67017 {Apparatus for fluid treatment (H01L 21/67126, H01L 21/6715 take precedence)}
<administratively transferred to [H10P 72/0402](#)>
- D H01L 21/67023 {for general liquid treatment, e.g. etching followed by cleaning}
<administratively transferred to [H10P 72/0404](#)>
- D H01L 21/67028 {for cleaning followed by drying, rinsing, stripping, blasting or the like}
<administratively transferred to [H10P 72/0406](#)>
- D H01L 21/67034 {for drying}
<administratively transferred to [H10P 72/0408](#)>
- D H01L 21/6704 {for wet cleaning or washing}
<administratively transferred to [H10P 72/0411](#)>
- D H01L 21/67046 {using mainly scrubbing means, e.g. brushes}
<administratively transferred to [H10P 72/0412](#)>
- D H01L 21/67051 {using mainly spraying means, e.g. nozzles}
<administratively transferred to [H10P 72/0414](#)>
- D H01L 21/67057 {with the semiconductor substrates being dipped in baths or vessels}
<administratively transferred to [H10P 72/0416](#)>

- D H01L 21/67063 {for etching}
<administratively transferred to [H10P 72/0418](#)>
- D H01L 21/67069 {for drying etching}
<administratively transferred to [H10P 72/0421](#)>
- D H01L 21/67075 {for wet etching}
<administratively transferred to [H10P 72/0422](#)>
- D H01L 21/6708 {using mainly spraying means, e.g. nozzles}
<administratively transferred to [H10P 72/0424](#)>
- D H01L 21/67086 {with the semiconductor substrates being dipped in baths or vessels}
<administratively transferred to [H10P 72/0426](#)>
- D H01L 21/67092 {Apparatus for mechanical treatment (or grinding or cutting, see the relevant groups in subclasses B24B or B28D)}
<administratively transferred to [H10P 72/0428](#)>
- D H01L 21/67098 {Apparatus for thermal treatment}
<administratively transferred to [H10P 72/0431](#)>
- D H01L 21/67103 {mainly by conduction}
<administratively transferred to [H10P 72/0432](#)>
- D H01L 21/67109 {mainly by convection}
<administratively transferred to [H10P 72/0434](#)>
- D H01L 21/67115 {mainly by radiation}
<administratively transferred to [H10P 72/0436](#)>
- D H01L 21/67121 {Apparatus for making assemblies not otherwise provided for, e.g. package constructions}
<administratively transferred to [H10P 72/0438](#)>
- D H01L 21/67126 {Apparatus for sealing, encapsulating, glassing, decapsulating or the like (processes H01L 23/02, H01L 23/28)}
<administratively transferred to [H10P 72/0441](#)>
- D H01L 21/67132 {Apparatus for placing on an insulating substrate, e.g. tape}
<administratively transferred to [H10P 72/0442](#)>
- D H01L 21/67138 {Apparatus for wiring semiconductor or solid-state device}
<administratively transferred to [H10P 72/0444](#)>
- D H01L 21/67144 {Apparatus for mounting on conductive members, e.g. leadframes or conductors on insulating substrates}
<administratively transferred to [H10P 72/0446](#)>
- D H01L 21/6715 {Apparatus for applying a liquid, a resin, an ink or the like (H01L 21/67126 takes precedence)}
<administratively transferred to [H10P 72/0448](#)>
- D H01L 21/67155 {Apparatus for manufacturing or treating in a plurality of work-stations}
<administratively transferred to [H10P 72/0451](#)>
- D H01L 21/67161 {characterized by the layout of the process chambers}
<administratively transferred to [H10P 72/0452](#)>
- D H01L 21/67167 {surrounding a central transfer chamber}
<administratively transferred to [H10P 72/0454](#)>

- D H01L 21/67173 {in-line arrangement}
<administratively transferred to [H10P 72/0456](#)>
- D H01L 21/67178 {vertical arrangement}
<administratively transferred to [H10P 72/0458](#)>
- D H01L 21/67184 {characterized by the presence of more than one transfer chamber}
<administratively transferred to [H10P 72/0461](#)>
- D H01L 21/6719 {characterized by the construction of the processing chambers, e.g. modular processing chambers}
<administratively transferred to [H10P 72/0462](#)>
- D H01L 21/67196 {characterized by the construction of the transfer chamber}
<administratively transferred to [H10P 72/0464](#)>
- D H01L 21/67201 {characterized by the construction of the load-lock chamber}
<administratively transferred to [H10P 72/0466](#)>
- D H01L 21/67207 {comprising a chamber adapted to a particular process}
<administratively transferred to [H10P 72/0468](#)>
- D H01L 21/67213 {comprising at least one ion or electron beam chamber (coating by ion implantation G23C; ion or electron beam tubes H01J 37/00)}
<administratively transferred to [H10P 72/0471](#)>
- D H01L 21/67219 {comprising at least one polishing chamber (polishing apparatuses B24B)}
<administratively transferred to [H10P 72/0472](#)>
- D H01L 21/67225 {comprising at least one lithography chamber (lithographic apparatuses G03F 7/00)}
<administratively transferred to [H10P 72/0474](#)>
- D H01L 21/6723 {comprising at least one plating chamber (electroless plating apparatuses C23C, electroplating apparatuses C25D)}
<administratively transferred to [H10P 72/0476](#)>
- D H01L 21/67236 {the substrates being processed being not semiconductor wafers, e.g. leadframes or chips}
<administratively transferred to [H10P 72/0478](#)>
- D H01L 21/67242 . . . {Apparatus for monitoring, sorting or marking (testing or measuring during manufacture H01L 22/00, marks per se H01L 23/544; testing individual semiconductor devices G01R 31/26)}
<administratively transferred to [H10P 72/06](#)>
- D H01L 21/67248 {Temperature monitoring}
<administratively transferred to [H10P 72/0602](#)>
- D H01L 21/67253 {Process monitoring, e.g. flow or thickness monitoring}
<administratively transferred to [H10P 72/0604](#)>
- D H01L 21/67259 {Position monitoring, e.g. misposition detection or presence detection}
<administratively transferred to [H10P 72/0606](#)>
- D H01L 21/67265 {of substrates stored in a container, a magazine, a carrier, a boat or the like}
<administratively transferred to [H10P 72/0608](#)>
- D H01L 21/67271 {Sorting devices}
<administratively transferred to [H10P 72/0611](#)>

- D H01L 21/67276 . . . {Production flow monitoring, e.g. for increasing throughput (program-control systems per se G05B 19/00, e.g. total factory control G05B 19/418)}
<administratively transferred to [H10P 72/0612](#)>
- D H01L 21/67282 . . . {Marking devices}
<administratively transferred to [H10P 72/0614](#)>
- D H01L 21/67288 . . . {Monitoring of warpage, curvature, damage, defects or the like}
<administratively transferred to [H10P 72/0616](#)>
- D H01L 21/67294 . . . {using identification means, e.g. labels on substrates or labels on containers}
<administratively transferred to [H10P 72/0618](#)>
- D H01L 21/673 . . using specially adapted carriers (or holders; Fixing the workpieces on such carriers or holders (holders for supporting a complete device in operation H01L 23/32))
<administratively transferred to [H10P 72/10](#)>
- D H01L 21/67303 . . . {Vertical boat type carrier whereby the substrates are horizontally supported, e.g. comprising rod-shaped elements}
<administratively transferred to [H10P 72/12](#)>
- D H01L 21/67306 . . . {characterized by a material, a roughness, a coating or the like}
<administratively transferred to [H10P 72/123](#)>
- D H01L 21/67309 . . . {characterized by the substrate support}
<administratively transferred to [H10P 72/127](#)>
- D H01L 21/67313 . . . {Horizontal boat type carrier whereby the substrates are vertically supported, e.g. comprising rod-shaped elements}
<administratively transferred to [H10P 72/13](#)>
- D H01L 21/67316 . . . {characterized by a material, a roughness, a coating or the like}
<administratively transferred to [H10P 72/135](#)>
- D H01L 21/6732 . . . {Vertical carrier comprising wall type elements whereby the substrates are horizontally supported, e.g. comprising sidewalls}
<administratively transferred to [H10P 72/14](#)>
- D H01L 21/67323 . . . {characterized by a material, a roughness, a coating or the like}
<administratively transferred to [H10P 72/145](#)>
- D H01L 21/67326 . . . {Horizontal carrier comprising wall type elements whereby the substrates are vertically supported, e.g. comprising sidewalls}
<administratively transferred to [H10P 72/15](#)>
- D H01L 21/6733 . . . {characterized by a material, a roughness, a coating or the like}
<administratively transferred to [H10P 72/155](#)>
- D H01L 21/67333 . . . {Trays for chips (magazine for components H05K 13/0084)}
<administratively transferred to [H10P 72/16](#)>
- D H01L 21/67336 . . . {characterized by a material, a roughness, a coating or the like}
<administratively transferred to [H10P 72/165](#)>
- D H01L 21/6734 . . . {specially adapted for supporting large square shaped substrates (containers and packaging elements for glass sheets B65D 85/48; transporting of glass products during their manufacture C03B 35/00)}
<administratively transferred to [H10P 72/17](#)>

- D H01L 21/67343 . . . {characterized by a material, a roughness, a coating or the like}
<administratively transferred to [H10P 72/175](#)>
- D H01L 21/67346 . . . {characterized by being specially adapted for supporting a single substrate or by comprising a stack of such individual supports}
<administratively transferred to [H10P 72/18](#)>
- D H01L 21/6735 . . . {Closed carriers}
<administratively transferred to [H10P 72/19](#)>
- D H01L 21/67353 . . . {specially adapted for a single substrate}
<administratively transferred to [H10P 72/1902](#)>
- D H01L 21/67356 . . . {specially adapted for containing chips, dies or ICs}
<administratively transferred to [H10P 72/1904](#)>
- D H01L 21/67359 . . . {specially adapted for containing masks, reticles or pellicles}
<administratively transferred to [H10P 72/1906](#)>
- D H01L 21/67363 . . . {specially adapted for containing substrates other than wafers (H01L 21/67356, H01L 21/67359 take precedence)}
<administratively transferred to [H10P 72/1908](#)>
- D H01L 21/67366 . . . {characterised by materials, roughness, coatings or the like (materials relating to an injection moulding process B29C 45/00; chemical composition of materials C08L 51/00)}
<administratively transferred to [H10P 72/1911](#)>
- D H01L 21/67369 . . . {characterised by shock absorbing elements, e.g. retainers or cushions}
<administratively transferred to [H10P 72/1912](#)>
- D H01L 21/67373 . . . {characterised by locking systems}
<administratively transferred to [H10P 72/1914](#)>
- D H01L 21/67376 . . . {characterised by sealing arrangements}
<administratively transferred to [H10P 72/1916](#)>
- D H01L 21/67379 . . . {characterised by coupling elements, kinematic members, handles or elements to be externally gripped}
<administratively transferred to [H10P 72/1918](#)>
- D H01L 21/67383 . . . {characterised by substrate supports}
<administratively transferred to [H10P 72/1921](#)>
- D H01L 21/67386 . . . {characterised by the construction of the closed carrier}
<administratively transferred to [H10P 72/1922](#)>
- D H01L 21/67389 . . . {characterised by atmosphere control}
<administratively transferred to [H10P 72/1924](#)>
- D H01L 21/67393 . . . {characterised by the presence of atmosphere modifying elements inside or attached to the closed carrier}
<administratively transferred to [H10P 72/1926](#)>
- D H01L 21/67396 . . . {characterised by the presence of antistatic elements}
<administratively transferred to [H10P 72/1928](#)>
- D H01L 21/677 . . for conveying, e.g. between different workstations
<administratively transferred to [H10P 72/30](#)>
- D H01L 21/67703 . . . {between different workstations}
<administratively transferred to [H10P 72/32](#)>

- D H01L 21/67706 . . . {Mechanical details, e.g. roller, belt (H01L 21/67709 takes precedence)}
<administratively transferred to [H10P 72/3202](#)>
- D H01L 21/67709 . . . {using magnetic elements}
<administratively transferred to [H10P 72/3204](#)>
- D H01L 21/67712 . . . {the substrate being handled substantially vertically}
<administratively transferred to [H10P 72/3206](#)>
- D H01L 21/67715 . . . {Changing the direction of the conveying path}
<administratively transferred to [H10P 72/3208](#)>
- D H01L 21/67718 . . . {Changing orientation of the substrate, e.g. from a horizontal position to a vertical position}
<administratively transferred to [H10P 72/3211](#)>
- D H01L 21/67721 . . . {the substrates to be conveyed not being semiconductor wafers or large planar substrates, e.g. chips, lead frames (H01L 21/6773 takes precedence)}
<administratively transferred to [H10P 72/3212](#)>
- D H01L 21/67724 . . . {by means of a cart or a vehicle}
<administratively transferred to [H10P 72/3214](#)>
- D H01L 21/67727 . . . {using a general scheme of a conveying path within a factory}
<administratively transferred to [H10P 72/3216](#)>
- D H01L 21/6773 . . . {Conveying cassettes, containers or carriers}
<administratively transferred to [H10P 72/3218](#)>
- D H01L 21/67733 . . . {Overhead conveying}
<administratively transferred to [H10P 72/3221](#)>
- D H01L 21/67736 . . . {Loading to or unloading from a conveyor}
<administratively transferred to [H10P 72/3222](#)>
- D H01L 21/67739 . . . {into and out of processing chamber}
<administratively transferred to [H10P 72/33](#)>
- D H01L 21/67742 . . . {Mechanical parts of transfer devices (robots in general in B25J)}
<administratively transferred to [H10P 72/3302](#)>
- D H01L 21/67745 . . . {characterized by movements or sequence of movements of transfer devices}
<administratively transferred to [H10P 72/3304](#)>
- D H01L 21/67748 . . . {horizontal transfer of a single workpiece}
<administratively transferred to [H10P 72/3306](#)>
- D H01L 21/67751 . . . {vertical transfer of a single workpiece}
<administratively transferred to [H10P 72/3308](#)>
- D H01L 21/67754 . . . {horizontal transfer of a batch of workpieces}
<administratively transferred to [H10P 72/3311](#)>
- D H01L 21/67757 . . . {vertical transfer of a batch of workpieces}
<administratively transferred to [H10P 72/3312](#)>
- D H01L 21/6776 . . . {Continuous loading and unloading into and out of a processing chamber, e.g. transporting belts within processing chambers}
<administratively transferred to [H10P 72/3314](#)>

- D H01L 21/67763 . . . {the wafers being stored in a carrier, involving loading and unloading (H01L 21/6779 takes precedence)}
<administratively transferred to [H10P 72/34](#)>
 - D H01L 21/67766 . . . {Mechanical parts of transfer devices (robots in general in B25J)}
<administratively transferred to [H10P 72/3402](#)>
 - D H01L 21/67769 . . . {Storage means}
<administratively transferred to [H10P 72/3404](#)>
 - D H01L 21/67772 . . . {involving removal of lid, door, cover}
<administratively transferred to [H10P 72/3406](#)>
 - D H01L 21/67775 . . . {Docking arrangements}
<administratively transferred to [H10P 72/3408](#)>
 - D H01L 21/67778 . . . {involving loading and unloading of wafers}
<administratively transferred to [H10P 72/3411](#)>
 - D H01L 21/67781 . . . {Batch transfer of wafers}
<administratively transferred to [H10P 72/3412](#)>
 - D H01L 21/67784 . . . {using air tracks}
<administratively transferred to [H10P 72/36](#)>
 - D H01L 21/67787 . . . {with angular orientation of the workpieces}
<administratively transferred to [H10P 72/3602](#)>
 - D H01L 21/6779 . . . {the workpieces being stored in a carrier, involving loading and unloading}
<administratively transferred to [H10P 72/3604](#)>
 - D H01L 21/67793 . . . {with orientating and positioning by means of a vibratory bowl or track}
<administratively transferred to [H10P 72/37](#)>
 - D H01L 21/67796 . . . {with angular orientation of workpieces (H01L 21/67787 and H01L 21/67793 take precedence)}
<administratively transferred to [H10P 72/38](#)>
 - D H01L 21/68 . . . for positioning, orientation or alignment
<administratively transferred to [H10P 72/50](#)>
 - D H01L 21/681 . . . {using optical controlling means}
<administratively transferred to [H10P 72/53](#)>
 - D H01L 21/682 . . . {Mask-wafer alignment (in general G03F 7/70, G03F 9/70)}
<administratively transferred to [H10P 72/57](#)>
 - D H01L 21/683 . . . for supporting or gripping (for conveying H01L 21/677, for positioning, orientation or alignment H01L 21/68)
<administratively transferred to [H10P 72/70](#)>
 - D H01L 21/6831 . . . {using electrostatic chucks}
<administratively transferred to [H10P 72/72](#)>
 - D H01L 21/6833 . . . {Details of electrostatic chucks}
<administratively transferred to [H10P 72/722](#)>
 - D H01L 21/6835 . . . {using temporarily an auxiliary support}
- NOTE
{H01L 21/6835, details of the apparatus are to be further indexed using the indexing codes chosen from H01L 2221/68304 and subgroups.}
<administratively transferred to [H10P 72/74](#)>

- D H01L 21/6836 . . . {Wafer tapes, e.g. grinding or dicing support tapes (adhesive tapes in general C09J 7/20)}
<administratively transferred to [H10P 72/7402](#)>
- D H01L 21/6838 . . . {with gripping and holding devices using a vacuum; Bernoulli devices}
<administratively transferred to [H10P 72/78](#)>
- D H01L 21/687 . . . using mechanical means, e.g. chucks, clamps or pinches {(using electrostatic chucks H01L 21/6831)}
<administratively transferred to [H10P 72/76](#)>
- D H01L 21/68707 . . . {the wafers being placed on a robot blade, or gripped by a gripper for conveyance}
<administratively transferred to [H10P 72/7602](#)>
- D H01L 21/68714 . . . {the wafers being placed on a susceptor, stage or support}
<administratively transferred to [H10P 72/7604](#)>
- D H01L 21/68721 {characterised by edge clamping, e.g. clamping ring}
<administratively transferred to [H10P 72/7606](#)>
- D H01L 21/68728 {characterised by a plurality of separate clamping members, e.g. clamping fingers}
<administratively transferred to [H10P 72/7608](#)>
- D H01L 21/68735 {characterised by edge profile or support profile}
<administratively transferred to [H10P 72/7611](#)>
- D H01L 21/68742 {characterised by a lifting arrangement, e.g. lift pins}
<administratively transferred to [H10P 72/7612](#)>
- D H01L 21/6875 {characterised by a plurality of individual support members, e.g. support posts or protrusions}
<administratively transferred to [H10P 72/7614](#)>
- D H01L 21/68757 {characterised by a coating or a hardness or a material}
<administratively transferred to [H10P 72/7616](#)>
- D H01L 21/68764 {characterised by a movable susceptor, stage or support, others than those only rotating on their own vertical axis, e.g. susceptors on a rotating carroussel}
<administratively transferred to [H10P 72/7618](#)>
- D H01L 21/68771 {characterised by supporting more than one semiconductor substrate}
<administratively transferred to [H10P 72/7621](#)>
- D H01L 21/68778 {characterised by supporting substrates others than wafers, e.g. chips}
<administratively transferred to [H10P 72/7622](#)>
- D H01L 21/68785 {characterised by the mechanical construction of the susceptor, stage or support}
<administratively transferred to [H10P 72/7624](#)>
- D H01L 21/68792 {characterised by the construction of the shaft}
<administratively transferred to [H10P 72/7626](#)>

- D H01L 21/70
- Manufacture or treatment of devices consisting of a plurality of solid state components formed in or on a common substrate or of parts thereof; Manufacture of integrated circuit devices or of parts thereof ({multistep manufacturing processes of assemblies consisting of a plurality of individual semiconductor or other solid state devices H01L 25/00; } manufacture of assemblies consisting of preformed electrical components H05K 3/00; H05K 13/00)
- <administratively transferred to [H10D 84/01](#)>
- D H01L 21/702
- • {of thick or thin film circuits or parts thereof}
- <administratively transferred to [H10D 84/01](#)>
- D H01L 21/705
- • • {of thick film circuits or parts thereof}
- <administratively transferred to [H10D 84/01](#)>
- D H01L 21/707
- • • {of thin film circuits or parts thereof}
- <administratively transferred to [H10D 84/01](#)>

Project: RP12819 (H01L)

- D H01L 21/71
- • Manufacture of specific parts of devices defined in group H01L 21/70 ({H01L 21/0405, H01L 21/0445}, H01L 21/28, H01L 21/44, H01L 21/48 take precedence)
- <administratively transferred to [H10W 29/00](#) and [H10W 29/01](#)>
- D H01L 21/74
- • • Making of {localized} buried regions, e.g. buried collector layers, internal connections {substrate contacts}
- <administratively transferred to [H10W 15/00](#) and [H10W 15/01](#)>
- D H01L 21/743
- • • • {Making of internal connections, substrate contacts}
- <administratively transferred to [H10W 20/021](#)>
- D H01L 21/746
- • • • {for AIII-BV integrated circuits}
- <administratively transferred to [H10W 15/00](#) and [H10W 15/01](#)>
- D H01L 21/76
- • • Making of isolation regions between components
- <administratively transferred to [H10W 10/01](#) and [H10W 10/00](#)>
- D H01L 21/7602
- • • • {between components manufactured in an active substrate comprising SiC compounds}
- <administratively transferred to [H10W 10/01](#) and [H10W 10/00](#)>
- D H01L 21/7605
- • • • {between components manufactured in an active substrate comprising AIII-BV compounds}
- <administratively transferred to [H10W 10/01](#) and [H10W 10/00](#)>
- D H01L 21/7607
- • • • {between components manufactured in an active substrate comprising $A_{III}B_{V+}$ compounds}
- <administratively transferred to [H10W 10/01](#) and [H10W 10/00](#)>
- D H01L 21/761
- • • • PN junctions
- <administratively transferred to [H10W 10/031](#) and [H10W 10/30](#)>
- D H01L 21/762
- • • • Dielectric regions {, e.g. EPIC dielectric isolation, LOCOS; Trench refilling techniques, SOI technology, use of channel stoppers}
- <administratively transferred to [H10W 10/011](#) and [H10W 10/10](#)>
- D H01L 21/76202
- • • • • {using a local oxidation of silicon, e.g. LOCOS, SWAMI, SILO (H01L 21/76235 takes precedence; together with vertical isolation, e.g. LOCOS in a SOI substrate, H01L 21/76264)}
- <administratively transferred to [H10W 10/012](#) and [H10W 10/13](#)>

- D H01L 21/76205 {in a region being recessed from the surface, e.g. in a recess, groove, tub or trench region}
<administratively transferred to [H10W 10/0121](#) and [H10W 10/13](#)>
- D H01L 21/76208 {using auxiliary pillars in the recessed region, e.g. to form LOCOS over extended areas}
<administratively transferred to [H10W 10/0123](#) and [H10W 10/13](#)>
- D H01L 21/7621 {the recessed region having a shape other than rectangular, e.g. rounded or oblique shape (H01L 21/76208 takes precedence)}
<administratively transferred to [H10W 10/0124](#) and [H10W 10/13](#)>
- D H01L 21/76213 {introducing electrical inactive or active impurities in the local oxidation region, e.g. to alter LOCOS oxide growth characteristics or for additional isolation purpose}
<administratively transferred to [H10W 10/0125](#) and [H10W 10/13](#)>
- D H01L 21/76216 {introducing electrical active impurities in the local oxidation region for the sole purpose of creating channel stoppers}
<administratively transferred to [H10W 10/0126](#) and [H10W 10/13](#)>
- D H01L 21/76218 {introducing both types of electrical active impurities in the local oxidation region for the sole purpose of creating channel stoppers, e.g. for isolation of complementary doped regions}
<administratively transferred to [H10W 10/0127](#) and [H10W 10/13](#)>
- D H01L 21/76221 {with a plurality of successive local oxidation steps}
<administratively transferred to [H10W 10/0128](#) and [H10W 10/13](#)>
- D H01L 21/76224 {using trench refilling with dielectric materials (trench filling with polycrystalline silicon H01L 21/763; together with vertical isolation, e.g. trench refilling in a SOI substrate H01L 21/76264)}
<administratively transferred to [H10W 10/014](#) and [H10W 10/17](#)>
- D H01L 21/76227 {the dielectric materials being obtained by full chemical transformation of non-dielectric materials, such as polycrystalline silicon, metals}
<administratively transferred to [H10W 10/0142](#) and [H10W 10/17](#)>
- D H01L 21/76229 {Concurrent filling of a plurality of trenches having a different trench shape or dimension, e.g. rectangular and V-shaped trenches, wide and narrow trenches, shallow and deep trenches}
<administratively transferred to [H10W 10/0143](#) and [H10W 10/17](#)>
- D H01L 21/76232 {of trenches having a shape other than rectangular or V-shape, e.g. rounded corners, oblique or rounded trench walls (H01L 21/76229 takes precedence)}
<administratively transferred to [H10W 10/0145](#) and [H10W 10/17](#)>
- D H01L 21/76235 {trench shape altered by a local oxidation of silicon process step, e.g. trench corner rounding by LOCOS}
<administratively transferred to [H10W 10/0147](#) and [H10W 10/17](#)>
- D H01L 21/76237 {introducing impurities in trench side or bottom walls, e.g. for forming channel stoppers or alter isolation behavior}
<administratively transferred to [H10W 10/0148](#) and [H10W 10/17](#)>

Project: RP12800 (H01L)

- D H01L 21/7624 {using semiconductor on insulator [SOI] technology}
<administratively transferred to [H10P 90/1906](#) and [H10W 10/181](#)>

- D H01L 21/76243 {using silicon implanted buried insulating layers, e.g. oxide layers, i.e. SIMOX techniques}
<administratively transferred to [H10P 90/1908](#) and [H10W 10/181](#)>
- D H01L 21/76245 {using full isolation by porous oxide silicon, i.e. FIPOS techniques}
<administratively transferred to [H10P 90/191](#) and [H10W 10/181](#)>
- D H01L 21/76248 {using lateral overgrowth techniques, i.e. ELO techniques}
<administratively transferred to [H10P 90/1912](#) and [H10W 10/181](#)>
- D H01L 21/76251 {using bonding techniques}
<administratively transferred to [H10P 90/1914](#) and [H10W 10/181](#)>
- D H01L 21/76254 {with separation/delamination along an ion implanted layer, e.g. Smart-cut, Unibond}
<administratively transferred to [H10P 90/1916](#) and [H10W 10/181](#)>
- D H01L 21/76256 {using silicon etch back techniques, e.g. BESOI, ELTRAN}
<administratively transferred to [H10P 90/1922](#) and [H10W 10/181](#)>
- D H01L 21/76259 {with separation/delamination along a porous layer}
<administratively transferred to [H10P 90/1924](#) and [H10W 10/181](#)>
- D H01L 21/76262 {using selective deposition of single crystal silicon, i.e. SEG techniques}
<administratively transferred to [H10P 90/1912](#) and [H10W 10/181](#)>

Project: RP12819 (H01L)

- D H01L 21/76264 {SOI together with lateral isolation, e.g. using local oxidation of silicon, or dielectric or polycrystalline material refilled trench or air gap isolation regions, e.g. completely isolated semiconductor islands}
<administratively transferred to [H10P 90/1906](#), [H10W 10/061](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/76267 {Vertical isolation by silicon implanted buried insulating layers, e.g. oxide layers, i.e. SIMOX techniques}
<administratively transferred to [H10P 90/1908](#), [H10W 10/061](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/7627 {Vertical isolation by full isolation by porous oxide silicon, i.e. FIPOS techniques}
<administratively transferred to [H10P 90/191](#), [H10W 10/061](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/76272 {Vertical isolation by lateral overgrowth techniques, i.e. ELO techniques}
<administratively transferred to [H10P 90/1912](#), [H10W 10/061](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/76275 {Vertical isolation by bonding techniques}
<administratively transferred to [H10P 90/1914](#), [H10W 10/061](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/76278 {Vertical isolation by selective deposition of single crystal silicon, i.e. SEG techniques}
<administratively transferred to [H10P 90/1912](#), [H10W 10/061](#), and [H10W 10/181](#) simultaneously>

- D H01L 21/76281 {Lateral isolation by selective oxidation of silicon}
 <administratively transferred to [H10P 90/1906](#), [H10W 10/012](#),
[H10W 10/061](#), [H10W 10/13](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/76283 {Lateral isolation by refilling of trenches with dielectric material}
 <administratively transferred to [H10P 90/1906](#), [H10W 10/014](#),
[H10W 10/061](#), [H10W 10/17](#), and [H10W 10/181](#) simultaneously>
- D H01L 21/76286 {Lateral isolation by refilling of trenches with polycrystalline material}
 <administratively transferred to [H10P 90/1906](#), [H10W 10/061](#),
[H10W 10/041](#), [H10W 10/181](#), and [H10W 10/40](#) simultaneously>
- D H01L 21/76289 {Lateral isolation by air gap}
 <administratively transferred to [H10P 90/1906](#), [H10W 10/061](#),
[H10W 10/021](#), [H10W 10/181](#), and [H10W 10/20](#) simultaneously>
- D H01L 21/76291 {Lateral isolation by field effect}
 <administratively transferred to [H10P 90/1906](#), [H10W 10/061](#),
[H10W 10/051](#), [H10W 10/181](#), and [H10W 10/50](#) simultaneously>
- D H01L 21/76294 {using selective deposition of single crystal silicon, i.e. SEG techniques}
 <administratively transferred to [H10W 10/018](#) and [H10W 10/10](#)>
- D H01L 21/76297 {Dielectric isolation using EPIC techniques, i.e. epitaxial passivated
 integrated circuit}
 <administratively transferred to [H10W 10/019](#) and [H10W 10/10](#)>
- D H01L 21/763 Polycrystalline semiconductor regions {(H01L 21/76264 takes
 precedence)}
 <administratively transferred to [H10W 10/041](#) and [H10W 10/40](#)>
- D H01L 21/764 Air gaps {(H01L 21/76264 takes precedence)}
 <administratively transferred to [H10W 10/021](#) and [H10W 10/20](#)>
- D H01L 21/765 by field effect {(H01L 21/76264 takes precedence)}
 <administratively transferred to [H10W 10/051](#) and [H10W 10/50](#)>
- D H01L 21/768 . . . Applying interconnections to be used for carrying current between separate
 components within a device {comprising conductors and dielectrics}
- NOTE**
 {Groups H01L 21/768 - H01L 21/76898 cover multi-step processes for
 manufacturing interconnections. Information peculiar to single-step
 processes should also be classified in the corresponding group, e.g.
 • cleaning H01L 21/02041
 • etching H01L 21/311, H01L 21/3213
 • masking H01L 21/027, H01L 21/033, H01L 21/31144, H01L 21/32139
 • planarizing H01L 21/3105, H01L 21/321.
 }
- <administratively transferred to [H10W 20/01](#)>
- D H01L 21/76801 {characterised by the formation and the after-treatment of the dielectrics,
 e.g. smoothing}
 <administratively transferred to [H10W 20/071](#)>
- D H01L 21/76802 {by forming openings in dielectrics}
 <administratively transferred to [H10W 20/081](#)>
- D H01L 21/76804 {by forming tapered via holes}
 <administratively transferred to [H10W 20/082](#)>

- D H01L 21/76805 {the opening being a via or contact hole penetrating the underlying conductor}
<administratively transferred to [H10W 20/083](#)>
- D H01L 21/76807 {for dual-damascene structures}
<administratively transferred to [H10W 20/084](#)>
- D H01L 21/76808 {involving intermediate temporary filling with material}
<administratively transferred to [H10W 20/085](#)>
- D H01L 21/7681 {involving one or more buried masks}
<administratively transferred to [H10W 20/086](#)>
- D H01L 21/76811 {involving multiple stacked pre-patterned masks}
<administratively transferred to [H10W 20/087](#)>
- D H01L 21/76813 {involving a partial via etch}
<administratively transferred to [H10W 20/088](#)>
- D H01L 21/76814 {post-treatment or after-treatment, e.g. cleaning or removal of oxides on underlying conductors}
<administratively transferred to [H10W 20/081](#)>
- D H01L 21/76816 {Aspects relating to the layout of the pattern or to the size of vias or trenches (layout of the interconnections per se H01L 23/528; CAD of ICs G06F 30/00)}
<administratively transferred to [H10W 20/089](#)>
- D H01L 21/76817 {using printing or stamping techniques}
<administratively transferred to [H10W 20/091](#)>
- D H01L 21/76819 {Smoothing of the dielectric (planarisation of insulating materials per se H01L 21/31051)}
<administratively transferred to [H10W 20/092](#)>
- D H01L 21/7682 {the dielectric comprising air gaps}
<administratively transferred to [H10W 20/072](#) and [H10W 20/46](#)>
- D H01L 21/76822 {Modification of the material of dielectric layers, e.g. grading, after-treatment to improve the stability of the layers, to increase their density etc.}
<administratively transferred to [H10W 20/093](#)>
- D H01L 21/76823 {transforming an insulating layer into a conductive layer}
<administratively transferred to [H10W 20/094](#)>
- D H01L 21/76825 {by exposing the layer to particle radiation, e.g. ion implantation, irradiation with UV light or electrons etc. (plasma treatment H01L 21/76826)}
<administratively transferred to [H10W 20/095](#)>
- D H01L 21/76826 {by contacting the layer with gases, liquids or plasmas}
<administratively transferred to [H10W 20/096](#)>
- D H01L 21/76828 {thermal treatment}
<administratively transferred to [H10W 20/097](#)>
- D H01L 21/76829 {characterised by the formation of thin functional dielectric layers, e.g. dielectric etch-stop, barrier, capping or liner layers}
<administratively transferred to [H10W 20/074](#)>
- D H01L 21/76831 {in via holes or trenches, e.g. non-conductive sidewall liners}
<administratively transferred to [H10W 20/076](#)>

- D H01L 21/76832 {Multiple layers}
<administratively transferred to [H10W 20/075](#)>
- D H01L 21/76834 {formation of thin insulating films on the sidewalls or on top of conductors (H01L 21/76831 takes precedence)}
<administratively transferred to [H10W 20/077](#)>
- D H01L 21/76835 {Combinations of two or more different dielectric layers having a low dielectric constant (H01L 21/76832 takes precedence)}
<administratively transferred to [H10W 20/071](#)>
- D H01L 21/76837 {Filling up the space between adjacent conductive structures; Gap-filling properties of dielectrics}
<administratively transferred to [H10W 20/098](#)>
- D H01L 21/76838 {characterised by the formation and the after-treatment of the conductors (etching for patterning the conductors H01L 21/3213)}
NOTE
{When the interconnect is also used as the conductor part of a conductor insulator semiconductor electrode (gate level interconnections), documents are classified in the relevant electrode manufacture groups, e.g. H01L 21/28026}.
<administratively transferred to [H10W 20/031](#)>
- D H01L 21/7684 {Smoothing; Planarisation}
<administratively transferred to [H10W 20/062](#)>
- D H01L 21/76841 {Barrier, adhesion or liner layers}
<administratively transferred to [H10W 20/032](#)>
- D H01L 21/76843 {formed in openings in a dielectric}
<administratively transferred to [H10W 20/033](#)>
- D H01L 21/76844 {Bottomless liners}
<administratively transferred to [H10W 20/034](#)>
- D H01L 21/76846 {Layer combinations}
<administratively transferred to [H10W 20/035](#)>
- D H01L 21/76847 {the layer being positioned within the main fill metal}
<administratively transferred to [H10W 20/036](#)>
- D H01L 21/76849 {the layer being positioned on top of the main fill metal}
<administratively transferred to [H10W 20/037](#)>
- D H01L 21/7685 {the layer covering a conductive structure (H01L 21/76849 takes precedence)}
<administratively transferred to [H10W 20/038](#)>
- D H01L 21/76852 {the layer also covering the sidewalls of the conductive structure}
<administratively transferred to [H10W 20/039](#)>
- D H01L 21/76853 {characterized by particular after-treatment steps}
<administratively transferred to [H10W 20/032](#)>
- D H01L 21/76855 {After-treatment introducing at least one additional element into the layer}
<administratively transferred to [H10W 20/047](#)>
- D H01L 21/76856 {by treatment in plasmas or gaseous environments, e.g. nitriding a refractory metal liner}
<administratively transferred to [H10W 20/048](#)>

- D H01L 21/76858 {by diffusing alloying elements}
<administratively transferred to [H10W 20/049](#)>
- D H01L 21/76859 {by ion implantation}
<administratively transferred to [H10W 20/051](#)>
- D H01L 21/76861 {Post-treatment or after-treatment not introducing additional chemical elements into the layer}
<administratively transferred to [H10W 20/052](#)>
- D H01L 21/76862 {Bombardment with particles, e.g. treatment in noble gas plasmas; UV irradiation}
<administratively transferred to [H10W 20/0523](#)>
- D H01L 21/76864 {Thermal treatment}
<administratively transferred to [H10W 20/0526](#)>
- D H01L 21/76865 {Selective removal of parts of the layer (H01L 21/76844 takes precedence)}
<administratively transferred to [H10W 20/054](#)>
- D H01L 21/76867 {characterized by methods of formation other than PVD, CVD or deposition from a liquids (PVD H01L 21/2855; CVD H01L 21/28556; deposition from liquids H01L 21/288)}
<administratively transferred to [H10W 20/055](#)>
- D H01L 21/76868 {Forming or treating discontinuous thin films, e.g. repair, enhancement or reinforcement of discontinuous thin films}
<administratively transferred to [H10W 20/041](#)>
- D H01L 21/7687 {Thin films associated with contacts of capacitors}
<administratively transferred to [H10W 20/046](#)>
- D H01L 21/76871 {Layers specifically deposited to enhance or enable the nucleation of further layers, i.e. seed layers}
<administratively transferred to [H10W 20/042](#)>
- D H01L 21/76873 {for electroplating}
<administratively transferred to [H10W 20/043](#)>
- D H01L 21/76874 {for electroless plating}
<administratively transferred to [H10W 20/044](#)>
- D H01L 21/76876 {for deposition from the gas phase, e.g. CVD}
<administratively transferred to [H10W 20/045](#)>
- D H01L 21/76877 {Filling of holes, grooves or trenches, e.g. vias, with conductive material}
<administratively transferred to [H10W 20/056](#)>
- D H01L 21/76879 {by selective deposition of conductive material in the vias, e.g. selective C.V.D. on semiconductor material, plating (plating on semiconductors in general H01L 21/288)}
<administratively transferred to [H10W 20/057](#)>
- D H01L 21/7688 {by deposition over sacrificial masking layer, e.g. lift-off (lift-off per se H01L 21/0272)}
<administratively transferred to [H10W 20/058](#)>
- D H01L 21/76882 {Reflowing or applying of pressure to better fill the contact hole}
<administratively transferred to [H10W 20/059](#)>

- D H01L 21/76883 {Post-treatment or after-treatment of the conductive material}
<administratively transferred to [H10W 20/056](#)>
- D H01L 21/76885 {By forming conductive members before deposition of protective insulating material, e.g. pillars, studs}
<administratively transferred to [H10W 20/063](#)>
- D H01L 21/76886 {Modifying permanently or temporarily the pattern or the conductivity of conductive members, e.g. formation of alloys, reduction of contact resistances}
<administratively transferred to [H10W 20/064](#)>
- D H01L 21/76888 {By rendering at least a portion of the conductor non-conductive, e.g. oxidation}
<administratively transferred to [H10W 20/065](#)>
- D H01L 21/76889 {by forming silicides of refractory metals}
<administratively transferred to [H10W 20/066](#)>
- D H01L 21/76891 {by using superconducting materials}
<administratively transferred to [H10W 20/064](#)>
- D H01L 21/76892 {modifying the pattern}
<administratively transferred to [H10W 20/067](#)>
- D H01L 21/76894 {using a laser, e.g. laser cutting, laser direct writing, laser repair}
<administratively transferred to [H10W 20/068](#)>
- D H01L 21/76895 {Local interconnects; Local pads, as exemplified by patent document EP0896365}
<administratively transferred to [H10W 20/069](#)>
- D H01L 21/76897 {Formation of self-aligned vias or contact plugs, i.e. involving a lithographically uncritical step}
<administratively transferred to [H10W 20/069](#)>
- D H01L 21/76898 {formed through a semiconductor substrate}
<administratively transferred to [H10W 20/023](#)>

Project: RP12800 (H01L)

- D H01L 21/77 {Manufacture or treatment of devices consisting of a plurality of solid-state components or integrated circuits formed in, or on, a common substrate (manufacture or treatment of electronic memory devices H10B)
<administratively transferred to [H10D 84/01](#)>
- D H01L 21/78 {with subsequent division of the substrate into plural individual devices (cutting to change the surface-physical characteristics or shape of semiconductor bodies H01L 21/304)
<administratively transferred to [H10P 54/00](#)>
- D H01L 21/7806 {involving the separation of the active layers from a substrate}
<administratively transferred to [H10P 95/11](#)>
- D H01L 21/7813 {leaving a reusable substrate, e.g. epitaxial lift off}
<administratively transferred to [H10P 95/112](#)>
- D H01L 22/00 **{Testing or measuring during manufacture or treatment; Reliability measurements, i.e. testing of parts without further processing to modify the parts as such; Structural arrangements therefor}**
<administratively transferred to [H10P 74/00](#)>

- D H01L 22/10
 - {Measuring as part of the manufacturing process (burn-in G01R 31/2855)}
 - <administratively transferred to [H10P 74/20](#)>
- D H01L 22/12
 - {for structural parameters, e.g. thickness, line width, refractive index, temperature, warp, bond strength, defects, optical inspection, electrical measurement of structural dimensions, metallurgic measurement of diffusions (electrical measurement of diffusions H01L 22/14)}
 - <administratively transferred to [H10P 74/203](#)>
- D H01L 22/14
 - {for electrical parameters, e.g. resistance, deep-levels, CV, diffusions by electrical means}
 - <administratively transferred to [H10P 74/207](#)>
- D H01L 22/20
 - {Sequence of activities consisting of a plurality of measurements, corrections, marking or sorting steps}
 - <administratively transferred to [H10P 74/23](#)>
- D H01L 22/22
 - {Connection or disconnection of sub-entities or redundant parts of a device in response to a measurement (testing and repair of stores after manufacture including at wafer scale G11C 29/00; fuses per se H01L 23/525)}
 - <administratively transferred to [H10P 74/232](#)>
- D H01L 22/24
 - {Optical enhancement of defects or not directly visible states, e.g. selective electrolytic deposition, bubbles in liquids, light emission, colour change (voltage contrast G01R 31/311)}
 - <administratively transferred to [H10P 74/235](#)>
- D H01L 22/26
 - {Acting in response to an ongoing measurement without interruption of processing, e.g. endpoint detection, in-situ thickness measurement (endpoint detection arrangements in CMP apparatus B24B 37/013, in discharge apparatus H01J 37/32)}
 - <administratively transferred to [H10P 74/238](#)>
- D H01L 22/30
 - {Structural arrangements specially adapted for testing or measuring during manufacture or treatment, or specially adapted for reliability measurements}
 - <administratively transferred to [H10P 74/27](#)>
- D H01L 22/32
 - {Additional lead-in metallisation on a device or substrate, e.g. additional pads or pad portions, lines in the scribe line, sacrificed conductors (arrangements for conducting electric current to or from the solid state body in operation H01L 23/48)}
 - <administratively transferred to [H10P 74/273](#)>
- D H01L 22/34
 - {Circuits for electrically characterising or monitoring manufacturing processes, e.g. whole test die, wafers filled with test structures, on-board devices incorporated on each die, process control monitors or pad structures thereof, devices in scribe line (switching, multiplexing, gating devices G01R 19/25; process control with lithography, e.g. dose control, G03F 7/20; structures for alignment control by optical means G03F 7/70633)}
 - <administratively transferred to [H10P 74/277](#)>

Project: RP12819 (H01L)

- D H01L 23/00** **Details of semiconductor or other solid state devices (H01L 25/00 takes precedence {; structural arrangements for testing or measuring during manufacture or treatment, or for reliability measurements H01L 22/00; arrangements for connecting or disconnecting semiconductor or solid-state bodies, or methods related thereto H01L 24/00; finger print sensors G06V 40/12})**
- NOTE
This group ~~does not cover~~:
- details of semiconductor bodies or of electrodes of devices provided for in subclass H10D, which details are covered by that group;
 - details peculiar to devices provided for in a single subclass of subclasses H10F, H10H, H10K or H10N, which details are covered by those places.
- <administratively transferred to [H10W 99/00](#)>**
- D H01L 23/02** • Containers; Seals (H01L 23/12, H01L 23/34, H01L 23/48, H01L 23/552, {H01L 23/66} take precedence; {for memories G11C})
- <administratively transferred to [H10W 76/10](#)>**
- D H01L 23/04** • • characterised by the shape {of the container or parts, e.g. caps, walls}
- <administratively transferred to [H10W 76/12](#)>**
- D H01L 23/041** • • • {the container being a hollow construction having no base used as a mounting for the semiconductor body}
- <administratively transferred to [H10W 76/161](#)>**
- D H01L 23/043** • • • the container being a hollow construction and having a conductive base as a mounting as well as a lead for the semiconductor body
- <administratively transferred to [H10W 76/13](#)>**
- D H01L 23/045** • • • • the other leads having an insulating passage through the base
- <administratively transferred to [H10W 76/132](#)>**
- D H01L 23/047** • • • • the other leads being parallel to the base
- <administratively transferred to [H10W 76/134](#)>**
- D H01L 23/049** • • • • the other leads being perpendicular to the base
- <administratively transferred to [H10W 76/136](#)>**
- D H01L 23/051** • • • • another lead being formed by a cover plate parallel to the base plate, e.g. sandwich type
- <administratively transferred to [H10W 76/138](#)>**
- D H01L 23/053** • • • the container being a hollow construction and having an insulating {or insulated} base as a mounting for the semiconductor body
- <administratively transferred to [H10W 76/15](#)>**
- D H01L 23/055** • • • • the leads having a passage through the base {(H01L 23/057 takes precedence)}
- <administratively transferred to [H10W 76/153](#)>**
- D H01L 23/057** • • • • the leads being parallel to the base
- <administratively transferred to [H10W 76/157](#)>**
- D H01L 23/06** • • characterised by the material of the container or its electrical properties
- <administratively transferred to [H10W 76/17](#)>**
- D H01L 23/08** • • • the material being an electrical insulator, e.g. glass
- <administratively transferred to [H10W 76/18](#)>**

- D H01L 23/10
- characterised by the material or arrangement of seals between parts, e.g. between cap and base of the container or between leads and walls of the container
- <administratively transferred to [H10W 76/60](#)>
- D H01L 23/12
- Mountings, e.g. non-detachable insulating substrates
- <administratively transferred to [H10W 70/60](#)>
- D H01L 23/13
- characterised by the shape
- <administratively transferred to [H10W 70/68](#)>
- D H01L 23/14
- characterised by the material or its electrical properties {(printed circuit boards H05K 1/00)}
- <administratively transferred to [H10W 70/69](#)>
- D H01L 23/142
- {Metallic substrates having insulating layers}
- <administratively transferred to [H10W 70/6875](#)>
- D H01L 23/145
- {Organic substrates, e.g. plastic}
- <administratively transferred to [H10W 70/695](#)>
- D H01L 23/147
- {Semiconductor insulating substrates (semiconductor conductive substrates H01L 23/4926)}
- <administratively transferred to [H10W 70/698](#)>
- D H01L 23/15
- Ceramic or glass substrates {(H01L 23/142, H01L 23/145, H01L 23/147 take precedence)}
- <administratively transferred to [H10W 70/692](#)>
- D H01L 23/16
- Fillings or auxiliary members in containers {or encapsulations}, e.g. centering rings (H01L 23/42, H01L 23/552 take precedence)
- <administratively transferred to [H10W 76/40](#)>
- D H01L 23/18
- Fillings characterised by the material, its physical or chemical properties, or its arrangement within the complete device
- NOTE**
Group H01L 23/26 takes precedence over groups H01L 23/20 - H01L 23/24
- <administratively transferred to [H10W 76/42](#)>
- D H01L 23/20
- gaseous at the normal operating temperature of the device
- <administratively transferred to [H10W 76/43](#)>
- D H01L 23/22
- liquid at the normal operating temperature of the device
- <administratively transferred to [H10W 76/45](#)>
- D H01L 23/24
- solid or gel at the normal operating temperature of the device {(H01L 23/3135 takes precedence)}
- <administratively transferred to [H10W 76/47](#)>
- D H01L 23/26
- including materials for absorbing or reacting with moisture or other undesired substances {, e.g. getters}
- <administratively transferred to [H10W 76/48](#)>
- D H01L 23/28
- Encapsulations, e.g. encapsulating layers, coatings, {e.g. for protection} (H01L 23/552 takes precedence; {insulating layers for contacts or interconnections H01L 23/5329})
- <administratively transferred to [H10W 74/00](#)>
- D H01L 23/29
- characterised by the material {, e.g. carbon (interlayer dielectrics H01L 23/5329)}
- <administratively transferred to [H10W 74/40](#)>

- | | | |
|---|--------------|---|
| D | H01L 23/291 | <ul style="list-style-type: none"> • • • {Oxides or nitrides or carbides, e.g. ceramics, glass} <administratively transferred to H10W 74/43> |
| D | H01L 23/293 | <ul style="list-style-type: none"> • • • {Organic, e.g. plastic} <administratively transferred to H10W 74/47> |
| D | H01L 23/295 | <ul style="list-style-type: none"> • • • • {containing a filler (H01L 23/296 takes precedence)} <administratively transferred to H10W 74/473> |
| D | H01L 23/296 | <ul style="list-style-type: none"> • • • • {Organo-silicon compounds} <administratively transferred to H10W 74/476> |
| D | H01L 23/298 | <ul style="list-style-type: none"> • • • {Semiconductor material, e.g. amorphous silicon} <administratively transferred to H10W 74/481> |
| D | H01L 23/31 | <ul style="list-style-type: none"> • • characterised by the arrangement {or shape} <administratively transferred to H10W 74/10> |
| D | H01L 23/3107 | <ul style="list-style-type: none"> • • • {the device being completely enclosed} <administratively transferred to H10W 74/111> |
| D | H01L 23/3114 | <ul style="list-style-type: none"> • • • • {the device being a chip scale package, e.g. CSP} <administratively transferred to H10W 74/129> |
| D | H01L 23/3121 | <ul style="list-style-type: none"> • • • • {a substrate forming part of the encapsulation} <administratively transferred to H10W 74/114> |
| D | H01L 23/3128 | <ul style="list-style-type: none"> • • • • • {the substrate having spherical bumps for external connection} <administratively transferred to H10W 74/117> |
| D | H01L 23/3135 | <ul style="list-style-type: none"> • • • • {Double encapsulation or coating and encapsulation} <administratively transferred to H10W 74/121> |
| D | H01L 23/3142 | <ul style="list-style-type: none"> • • • • {Sealing arrangements between parts, e.g. adhesion promoters} <administratively transferred to H10W 74/127> |
| D | H01L 23/315 | <ul style="list-style-type: none"> • • • • {the encapsulation having a cavity} <administratively transferred to H10W 74/124> |
| D | H01L 23/3157 | <ul style="list-style-type: none"> • • • {Partial encapsulation or coating (mask layer used as insulation layer H01L 21/31)} <administratively transferred to H10W 74/131> |
| D | H01L 23/3164 | <ul style="list-style-type: none"> • • • • {the coating being a foil} <administratively transferred to H10W 74/144> |
| D | H01L 23/3171 | <ul style="list-style-type: none"> • • • • {the coating being directly applied to the semiconductor body, e.g. passivation layer (H01L 23/3178 takes precedence)} <administratively transferred to H10W 74/137> |
| D | H01L 23/3178 | <ul style="list-style-type: none"> • • • • {Coating or filling in grooves made in the semiconductor body} <administratively transferred to H10W 74/134> |
| D | H01L 23/3185 | <ul style="list-style-type: none"> • • • • {the coating covering also the sidewalls of the semiconductor body} <administratively transferred to H10W 74/141> |
| D | H01L 23/3192 | <ul style="list-style-type: none"> • • • • {Multilayer coating} <administratively transferred to H10W 74/147> |
| D | H01L 23/32 | <ul style="list-style-type: none"> • Holders for supporting the complete device in operation, i.e. detachable fixtures (H01L 23/40 takes precedence) <administratively transferred to H10W 78/00> |

- D H01L 23/34
 - Arrangements for cooling, heating, ventilating or temperature compensation (}; Temperature sensing arrangements (thermal treatment apparatus H01L 21/00))
 - <administratively transferred to [H10W 40/00](#)>
- D H01L 23/345
 - {Arrangements for heating (thermal treatment apparatus H01L 21/00)}
 - <administratively transferred to [H10W 40/10](#)>
- D H01L 23/36
 - • Selection of materials, or shaping, to facilitate cooling or heating, e.g. heatsinks {(H01L 23/28, H01L 23/40, H01L 23/42, H01L 23/44, H01L 23/46 take precedence; heating H01L 23/345)}
 - <administratively transferred to [H10W 40/10](#)>
- D H01L 23/367
 - • • Cooling facilitated by shape of device {(H01L 23/38, H01L 23/40, H01L 23/42, H01L 23/44, H01L 23/46 take precedence)}
 - <administratively transferred to [H10W 40/22](#)>
- D H01L 23/3672
 - • • • {Foil-like cooling fins or heat sinks (being part of lead-frames H01L 23/49568)}
 - <administratively transferred to [H10W 40/226](#)>
- D H01L 23/3675
 - • • • {characterised by the shape of the housing}
 - <administratively transferred to [H10W 40/22](#)>
- D H01L 23/3677
 - • • • {Wire-like or pin-like cooling fins or heat sinks}
 - <administratively transferred to [H10W 40/228](#)>
- D H01L 23/373
 - • • Cooling facilitated by selection of materials for the device {or materials for thermal expansion adaptation, e.g. carbon}
 - <administratively transferred to [H10W 40/25](#)>
- D H01L 23/3731
 - • • • {Ceramic materials or glass (H01L 23/3732, H01L 23/3733, H01L 23/3735, H01L 23/3737, H01L 23/3738 take precedence)}
 - <administratively transferred to [H10W 40/259](#)>
- D H01L 23/3732
 - • • • {Diamonds}
 - <administratively transferred to [H10W 40/254](#)>
- D H01L 23/3733
 - • • • {having a heterogeneous or anisotropic structure, e.g. powder or fibres in a matrix, wire mesh, porous structures (H01L 23/3732, H01L 23/3737 take precedence)}
 - <administratively transferred to [H10W 40/257](#)>
- D H01L 23/3735
 - • • • {Laminates or multilayers, e.g. direct bond copper ceramic substrates}
 - <administratively transferred to [H10W 40/255](#)>
- D H01L 23/3736
 - • • • {Metallic materials (H01L 23/3732, H01L 23/3733, H01L 23/3735, H01L 23/3737, H01L 23/3738 take precedence)}
 - <administratively transferred to [H10W 40/258](#)>
- D H01L 23/3737
 - • • • {Organic materials with or without a thermoconductive filler}
 - <administratively transferred to [H10W 40/251](#)>
- D H01L 23/3738
 - • • • {Semiconductor materials}
 - <administratively transferred to [H10W 40/253](#)>
- D H01L 23/38
 - • Cooling arrangements using the Peltier effect
 - <administratively transferred to [H10W 40/28](#)>
- D H01L 23/40
 - • Mountings or securing means for detachable cooling or heating arrangements {(heating H01L 23/345); fixed by friction, plugs or springs}
 - <administratively transferred to [H10W 40/60](#)>

- D H01L 23/4006 . . . {with bolts or screws}
<administratively transferred to [H10W 40/611](#)>
- D H01L 23/4012 . . . {for stacked arrangements of a plurality of semiconductor devices (assemblies per se H01L 25/00)}
<administratively transferred to [H10W 40/613](#)>
- D H01L 2023/4018 . . . {characterised by the type of device to be heated or cooled}
<administratively transferred to [H10W 40/611](#)>
- D H01L 2023/4025 . . . {Base discrete devices, e.g. presspack, disc-type transistors}
<administratively transferred to [H10W 40/611](#)>
- D H01L 2023/4031 . . . {Packaged discrete devices, e.g. to-3 housings, diodes}
<administratively transferred to [H10W 40/611](#)>
- D H01L 2023/4037 . . . {characterised by thermal path or place of attachment of heatsink}
<administratively transferred to [H10W 40/231](#)>
- D H01L 2023/4043 . . . {heatsink to have chip}
<administratively transferred to [H10W 40/233](#)>
- D H01L 2023/405 . . . {heatsink to package}
<administratively transferred to [H10W 40/235](#)>
- D H01L 2023/4056 . . . {heatsink to additional heatsink}
<administratively transferred to [H10W 40/237](#)>
- D H01L 2023/4062 . . . {heatsink to or through board or cabinet}
<administratively transferred to [H10W 40/231](#)>
- D H01L 2023/4068 . . . {Heatconductors between device and heatsink, e.g. compliant heat-spreaders, heat-conducting bands}
<administratively transferred to [H10W 40/242](#)>
- D H01L 2023/4075 . . . {Mechanical elements}
<administratively transferred to [H10W 40/60](#)>
- D H01L 2023/4081 . . . {Compliant clamping elements not primarily serving heat-conduction}
<administratively transferred to [H10W 40/625](#)>
- D H01L 2023/4087 . . . {Mounting accessories, interposers, clamping or screwing parts}
<administratively transferred to [H10W 40/60](#)>
- D H01L 23/4093 . . . {Snap-on arrangements, e.g. clips}
<administratively transferred to [H10W 40/641](#)>
- D H01L 23/42 . . . Fillings or auxiliary members in containers {or encapsulations} selected or arranged to facilitate heating or cooling
<administratively transferred to [H10W 40/70](#)>
- D H01L 23/427 . . . Cooling by change of state, e.g. use of heat pipes {(by liquefied gas H01L 23/445)}
<administratively transferred to [H10W 40/73](#)>
- D H01L 23/4275 . . . {by melting or evaporation of solids}
<administratively transferred to [H10W 40/735](#)>
- D H01L 23/433 . . . Auxiliary members {in containers} characterised by their shape, e.g. pistons
<administratively transferred to [H10W 40/77](#)>
- D H01L 23/4332 . . . {Bellows}
<administratively transferred to [H10W 40/772](#)>

- D H01L 23/4334 . . . {Auxiliary members in encapsulations (H01L 23/49568 takes precedence)}
<administratively transferred to [H10W 40/778](#)>
- D H01L 23/4336 . . . {in combination with jet impingement}
<administratively transferred to [H10W 40/776](#)>
- D H01L 23/4338 . . . {Pistons, e.g. spring-loaded members}
<administratively transferred to [H10W 40/774](#)>
- D H01L 23/44 . . the complete device being wholly immersed in a fluid other than air {(H01L 23/427 takes precedence)}
<administratively transferred to [H10W 40/30](#)>
- D H01L 23/445 . . {the fluid being a liquefied gas, e.g. in a cryogenic vessel}
<administratively transferred to [H10W 40/305](#)>
- D H01L 23/46 . . involving the transfer of heat by flowing fluids (H01L 23/42, H01L 23/44 take precedence)
<administratively transferred to [H10W 40/40](#)>
- D H01L 23/467 . . by flowing gases, e.g. air {(H01L 23/473 takes precedence)}
<administratively transferred to [H10W 40/43](#)>
- D H01L 23/473 . . by flowing liquids {(H01L 23/4332, H01L 23/4338 take precedence)}
<administratively transferred to [H10W 40/47](#)>
- D H01L 23/4735 . . . {Jet impingement (H01L 23/4336 takes precedence)}
<administratively transferred to [H10W 40/475](#)>
- D H01L 23/48 . Arrangements for conducting electric current to or from the solid state body in operation, e.g. leads, terminal arrangements {-; Selection of materials therefor}
NOTE
{Arrangements for connecting or disconnecting semiconductor or other solid state bodies, or methods related thereto, other than those arrangements or methods covered by the following subgroups, are covered by H01L 24/00.}
<administratively transferred to [H10W 72/00](#)>
- D H01L 23/481 . . {Internal lead connections, e.g. via connections, feedthrough structures}
<administratively transferred to [H10W 20/20](#)>
- D H01L 23/482 . . consisting of lead-in layers inseparably applied to the semiconductor body {(electrodes)}
<administratively transferred to [H10W 20/40](#)>
- D H01L 23/4821 . . {Bridge structure with air gap}
<administratively transferred to [H10W 20/483](#)>
- D H01L 23/4822 . . {Beam leads}
<administratively transferred to [H10W 72/60](#)>
- D H01L 23/4824 . . {Pads with extended contours, e.g. grid structure, branch structure, finger structure}
<administratively transferred to [H10W 20/484](#)>
- D H01L 23/4825 . . {for devices consisting of semiconductor layers on insulating or semi-insulating substrates, e.g. silicon on sapphire devices, i.e. SOS}
<administratively transferred to [H10W 20/40](#)>
- D H01L 23/4827 . . {Materials}
<administratively transferred to [H10W 20/40](#)>

- D H01L 23/4828 . . . {Conductive organic material or pastes, e.g. conductive adhesives, inks}
<administratively transferred to [H10W 20/40](#)>
- D H01L 23/485 . . . consisting of layered constructions comprising conductive layers and insulating layers, e.g. planar contacts {(H01L 23/4821, H01L 23/4822, H01L 23/4824, H01L 23/4825 take precedence; materials H01L 23/532, bond pads H01L 24/02, bump connectors H01L 24/10)}
<administratively transferred to [H10W 20/40](#)>
- D H01L 23/4855 . . . {Overhang structure}
<administratively transferred to [H10W 20/40](#)>
- D H01L 23/488 . . . consisting of soldered {or bonded} constructions {(bump connectors H01L 24/01)}
<administratively transferred to [H10W 72/20](#)>
- D H01L 23/49 . . . wire-like {arrangements or pins or rods (using optical fibres H01L 23/48; pins attached to insulating substrates H01L 23/49811)}
<administratively transferred to [H10W 72/50](#)>
- D H01L 23/492 . . . Bases or plates {or solder therefor}
<administratively transferred to [H10W 70/20](#)>
- D H01L 23/4922 . . . {having a heterogeneous or anisotropic structure}
<administratively transferred to [H10W 70/22](#)>
- D H01L 23/4924 . . . {characterised by the materials}
<administratively transferred to [H10W 70/24](#)>
- D H01L 23/4926 . . . {the materials containing semiconductor material}
<administratively transferred to [H10W 70/26](#)>
- D H01L 23/4928 . . . {the materials containing carbon}
<administratively transferred to [H10W 70/28](#)>
- D H01L 23/495 . . . Lead-frames {or other flat leads (H01L 23/498 takes precedence; lead frame interconnections between components H01L 23/52)}
<administratively transferred to [H10W 70/40](#)>
- D H01L 23/49503 . . . {characterised by the die pad}
<administratively transferred to [H10W 70/411](#)>
- D H01L 23/49506 . . . {an insulative substrate being used as a diepad, e.g. ceramic, plastic (H01L 23/49531 takes precedence)}
<administratively transferred to [H10W 70/413](#)>
- D H01L 23/4951 . . . {Chip-on-leads or leads-on-chip techniques, i.e. inner lead fingers being used as die pad}
<administratively transferred to [H10W 70/415](#)>
- D H01L 23/49513 . . . {having bonding material between chip and die pad}
<administratively transferred to [H10W 70/417](#)>
- D H01L 23/49517 . . . {Additional leads}
<administratively transferred to [H10W 70/464](#)>
- D H01L 23/4952 . . . {the additional leads being a bump or a wire}
<administratively transferred to [H10W 70/465](#)>
- D H01L 23/49524 . . . {the additional leads being a tape carrier or flat leads}
<administratively transferred to [H10W 70/466](#)>

- D H01L 23/49527 {the additional leads being a multilayer}
<administratively transferred to [H10W 70/467](#)>
- D H01L 23/49531 {the additional leads being a wiring board}
<administratively transferred to [H10W 70/468](#)>
- D H01L 23/49534 {Multi-layer}
<administratively transferred to [H10W 70/451](#)>
- D H01L 23/49537 {Plurality of lead frames mounted in one device}
<administratively transferred to [H10W 70/442](#)>
- D H01L 23/49541 {Geometry of the lead-frame}
<administratively transferred to [H10W 70/421](#)>
- D H01L 23/49544 {Deformation absorbing parts in the lead frame plane, e.g. meanderline shape (H01L 23/49562 takes precedence)}
<administratively transferred to [H10W 70/433](#)>
- D H01L 23/49548 {Cross section geometry (H01L 23/49562 takes precedence)}
<administratively transferred to [H10W 70/424](#)>
- D H01L 23/49551 {characterised by bent parts}
<administratively transferred to [H10W 70/427](#)>
- D H01L 23/49555 {the bent parts being the outer leads}
<administratively transferred to [H10W 70/429](#)>
- D H01L 23/49558 {Insulating layers on lead frames, e.g. bridging members}
<administratively transferred to [H10W 70/435](#)>
- D H01L 23/49562 {for individual devices of subclass H10D}
<administratively transferred to [H10W 70/481](#)>
- D H01L 23/49565 {Side rails of the lead frame, e.g. with perforations, sprocket holes}
<administratively transferred to [H10W 70/438](#)>
- D H01L 23/49568 {specifically adapted to facilitate heat dissipation}
<administratively transferred to [H10W 70/461](#)>
- D H01L 23/49572 {consisting of thin flexible metallic tape with or without a film carrier (H01L 23/49503 - H01L 23/49568 and H01L 23/49575 - H01L 23/49579 take precedence)}
<administratively transferred to [H10W 70/453](#)>
- D H01L 23/49575 {Assemblies of semiconductor devices on lead frames}
<administratively transferred to [H10W 90/811](#)>
- D H01L 23/49579 {characterised by the materials of the lead frames or layers thereon}
<administratively transferred to [H10W 70/456](#)>
- D H01L 23/49582 {Metallic layers on lead frames}
<administratively transferred to [H10W 70/457](#)>
- D H01L 23/49586 {Insulating layers on lead frames}
<administratively transferred to [H10W 70/458](#)>
- D H01L 23/49589 {Capacitor integral with or on the leadframe}
<administratively transferred to [H10W 70/475](#)>
- D H01L 23/49593 {Battery in combination with a leadframe}
<administratively transferred to [H10W 70/474](#)>

- D H01L 23/49596 {Oscillators in combination with lead-frames}
<administratively transferred to [H10W 70/476](#)>
- D H01L 23/498 . . . Leads, (i.e. metallisations or lead-frames) on insulating substrates, (e.g. chip carriers (shape of the substrate H01L 23/13))
<administratively transferred to [H10W 70/60](#)>
- D H01L 23/49805 {the leads being also applied on the sidewalls or the bottom of the substrate, e.g. leadless packages for surface mounting}
<administratively transferred to [H10W 70/657](#)>
- D H01L 23/49811 {Additional leads joined to the metallisation on the insulating substrate, e.g. pins, bumps, wires, flat leads (H01L 23/49827 takes precedence)}
<administratively transferred to [H10W 90/701](#)>
- D H01L 23/49816 {Spherical bumps on the substrate for external connection, e.g. ball grid arrays [BGA]}
<administratively transferred to [H10W 90/701](#)>
- D H01L 23/49822 {Multilayer substrates (multilayer metallisation on monolayer substrate H01L 23/498)}
<administratively transferred to [H10W 70/685](#)>
- D H01L 23/49827 {Via connections through the substrates, e.g. pins going through the substrate, coaxial cables (H01L 23/49822, H01L 23/49833, H01L 23/4985, H01L 23/49861 take precedence)}
<administratively transferred to [H10W 70/635](#)>
- D H01L 23/49833 {the chip support structure consisting of a plurality of insulating substrates}
<administratively transferred to [H10W 90/401](#)>
- D H01L 23/49838 {Geometry or layout}
<administratively transferred to [H10W 70/65](#)>
- D H01L 23/49844 {for individual devices of subclass H10D}
<administratively transferred to [H10W 70/658](#)>
- D H01L 23/4985 {Flexible insulating substrates (H01L 23/49572 and H01L 23/49855 take precedence)}
<administratively transferred to [H10W 70/688](#)>
- D H01L 23/49855 {for flat-cards, e.g. credit cards (cards per se G06K 19/00)}
<administratively transferred to [H10W 70/699](#)>
- D H01L 23/49861 {Lead-frames fixed on or encapsulated in insulating substrates (H01L 23/4985, H01L 23/49805 take precedence)}
<administratively transferred to [H10W 70/479](#)>
- D H01L 23/49866 {characterised by the materials (materials of the substrates H01L 23/14, of the lead-frames H01L 23/49579)}
<administratively transferred to [H10W 70/66](#)>
- D H01L 23/49872 {the conductive materials containing semiconductor material}
<administratively transferred to [H10W 70/662](#)>
- D H01L 23/49877 {Carbon, e.g. fullerenes (superconducting fullerenes H10N 60/853)}
<administratively transferred to [H10W 70/664](#)>
- D H01L 23/49883 {the conductive materials containing organic materials or pastes, e.g. for thick films (for printed circuits H05K 1/092)}
<administratively transferred to [H10W 70/666](#)>

- D H01L 23/49888 {the conductive materials containing superconducting material}
<administratively transferred to [H10W 70/668](#)>
- D H01L 23/49894 {Materials of the insulating layers or coatings}
<administratively transferred to [H10W 70/69](#)>
- D H01L 23/50 . . for integrated circuit devices, {e.g. power bus, number of leads}(H01L 23/482 -H01L 23/498 take precedence)
<administratively transferred to [H10W 72/00](#)>
- D H01L 23/52 . Arrangements for conducting electric current within the device in operation from one component to another {, i.e. interconnections, e.g. wires, lead frames (optical interconnections G02B 6/00)}
<administratively transferred to [H10W 72/00](#)>
- D H01L 23/522 . . including external interconnections consisting of a multilayer structure of conductive and insulating layers inseparably formed on the semiconductor body
<administratively transferred to [H10W 20/40](#)>
- D H01L 23/5221 . . . {Crossover interconnections}
<administratively transferred to [H10W 20/432](#)>
- D H01L 23/5222 . . . {Capacitive arrangements or effects of, or between wiring layers (other capacitive arrangements H01L 23/642)}
<administratively transferred to [H10W 20/495](#)>
- D H01L 23/5223 {Capacitor integral with wiring layers}
<administratively transferred to [H10W 20/496](#)>
- D H01L 23/5225 {Shielding layers formed together with wiring layers}
<administratively transferred to [H10W 20/423](#)>
- D H01L 23/5226 . . . {Via connections in a multilevel interconnection structure}
<administratively transferred to [H10W 20/42](#)>
- D H01L 23/5227 . . . {Inductive arrangements or effects of, or between, wiring layers (other inductive arrangements H01L 23/645)}
<administratively transferred to [H10W 20/497](#)>
- D H01L 23/5228 . . . {Resistive arrangements or effects of, or between, wiring layers (other resistive arrangements H01L 23/647)}
<administratively transferred to [H10W 20/498](#)>
- D H01L 23/525 . . . with adaptable interconnections
<administratively transferred to [H10W 20/49](#)>
- D H01L 23/5252 {comprising anti-fuses, i.e. connections having their state changed from non-conductive to conductive}
<administratively transferred to [H10W 20/491](#)>
- D H01L 23/5254 {the change of state resulting from the use of an external beam, e.g. laser beam or ion beam}
<administratively transferred to [H10W 20/492](#)>
- D H01L 23/5256 {comprising fuses, i.e. connections having their state changed from conductive to non-conductive}
<administratively transferred to [H10W 20/493](#)>
- D H01L 23/5258 {the change of state resulting from the use of an external beam, e.g. laser beam or ion beam}
<administratively transferred to [H10W 20/494](#)>

- | | | |
|---|---------------|--|
| D | H01L 23/528 | <ul style="list-style-type: none"> • • • Layout of the interconnection structure • • • <administratively transferred to H10W 20/43> |
| D | H01L 23/5283 | <ul style="list-style-type: none"> • • • {Cross-sectional geometry} • • • <administratively transferred to H10W 20/435> |
| D | H01L 23/5286 | <ul style="list-style-type: none"> • • • {Arrangements of power or ground buses} • • • <administratively transferred to H10W 20/427> |
| D | H01L 23/532 | <ul style="list-style-type: none"> • • • characterised by the materials • • • <administratively transferred to H10W 20/48> |
| D | H01L 23/53204 | <ul style="list-style-type: none"> • • • {Conductive materials} • • • <administratively transferred to H10W 20/44> |
| D | H01L 23/53209 | <ul style="list-style-type: none"> • • • {based on metals, e.g. alloys, metal silicides (H01L 23/53285 takes precedence)} • • • <administratively transferred to H10W 20/4403> |
| D | H01L 23/53214 | <ul style="list-style-type: none"> • • • {the principal metal being aluminium} • • • <administratively transferred to H10W 20/4405> |
| D | H01L 23/53219 | <ul style="list-style-type: none"> • • • {Aluminium alloys} • • • <administratively transferred to H10W 20/4407> |
| D | H01L 23/53223 | <ul style="list-style-type: none"> • • • {Additional layers associated with aluminium layers, e.g. adhesion, barrier, cladding layers} • • • <administratively transferred to H10W 20/425> |
| D | H01L 23/53228 | <ul style="list-style-type: none"> • • • {the principal metal being copper} • • • <administratively transferred to H10W 20/4421> |
| D | H01L 23/53233 | <ul style="list-style-type: none"> • • • {Copper alloys} • • • <administratively transferred to H10W 20/4424> |
| D | H01L 23/53238 | <ul style="list-style-type: none"> • • • {Additional layers associated with copper layers, e.g. adhesion, barrier, cladding layers} • • • <administratively transferred to H10W 20/425> |
| D | H01L 23/53242 | <ul style="list-style-type: none"> • • • {the principal metal being a noble metal, e.g. gold} • • • <administratively transferred to H10W 20/4432> |
| D | H01L 23/53247 | <ul style="list-style-type: none"> • • • {Noble-metal alloys} • • • <administratively transferred to H10W 20/4435> |
| D | H01L 23/53252 | <ul style="list-style-type: none"> • • • {Additional layers associated with noble-metal layers, e.g. adhesion, barrier, cladding layers} • • • <administratively transferred to H10W 20/425> |
| D | H01L 23/53257 | <ul style="list-style-type: none"> • • • {the principal metal being a refractory metal} • • • <administratively transferred to H10W 20/4441> |
| D | H01L 23/53261 | <ul style="list-style-type: none"> • • • {Refractory-metal alloys} • • • <administratively transferred to H10W 20/4446> |
| D | H01L 23/53266 | <ul style="list-style-type: none"> • • • {Additional layers associated with refractory-metal layers, e.g. adhesion, barrier, cladding layers} • • • <administratively transferred to H10W 20/425> |
| D | H01L 23/53271 | <ul style="list-style-type: none"> • • • {containing semiconductor material, e.g. polysilicon} • • • <administratively transferred to H10W 20/4451> |

- D H01L 23/53276 {containing carbon, e.g. fullerenes (superconducting fullerenes H10N 60/853)}
<administratively transferred to [H10W 20/4462](#)>
- D H01L 23/5328 {containing conductive organic materials or pastes, e.g. conductive adhesives, inks}
<administratively transferred to [H10W 20/4473](#)>
- D H01L 23/53285 {containing superconducting materials}
<administratively transferred to [H10W 20/4484](#)>
- D H01L 23/5329 {Insulating materials}
<administratively transferred to [H10W 20/48](#)>
- D H01L 23/53295 {Stacked insulating layers}
<administratively transferred to [H10W 20/47](#)>
- D H01L 23/535 . . including internal interconnections, e.g. cross-under constructions {(internal lead connections H01L 23/481)}
<administratively transferred to [H10W 20/20](#)>
- D H01L 23/538 . . the interconnection structure between a plurality of semiconductor chips being formed on, or in, insulating substrates {(H05K takes precedence; manufacture or treatment H01L 21/4846); mountings per se H01L 23/12; {materials H01L 23/49866}}
<administratively transferred to [H10W 70/60](#) and [H10W 70/611](#)>
- D H01L 23/5381 . . . {Crossover interconnections, e.g. bridge stepovers}
<administratively transferred to [H10W 70/65](#)>
- D H01L 23/5382 . . . {Adaptable interconnections, e.g. for engineering changes}
<administratively transferred to [H10W 70/641](#) and [H10W 70/611](#)>
- D H01L 23/5383 . . . {Multilayer substrates (H01L 23/5385 takes precedence; multilayer metallisation on monolayer substrates H01L 23/538)}
<administratively transferred to [H10W 70/685](#) and [H10W 70/611](#)>
- D H01L 23/5384 . . . {Conductive vias through the substrate with or without pins, e.g. buried coaxial conductors (H01L 23/5383, H01L 23/5385 take precedence; pins attached to insulating substrates H01L 23/49811)}
<administratively transferred to [H10W 70/635](#) and [H10W 70/611](#)>
- D H01L 23/5385 . . . {Assembly of a plurality of insulating substrates}
<administratively transferred to [H10W 70/611](#) and [H10W 90/401](#)>
- D H01L 23/5386 . . . {Geometry or layout of the interconnection structure}
<administratively transferred to [H10W 70/65](#) and [H10W 70/611](#)>
- D H01L 23/5387 . . . {Flexible insulating substrates (H01L 23/5388 takes precedence)}
<administratively transferred to [H10W 70/688](#) and [H10W 70/611](#)>
- D H01L 23/5388 . . . {for flat cards, e.g. credit cards (cards per se G06K 19/00)}
<administratively transferred to [H10W 70/699](#) and [H10W 70/611](#)>
- D H01L 23/5389 . . . {the chips being integrally enclosed by the interconnect and support structures}
<administratively transferred to [H10W 70/614](#)>

- D H01L 23/544
- Marks applied to semiconductor devices (or parts), e.g. registration marks, {alignment structures, wafer maps (test patterns for characterising or monitoring manufacturing processes H01L 22/00)}
- NOTE
{When classifying in group H01L 23/544, details are to be further indexed by using the indexing codes chosen from H01L 2223/544 and subgroups.}
- <administratively transferred to [H10W 46/00](#)>
- D H01L 23/552
- Protection against radiation, e.g. light {or electromagnetic waves}
- <administratively transferred to [H10W 42/20](#)>
- D H01L 23/556
- • against alpha rays
- <administratively transferred to [H10W 42/25](#)>
- D H01L 23/562
- {Protection against mechanical damage (H01L 23/02, H01L 23/28 take precedence)}
- <administratively transferred to [H10W 42/121](#)>
- D H01L 23/564
- {Details not otherwise provided for, e.g. protection against moisture (getters H01L 23/26)}
- <administratively transferred to [H10W 42/00](#)>
- D H01L 23/57
- {Protection from inspection, reverse engineering or tampering}
- <administratively transferred to [H10W 42/40](#)>
- D H01L 23/573
- • {using passive means}
- <administratively transferred to [H10W 42/40](#)>
- D H01L 23/576
- • {using active circuits}
- <administratively transferred to [H10W 42/405](#)>
- D H01L 23/58
- Structural electrical arrangements for semiconductor devices not otherwise provided for {, e.g. in combination with batteries (H01L 23/49593, H01L 23/49596 take precedence)}
- <administratively transferred to [H10W 42/00](#)>
- D H01L 23/585
- • {comprising conductive layers or plates or strips or rods or rings (H01L 23/60, H01L 23/62, H01L 23/64, H01L 23/66 take precedence)}
- <administratively transferred to [H10W 42/00](#)>
- D H01L 23/60
- • Protection against electrostatic charges or discharges, e.g. Faraday shields
- <administratively transferred to [H10W 42/60](#)>
- D H01L 23/62
- • Protection against overvoltage, e.g. fuses, shunts
- <administratively transferred to [H10W 42/80](#)>
- D H01L 23/64
- • Impedance arrangements
- <administratively transferred to [H10W 44/00](#)>
- D H01L 23/642
- • • {Capacitive arrangements (H01L 23/49589, H01L 23/645, H01L 23/647, H01L 23/66 take precedence; capacitive effects between wiring layers on the semiconductor body H01L 23/5222)}
- <administratively transferred to [H10W 44/601](#)>
- D H01L 23/645
- • • {Inductive arrangements (H01L 23/647, H01L 23/66 take precedence)}
- <administratively transferred to [H10W 44/501](#)>
- D H01L 23/647
- • • {Resistive arrangements (H01L 23/66, H01L 23/62 take precedence)}
- <administratively transferred to [H10W 44/401](#)>

- D H01L 23/66
- • • High-frequency adaptations
- NOTE
{When classifying in group H01L 23/66, details are to be further indexed by using the indexing codes chosen from H01L 2223/66 and subgroups.}
- <administratively transferred to [H10W 44/20](#)>
- D H01L 24/00
- {Arrangements for connecting or disconnecting semiconductor or solid-state bodies; Methods or apparatus related thereto}**
- NOTES
1. This group does not cover:
- details of semiconductor bodies or of electrodes of devices provided for in subclass H10D, which details are covered by that group;
 - details peculiar to devices provided for in a single subclass of subclasses H10F, H10H, H10K or H10N, which details are covered by those places;
 - printed circuits, which are covered by groups H05K 1/00 – H05K 1/189;
 - apparatus or manufacturing processes for printed circuits, which are covered by groups H05K 3/00 – H05K 3/4685;
 - manufacture or treatment of parts, which are covered by group H01L 21/48 and subgroups except H01L 21/4885 – H01L 21/4896;
 - assemblies of semiconductor devices, which are covered by groups H01L 21/50 – H01L 21/568;
 - applying interconnections to be used for carrying current between separate components within a device, which is covered by group H01L 21/768 and subgroups;
 - containers or seals, which are covered by groups H01L 23/02 – H01L 23/10;
 - mountings, which are covered by groups H01L 23/12 – H01L 23/15 and subgroups;
 - arrangements for cooling, heating, ventilating or temperature compensation, which are covered by groups H01L 23/34 – H01L 23/4735;
 - arrangements for conducting electric current, which are covered by groups H01L 23/48 – H01L 23/50, and by groups H01L 23/52 – H01L 23/5389;
 - structural electrical arrangements, which are covered by groups H01L 23/58 – H01L 23/66;
 - assemblies of semiconductor or other solid-state devices, which are covered by groups H01L 25/00 – H01L 25/18.
2. In this group the following indexing codes are used : H01L 24/00, H01L 2224/00, H01L 2924/00, and subgroups thereof
- <administratively transferred to [H10W 72/00](#)>**
- D H01L 24/01
- {Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto}
- <administratively transferred to [H10W 72/00](#)>
- D H01L 24/02
- • {Bonding areas (on insulating substrates, e.g. chip carriers, H01L 23/49816, H01L 23/49838, H01L 23/5389); Manufacturing methods related thereto}
- <administratively transferred to [H10W 72/90](#)>
- D H01L 24/03
- • • {Manufacturing methods}
- <administratively transferred to [H10W 72/019](#)>
- D H01L 24/04
- • • {Structure, shape, material or disposition of the bonding areas prior to the connecting process}
- <administratively transferred to [H10W 72/90](#)>
- D H01L 24/05
- • • • {of an individual bonding area}
- <administratively transferred to [H10W 72/90](#)>

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|---|------------|---|
| D | H01L 24/06 | <ul style="list-style-type: none"> • • • {of a plurality of bonding areas} <p><administratively transferred to H10W 72/90></p> |
| D | H01L 24/07 | <ul style="list-style-type: none"> • • • {Structure, shape, material or disposition of the bonding areas after the connecting process} <p><administratively transferred to H10W 72/90></p> |
| D | H01L 24/08 | <ul style="list-style-type: none"> • • • {of an individual bonding area} <p><administratively transferred to H10W 72/90></p> |
| D | H01L 24/09 | <ul style="list-style-type: none"> • • • {of a plurality of bonding areas} <p><administratively transferred to H10W 72/90></p> |
| D | H01L 24/10 | <ul style="list-style-type: none"> • • {Bump connectors (bumps on insulating substrates, e.g. chip carriers, H01L 23/49816); Manufacturing methods related thereto} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/11 | <ul style="list-style-type: none"> • • {Manufacturing methods (for bumps on insulating substrates H01L 21/4853)} <p><administratively transferred to H10W 72/012></p> |
| D | H01L 24/12 | <ul style="list-style-type: none"> • • • {Structure, shape, material or disposition of the bump connectors prior to the connecting process} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/13 | <ul style="list-style-type: none"> • • • {of an individual bump connector} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/14 | <ul style="list-style-type: none"> • • • {of a plurality of bump connectors} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/15 | <ul style="list-style-type: none"> • • • {Structure, shape, material or disposition of the bump connectors after the connecting process} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/16 | <ul style="list-style-type: none"> • • • {of an individual bump connector} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/17 | <ul style="list-style-type: none"> • • • {of a plurality of bump connectors} <p><administratively transferred to H10W 72/20></p> |
| D | H01L 24/18 | <ul style="list-style-type: none"> • • {High density interconnect [HDI] connectors; Manufacturing methods related thereto (interconnection structure between a plurality of semiconductor chips H01L 23/5389)} <p><administratively transferred to H10W 70/60></p> |
| D | H01L 24/19 | <ul style="list-style-type: none"> • • • {Manufacturing methods of high density interconnect preforms} <p><administratively transferred to H10W 70/09></p> |
| D | H01L 24/20 | <ul style="list-style-type: none"> • • • {Structure, shape, material or disposition of high density interconnect preforms} <p><administratively transferred to H10W 70/60></p> |
| D | H01L 24/23 | <ul style="list-style-type: none"> • • • {Structure, shape, material or disposition of the high density interconnect connectors after the connecting process} <p><administratively transferred to H10W 70/60></p> |
| D | H01L 24/24 | <ul style="list-style-type: none"> • • • {of an individual high density interconnect connector} <p><administratively transferred to H10W 70/60></p> |
| D | H01L 24/25 | <ul style="list-style-type: none"> • • • {of a plurality of high density interconnect connectors} <p><administratively transferred to H10W 70/60></p> |

- D H01L 24/26
 - • {Layer connectors, e.g. plate connectors, solder or adhesive layers; Manufacturing methods related thereto}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/27
 - • • {Manufacturing methods}
 - <administratively transferred to [H10W 72/013](#)>
- D H01L 24/28
 - • • {Structure, shape, material or disposition of the layer connectors prior to the connecting process}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/29
 - • • • {of an individual layer connector}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/30
 - • • • {of a plurality of layer connectors}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/31
 - • • {Structure, shape, material or disposition of the layer connectors after the connecting process}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/32
 - • • • {of an individual layer connector}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/33
 - • • • {of a plurality of layer connectors}
 - <administratively transferred to [H10W 72/30](#)>
- D H01L 24/34
 - • {Strap connectors, e.g. copper straps for grounding power devices; Manufacturing methods related thereto}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/35
 - • • {Manufacturing methods}
 - <administratively transferred to [H10W 72/016](#)>
- D H01L 24/36
 - • • {Structure, shape, material or disposition of the strap connectors prior to the connecting process}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/37
 - • • • {of an individual strap connector}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/38
 - • • • {of a plurality of strap connectors}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/39
 - • • {Structure, shape, material or disposition of the strap connectors after the connecting process}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/40
 - • • • {of an individual strap connector}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/41
 - • • • {of a plurality of strap connectors}
 - <administratively transferred to [H10W 72/60](#)>
- D H01L 24/42
 - • {Wire connectors; Manufacturing methods related thereto}
 - <administratively transferred to [H10W 72/50](#)>
- D H01L 24/43
 - • • {Manufacturing methods}
 - <administratively transferred to [H10W 72/015](#)>
- D H01L 24/44
 - • • {Structure, shape, material or disposition of the wire connectors prior to the connecting process}
 - <administratively transferred to [H10W 72/50](#)>

- D H01L 24/45 • • • {of an individual wire connector}
 <administratively transferred to [H10W 72/50](#)>
- D H01L 24/46 • • • {of a plurality of wire connectors}
 <administratively transferred to [H10W 72/50](#)>
- D H01L 24/47 • • • {Structure, shape, material or disposition of the wire connectors after the
 connecting process}
 <administratively transferred to [H10W 72/50](#)>
- D H01L 24/48 • • • {of an individual wire connector}
 <administratively transferred to [H10W 72/50](#)>
- D H01L 24/49 • • • {of a plurality of wire connectors}
 <administratively transferred to [H10W 72/50](#)>
- D H01L 24/50 • {Tape automated bonding [TAB] connectors, i.e. film carriers; Manufacturing
 methods related thereto (thin flexible metallic tape with or without a film
 carrier H01L 23/49572, flexible insulating substrates H01L 23/4985,
 H01L 23/5387)}
 <administratively transferred to [H10W 72/701](#)>
- D H01L 24/63 • {Connectors not provided for in any of the groups H01L 24/10 – H01L 24/50
 and subgroups; Manufacturing methods related thereto}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/64 • • {Manufacturing methods}
 <administratively transferred to [H10W 72/01](#)>
- D H01L 24/65 • • {Structure, shape, material or disposition of the connectors prior to the
 connecting process}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/66 • • • {of an individual connector}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/67 • • • {of a plurality of connectors}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/68 • • {Structure, shape, material or disposition of the connectors after the
 connecting process}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/69 • • • {of an individual connector}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/70 • • • {of a plurality of connectors}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/71 • {Means for bonding not being attached to, or not being formed on, the surface
 to be connected (holders for supporting the complete device in operation
 H01L 23/32)}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/72 • {Detachable connecting means consisting of mechanical auxiliary parts
 connecting the device, e.g. pressure contacts using springs or clips}
 <administratively transferred to [H10W 72/00](#)>
- D H01L 24/73 • {Means for bonding being of different types provided for in two or more of
 groups H01L 24/10, H01L 24/18, H01L 24/26, H01L 24/34, H01L 24/42,
 H01L 24/50, H01L 24/63, H01L 24/71}
 <administratively transferred to [H10W 72/851](#)>

- D H01L 24/74 • {Apparatus for manufacturing arrangements for connecting or disconnecting semiconductor or solid-state bodies}
 <administratively transferred to [H10W 72/011](#)>
- D H01L 24/741 • • {Apparatus for manufacturing means for bonding, e.g. connectors}
 <administratively transferred to [H10W 72/011](#)>
- D H01L 24/742 • • • {Apparatus for manufacturing bump connectors}
 <administratively transferred to [H10W 72/0112](#)>
- D H01L 24/743 • • • {Apparatus for manufacturing layer connectors}
 <administratively transferred to [H10W 72/0113](#)>
- D H01L 24/744 • • • {Apparatus for manufacturing strap connectors}
 <administratively transferred to [H10W 72/0116](#)>
- D H01L 24/745 • • • {Apparatus for manufacturing wire connectors}
 <administratively transferred to [H10W 72/0115](#)>
- D H01L 24/75 • • {Apparatus for connecting with bump connectors or layer connectors}
 <administratively transferred to [H10W 72/0711](#)>
- D H01L 24/76 • • {Apparatus for connecting with build-up interconnects}
 <administratively transferred to [H10W 72/0711](#)>
- D H01L 24/77 • • {Apparatus for connecting with strap connectors}
 <administratively transferred to [H10W 72/0711](#)>
- D H01L 24/78 • • {Apparatus for connecting with wire connectors}
 <administratively transferred to [H10W 72/0711](#)>
- D H01L 24/79 • • {Apparatus for Tape Automated Bonding [TAB]}
 <administratively transferred to [H10W 72/0711](#)>
- D H01L 24/799 • • {Apparatus for disconnecting}
 <administratively transferred to [H10W 72/0711](#)>
- D H01L 24/80 • {Methods for connecting semiconductor or other solid state bodies using means for bonding being attached to, or being formed on, the surface to be connected}
 <administratively transferred to [H10W 99/00](#)>
- D H01L 24/81 • • {using a bump connector}
 <administratively transferred to [H10W 72/072](#)>
- D H01L 24/82 • • {by forming build-up interconnects at chip-level, e.g. for high density interconnects [HDI] (interconnection structure between a plurality of semiconductor chips H01L 23/5389)}
 <administratively transferred to [H10W 70/093](#)>
- D H01L 24/83 • • {using a layer connector}
 <administratively transferred to [H10W 72/073](#)>
- D H01L 24/84 • • {using a strap connector}
 <administratively transferred to [H10W 72/076](#)>
- D H01L 24/85 • • {using a wire connector (wire bonding in general B23K 20/004)}
 <administratively transferred to [H10W 72/075](#)>
- D H01L 24/86 • • {using tape automated bonding [TAB]}
 <administratively transferred to [H10W 72/077](#)>

- D H01L 24/89
- {using at least one connector not provided for in any of the groups H01L 24/81 – H01L 24/86}
- <administratively transferred to [H10W 72/00](#)>
- D H01L 24/90
- {Methods for connecting semiconductor or solid state bodies using means for bonding not being attached to, or not being formed on, the body surface to be connected, e.g. pressure contacts using springs or clips}
- <administratively transferred to [H10W 72/00](#)>
- D H01L 24/91
- {Methods for connecting semiconductor or solid state bodies including different methods provided for in two or more of groups H01L 24/80 – H01L 24/90}
- <administratively transferred to [H10W 99/00](#)>
- D H01L 24/92
- {Specific sequence of method steps}
- <administratively transferred to [H10W 99/00](#)>
- D H01L 24/93
- {Batch processes}
- <administratively transferred to [H10W 72/0198](#)>
- D H01L 24/94
- {at wafer-level, i.e. with connecting carried out on a wafer comprising a plurality of undiced individual devices}
- <administratively transferred to [H10W 72/0198](#)>
- D H01L 24/95
- {at chip-level, i.e. with connecting carried out on a plurality of singulated devices, i.e. on diced chips}
- <administratively transferred to [H10W 72/0198](#)>
- D H01L 24/96
- {the devices being encapsulated in a common layer, e.g. neo-wafer or pseudo-wafer, said common layer being separable into individual assemblies after connecting}
- <administratively transferred to [H10W 72/0198](#)>
- D H01L 24/97
- {the devices being connected to a common substrate, e.g. interposer, said common substrate being separable into individual assemblies after connecting}
- <administratively transferred to [H10W 72/0198](#)>
- D H01L 24/98
- {Methods for disconnecting semiconductor or solid-state bodies}
- <administratively transferred to [H10W 72/071](#)>
- D H01L 25/00
- Assemblies consisting of a plurality of semiconductor or other solid state devices (devices consisting of a plurality of solid-state components formed in or on a common substrate H10D 89/00; photovoltaic modules or arrays of photovoltaic cells H10F 19/00)**
- NOTE
- {Due to the ongoing developments in class H10 and related subclasses, the information displayed in notes, references and definitions of this main group and indents may not be entirely accurate. For each specific subject matter referred to in this main group and indents, users are invited to consult the relevant place in class H10 and to consider the class H10 information as correct, in case of conflict}
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/03
- all the devices being of a type provided for in a single subclass of subclasses H10B, H10D, H10F, H10H, H10K or H10N, e.g. assemblies of rectifier diodes
- <administratively transferred to [H10W 90/00](#)>

- D H01L 25/04
- the devices not having separate containers
- WARNING
Group H01L 25/04 is impacted by reclassification into groups H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00. All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/041
- {the devices being of a type provided for in subclass H10F}
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/042
- {the devices being arranged next to each other (solar cells H10F 19/00)}
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/043
- {Stacked arrangements of devices}
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/065
- the devices being of a type provided for in group H10D 89/00
- NOTE
{Group H01L 25/0652 takes precedence over groups H01L 25/0655 and H01L 25/0657.}
- WARNING
Group H01L 25/065 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00. All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/0652
- {the devices being arranged next and on each other, i.e. mixed assemblies}
- WARNING
Group H01L 25/0652 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00. All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/0655
- {the devices being arranged next to each other}
- WARNING
Group H01L 25/0655 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00. All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/0657
- {Stacked arrangements of devices}
- WARNING
Group H01L 25/0657 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18,

H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00.
All groups listed in this Warning should be considered in order to perform a complete search.

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/07 . . . the devices being of a type provided for in group subclass H10D

NOTE

{Group H01L 25/071 takes precedence over groups H01L 25/072 - H01L 25/074.}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/071 . . . {the devices being arranged next and on each other, i.e. mixed assemblies}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/072 . . . {the devices being arranged next to each other}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/073 . . . {Apertured devices mounted on one or more rods passed through the apertures}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/074 . . . {Stacked arrangements of non-apertured devices}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/075 . . . the devices being of a type provided for in group H10H 20/00

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/0753 . . . {the devices being arranged next to each other}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/0756 . . . {Stacked arrangements of devices}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/10 . . the devices having separate containers

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/105 . . . {the devices being integrated devices of class H10}

NOTE

{When classifying in group H01L 25/105, details of the assemblies are to be further indexed by using the indexing codes chosen from H01L 2225/1005 and subgroups.}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/11 . . . the devices being of a type provided for in subclass H10D

NOTE

{Group H01L 25/112 takes precedence over groups H01L 25/115 and H01L 25/117.}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/112 . . . {Mixed assemblies}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/115 . . . {the devices being arranged next to each other}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/117 . . . {Stacked arrangements of devices}

<administratively transferred to [H10W 90/00](#)>

- D H01L 25/13
- the devices being of a type provided for in group H10H 20/00
<administratively transferred to [H10W 90/00](#)>
- D H01L 25/16
- the devices being of types provided for in two or more different subclasses of H10B, H10D, H10F, H10H, H10K or H10N, e.g. forming hybrid circuits
- WARNING
Group H01L 25/16 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00.
All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/162
- {the devices being mounted on two or more different substrates}
- WARNING
Group H01L 25/162 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00.
All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/165
- {Containers}
- WARNING
Group H01L 25/165 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00.
All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/167
- {comprising optoelectronic devices, e.g. LED, photodiodes}
- WARNING
Group H01L 25/167 is impacted by reclassification into groups H10B 80/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00.
All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>
- D H01L 25/18
- the devices being of the types provided for in two or more different main groups of the same subclass of H10B, H10D, H10F, H10H, H10K or H10N
- WARNING
Group H01L 25/18 is impacted by reclassification into groups H10B 80/00, H10K 19/00, H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18, H10K 39/601, H10K 39/621, H10K 59/90, H10K 59/95, H10K 65/00, H10N 19/00, H10N 39/00, H10N 59/00, H10N 69/00, H10N 79/00 and H10N 89/00.
All groups listed in this Warning should be considered in order to perform a complete search.
- <administratively transferred to [H10W 90/00](#)>

- D H01L 25/50 • {Multistep manufacturing processes of assemblies consisting of devices, the devices being individual devices of subclass H10D or integrated devices of class H10 (H01L 21/50 takes precedence)}
- <administratively transferred to [H10W 90/00](#)>

Project: RP12800 (H01L)

- D H01L 2221/00 **Processes or apparatus adapted for the manufacture or treatment of semiconductor or solid state devices or of parts thereof covered by H01L 21/00**

Project: RP12819 (H01L)

- D H01L 2221/10 • Applying interconnections to be used for carrying current between separate components within a device
- <administratively transferred to [H10W 20/01](#)>
- D H01L 2221/1005 • • Formation and after-treatment of dielectrics
- <administratively transferred to [H10W 20/071](#)>
- D H01L 2221/101 • • • Forming openings in dielectrics
- <administratively transferred to [H10W 20/081](#)>
- D H01L 2221/1015 • • • • for dual damascene structures
- <administratively transferred to [H10W 20/084](#)>
- D H01L 2221/1021 • • • • • Pre-forming the dual damascene structure in a resist layer
- <administratively transferred to [H10W 20/0882](#)>
- D H01L 2221/1026 • • • • • the via being formed by burying a sacrificial pillar in the dielectric and removing the pillar
- <administratively transferred to [H10W 20/0884](#)>
- D H01L 2221/1031 • • • • • Dual damascene by forming vias in the via-level dielectric prior to deposition of the trench-level dielectric
- <administratively transferred to [H10W 20/0886](#)>
- D H01L 2221/1036 • • • • • Dual damascene with different via-level and trench-level dielectrics
- <administratively transferred to [H10W 20/0888](#)>
- D H01L 2221/1042 • • • the dielectric comprising air gaps
- <administratively transferred to [H10W 20/072](#)>
- D H01L 2221/1047 • • • • the air gaps being formed by pores in the dielectric
- <administratively transferred to [H10W 20/072](#)>
- D H01L 2221/1052 • • • Formation of thin functional dielectric layers
- <administratively transferred to [H10W 20/074](#)>
- D H01L 2221/1057 • • • • in via holes or trenches
- <administratively transferred to [H10W 20/076](#)>
- D H01L 2221/1063 • • • • • Sacrificial or temporary thin dielectric films in openings in a dielectric
- <administratively transferred to [H10W 20/0765](#)>
- D H01L 2221/1068 • • Formation and after-treatment of conductors
- <administratively transferred to [H10W 20/031](#)>
- D H01L 2221/1073 • • • Barrier, adhesion or liner layers
- <administratively transferred to [H10W 20/032](#)>

- D H01L 2221/1078 Multiple stacked thin films not being formed in openings in dielectrics
<administratively transferred to [H10W 20/0375](#)>
- D H01L 2221/1084 Layers specifically deposited to enhance or enable the nucleation of further layers, i.e. seed layers
<administratively transferred to [H10W 20/042](#)>
- D H01L 2221/1089 Stacks of seed layers
<administratively transferred to [H10W 20/0425](#)>
- D H01L 2221/1094 . . . Conducting structures comprising nanotubes or nanowires
<administratively transferred to [H10W 20/0554](#)>

Project: RP12800 (H01L)

- D H01L 2221/67 . Apparatus for handling semiconductor or electric solid state devices during manufacture or treatment thereof; Apparatus for handling wafers during manufacture or treatment of semiconductor or electric solid state devices or components; Apparatus not specifically provided for elsewhere
<administratively transferred to [H10P 72/00](#)>
- D H01L 2221/683 . . for supporting or gripping
<administratively transferred to [H10P 72/70](#)>
- D H01L 2221/68304 . . . using temporarily an auxiliary support
<administratively transferred to [H10P 72/74](#)>
- D H01L 2221/68309 Auxiliary support including alignment aids
<administratively transferred to [H10P 72/7408](#)>
- D H01L 2221/68313 Auxiliary support including a cavity for storing a finished device, e.g. IC package, or a partly finished device, e.g. die, during manufacturing or mounting
<administratively transferred to [H10P 72/741](#)>
- D H01L 2221/68318 Auxiliary support including means facilitating the separation of a device or wafer from the auxiliary support
<administratively transferred to [H10P 72/7412](#)>
- D H01L 2221/68322 Auxiliary support including means facilitating the selective separation of some of a plurality of devices from the auxiliary support
<administratively transferred to [H10P 72/7414](#)>
- D H01L 2221/68327 used during dicing or grinding
<administratively transferred to [H10P 72/7416](#)>
- D H01L 2221/68331 of passive members, e.g. die mounting substrate
<administratively transferred to [H10P 72/7418](#)>
- D H01L 2221/68336 involving stretching of the auxiliary support post dicing
<administratively transferred to [H10P 72/742](#)>
- D H01L 2221/6834 used to protect an active side of a device or wafer
<administratively transferred to [H10P 72/7422](#)>
- D H01L 2221/68345 used as a support during the manufacture of self supporting substrates
<administratively transferred to [H10P 72/7424](#)>
- D H01L 2221/6835 used as a support during build up manufacturing of active devices
<administratively transferred to [H10P 72/7426](#)>

- D H01L 2221/68354 used to support diced chips prior to mounting
<administratively transferred to [H10P 72/7428](#)>
- D H01L 2221/68359 used as a support during manufacture of interconnect decals or build-up layers
<administratively transferred to [H10P 72/743](#)>
- D H01L 2221/68363 used in a transfer process involving transfer directly from an origin substrate to a target substrate without use of an intermediate handle substrate
<administratively transferred to [H10P 72/7432](#)>
- D H01L 2221/68368 used in a transfer process involving at least two transfer steps, i.e. including an intermediate handle substrate
<administratively transferred to [H10P 72/7434](#)>
- D H01L 2221/68372 used to support a device or wafer when forming electrical connections thereto
<administratively transferred to [H10P 72/7436](#)>
- D H01L 2221/68377 with parts of the auxiliary support remaining in the finished device
<administratively transferred to [H10P 72/7438](#)>
- D H01L 2221/68381 Details of chemical or physical process used for separating the auxiliary support from a device or wafer
<administratively transferred to [H10P 72/744](#)>
- D H01L 2221/68386 Separation by peeling
<administratively transferred to [H10P 72/7442](#)>
- D H01L 2221/6839 using peeling wedge or knife or bar
<administratively transferred to [H10P 72/7444](#)>
- D H01L 2221/68395 using peeling wheel
<administratively transferred to [H10P 72/7446](#)>

Project: RP12819 (H01L)

- D H01L 2223/00 **Details relating to semiconductor or other solid state devices covered by the group H01L 23/00**
<administratively transferred to [H10W 99/00](#)>
- D H01L 2223/544 . Marks applied to semiconductor devices or parts
<administratively transferred to [H10W 46/00](#)>
- D H01L 2223/54406 . . comprising alphanumeric information
<administratively transferred to [H10W 46/103](#)>
- D H01L 2223/54413 . . comprising digital information, e.g. bar codes, data matrix
<administratively transferred to [H10W 46/106](#)>
- D H01L 2223/5442 . . comprising non digital, non-alphanumeric information, e.g. symbols
<administratively transferred to [H10W 46/101](#)>
- D H01L 2223/54426 . . for alignment
<administratively transferred to [H10W 46/301](#)>
- D H01L 2223/54433 . . containing identification or tracking information
<administratively transferred to [H10W 46/401](#)>
- D H01L 2223/5444 . . . for electrical read-out
<administratively transferred to [H10W 46/403](#)>

- D H01L 2223/54446 Wireless electrical read-out
<administratively transferred to [H10W 46/407](#)>
- D H01L 2223/54453 . . for use prior to dicing
<administratively transferred to [H10W 46/501](#)>
- D H01L 2223/5446 . . . Located in scribe lines
<administratively transferred to [H10W 46/503](#)>
- D H01L 2223/54466 . . . Located in a dummy or reference die
<administratively transferred to [H10W 46/507](#)>
- D H01L 2223/54473 . . for use after dicing
<administratively transferred to [H10W 46/601](#)>
- D H01L 2223/5448 . . . Located on chip prior to dicing and remaining on chip after dicing
<administratively transferred to [H10W 46/603](#)>
- D H01L 2223/54486 . . . Located on package parts, e.g. encapsulation, leads, package substrate
<administratively transferred to [H10W 46/607](#)>
- D H01L 2223/54493 . . Peripheral marks on wafers, e.g. orientation flats, notches, lot number
<administratively transferred to [H10W 46/201](#)>
- D H01L 2223/58 . Structural electrical arrangements for semiconductor devices not otherwise provided for
<administratively transferred to [H10W 42/00](#)>
- D H01L 2223/64 . . Impedance arrangements
<administratively transferred to [H10W 44/00](#)>
- D H01L 2223/66 . . . High-frequency adaptations
<administratively transferred to [H10W 44/20](#)>
- D H01L 2223/6605 High-frequency electrical connections
<administratively transferred to [H10W 44/203](#)>
- D H01L 2223/6611 Wire connections
<administratively transferred to [H10W 44/206](#)>
- D H01L 2223/6616 Vertical connections, e.g. vias
<administratively transferred to [H10W 44/209](#)>
- D H01L 2223/6622 Coaxial feed-throughs in active or passive substrates
<administratively transferred to [H10W 44/212](#)>
- D H01L 2223/6627 Waveguides, e.g. microstrip line, strip line, coplanar line
<administratively transferred to [H10W 44/216](#)>
- D H01L 2223/6633 Transition between different waveguide types
<administratively transferred to [H10W 44/219](#)>
- D H01L 2223/6638 Differential pair signal lines
<administratively transferred to [H10W 44/223](#)>
- D H01L 2223/6644 Packaging aspects of high-frequency amplifiers
<administratively transferred to [H10W 44/226](#)>
- D H01L 2223/665 Bias feed arrangements
<administratively transferred to [H10W 44/231](#)>

- D H01L 2223/6655 Matching arrangements, e.g. arrangement of inductive and capacitive components
<administratively transferred to [H10W 44/234](#)>
- D H01L 2223/6661 for passive devices
<administratively transferred to [H10W 44/241](#)>
- D H01L 2223/6666 for decoupling, e.g. bypass capacitors
<administratively transferred to [H10W 44/243](#)>
- D H01L 2223/6672 for integrated passive components, e.g. semiconductor device with passive components only
<administratively transferred to [H10W 44/241](#)>
- D H01L 2223/6677 for antenna, e.g. antenna included within housing of semiconductor device
<administratively transferred to [H10W 44/248](#)>
- D H01L 2223/6683 for monolithic microwave integrated circuit [MMIC]
<administratively transferred to [H10W 44/251](#)>
- D H01L 2223/6688 Mixed frequency adaptations, i.e. for operation at different frequencies
<administratively transferred to [H10W 44/255](#)>
- D H01L 2223/6694 Optical signal interface included within high-frequency semiconductor device housing
<administratively transferred to [H10W 44/259](#)>
- D H01L 2224/00 Indexing scheme for arrangements for connecting or disconnecting semiconductor or solid-state bodies and methods related thereto as covered by H01L 24/00**
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/01 . Means for bonding being attached to, or being formed on, the surface to be connected, e.g. chip-to-package, die-attach, "first-level" interconnects; Manufacturing methods related thereto
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/02 . . Bonding areas; Manufacturing methods related thereto
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/0212 . . . Auxiliary members for bonding areas, e.g. spacers
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/02122 being formed on the semiconductor or solid-state body
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/02123 inside the bonding area
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/02125 Reinforcing structures
<administratively transferred to [H10W 72/983](#)>
- D H01L 2224/02126 Collar structures
<administratively transferred to [H10W 72/983](#)>
- D H01L 2224/0213 Alignment aids
<administratively transferred to [H10W 72/985](#)>
- D H01L 2224/02135 Flow barrier
<administratively transferred to [H10W 72/987](#)>

D	H01L 2224/0214	. . . . . Structure of the auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/02141	. . . . . Multilayer auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/02145	. . . . . Shape of the auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/0215	. . . . . Material of the auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/02163	. . . . . on the bonding area <administratively transferred to H10W 72/981 >
D	H01L 2224/02165	. . . . . Reinforcing structures <administratively transferred to H10W 72/983 >
D	H01L 2224/02166	. . . . . Collar structures <administratively transferred to H10W 72/983 >
D	H01L 2224/0217	. . . . . Alignment aids <administratively transferred to H10W 72/985 >
D	H01L 2224/02175	. . . . . Flow barrier <administratively transferred to H10W 72/987 >
D	H01L 2224/0218	. . . . . Structure of the auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/02181	. . . . . Multilayer auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/02185	. . . . . Shape of the auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/0219	. . . . . Material of the auxiliary member <administratively transferred to H10W 72/981 >
D	H01L 2224/022	. . . . . Protective coating, i.e. protective bond-through coating <administratively transferred to H10W 72/981 >
D	H01L 2224/02205	. . . . . Structure of the protective coating <administratively transferred to H10W 72/981 >
D	H01L 2224/02206	. . . . . Multilayer protective coating <administratively transferred to H10W 72/981 >
D	H01L 2224/0221	. . . . . Shape of the protective coating <administratively transferred to H10W 72/981 >
D	H01L 2224/02215	. . . . . Material of the protective coating <administratively transferred to H10W 72/981 >
D	H01L 2224/02233	. . . . . not in direct contact with the bonding area <administratively transferred to H10W 72/981 >
D	H01L 2224/02235	. . . . . Reinforcing structures <administratively transferred to H10W 72/983 >
D	H01L 2224/0224	. . . . . Alignment aids <administratively transferred to H10W 72/985 >

- D H01L 2224/02245 Flow barrier
<administratively transferred to [H10W 72/987](#)>
- D H01L 2224/0225 Structure of the auxiliary member
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/02251 Multilayer auxiliary member
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/02255 Shape of the auxiliary member
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/0226 Material of the auxiliary member
<administratively transferred to [H10W 72/981](#)>
- D H01L 2224/023 . . . Redistribution layers [RDL] for bonding areas
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/0231 Manufacturing methods of the redistribution layers
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/02311 Additive methods
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/02313 Subtractive methods
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/02315 Self-assembly processes
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/02317 by local deposition
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/02319 by using a preform
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/02321 Reworking
<administratively transferred to [H10W 70/05](#)>
- D H01L 2224/0233 Structure of the redistribution layers
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/02331 Multilayer structure
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/02333 being a bump
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/02335 Free-standing redistribution layers
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/0235 Shape of the redistribution layers
<administratively transferred to [H10W 70/65](#)>
- D H01L 2224/02351 comprising interlocking features
<administratively transferred to [H10W 70/65](#)>
- D H01L 2224/0236 Shape of the insulating layers therebetween
<administratively transferred to [H10W 70/68](#)>
- D H01L 2224/0237 Disposition of the redistribution layers
<administratively transferred to [H10W 70/65](#)>

- D H01L 2224/02371 connecting the bonding area on a surface of the semiconductor or solid-state body with another surface of the semiconductor or solid-state body
<administratively transferred to [H10W 70/65](#)>
- D H01L 2224/02372 connecting to a via connection in the semiconductor or solid-state body
<administratively transferred to [H10W 70/65](#)>
- D H01L 2224/02373 Layout of the redistribution layers
<administratively transferred to [H10W 70/65](#)>
- D H01L 2224/02375 Top view
<administratively transferred to [H10W 70/654](#)>
- D H01L 2224/02377 Fan-in arrangement
<administratively transferred to [H10W 70/656](#)>
- D H01L 2224/02379 Fan-out arrangement
<administratively transferred to [H10W 70/655](#)>
- D H01L 2224/02381 Side view
<administratively transferred to [H10W 70/652](#)>
- D H01L 2224/0239 Material of the redistribution layers
<administratively transferred to [H10W 70/66](#)>
- D H01L 2224/024 Material of the insulating layers therebetween
<administratively transferred to [H10W 70/69](#)>
- D H01L 2224/03 . . . Manufacturing methods
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03001 Involving a temporary auxiliary member not forming part of the manufacturing apparatus, e.g. removable or sacrificial coating, film or substrate
<administratively transferred to [H10W 72/01904](#)>
- D H01L 2224/03002 for supporting the semiconductor or solid-state body
<administratively transferred to [H10W 72/01904](#)>
- D H01L 2224/03003 for holding or transferring a preform
<administratively transferred to [H10W 72/01904](#)>
- D H01L 2224/03005 for aligning the bonding area, e.g. marks, spacers
<administratively transferred to [H10W 72/01904](#)>
- D H01L 2224/03009 for protecting parts during manufacture
<administratively transferred to [H10W 72/01904](#)>
- D H01L 2224/03011 Involving a permanent auxiliary member, i.e. a member which is left at least partly in the finished device, e.g. coating, dummy feature
<administratively transferred to [H10W 72/01908](#)>
- D H01L 2224/03013 for holding or confining the bonding area, e.g. solder flow barrier
<administratively transferred to [H10W 72/01908](#)>
- D H01L 2224/03015 for aligning the bonding area, e.g. marks, spacers
<administratively transferred to [H10W 72/01908](#)>
- D H01L 2224/03019 for protecting parts during the process
<administratively transferred to [H10W 72/01908](#)>

- D H01L 2224/031 Manufacture and pre-treatment of the bonding area preform
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/0311 Shaping
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/0312 Applying permanent coating
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/033 by local deposition of the material of the bonding area
<administratively transferred to [H10W 72/01921](#)>
- D H01L 2224/0331 in liquid form
<administratively transferred to [H10W 72/01923](#)>
- D H01L 2224/03312 Continuous flow, e.g. using a microsyringe, a pump, a nozzle or extrusion
<administratively transferred to [H10W 72/01923](#)>
- D H01L 2224/03318 by dispensing droplets
<administratively transferred to [H10W 72/01923](#)>
- D H01L 2224/0332 Screen-printing, i.e. using a stencil
<administratively transferred to [H10W 72/01923](#)>
- D H01L 2224/0333 in solid form
<administratively transferred to [H10W 72/01925](#)>
- D H01L 2224/03332 using a powder
<administratively transferred to [H10W 72/01925](#)>
- D H01L 2224/03334 using a preform
<administratively transferred to [H10W 72/01925](#)>
- D H01L 2224/034 by blanket deposition of the material of the bonding area
<administratively transferred to [H10W 72/01931](#)>
- D H01L 2224/0341 in liquid form
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/03416 Spin-coating
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/03418 Spray coating
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/0342 Curtain-coating
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/03422 by dipping, e.g. in a solder bath
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/03424 Immersion coating, e.g. in a solder bath
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/03426 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/03428 Wave-coating
<administratively transferred to [H10W 72/01933](#)>
- D H01L 2224/0343 in solid form
<administratively transferred to [H10W 72/01936](#)>

- D H01L 2224/03436 Lamination of a preform, e.g. foil, sheet or layer
<administratively transferred to [H10W 72/01936](#)>
- D H01L 2224/03438 the preform being at least partly pre-patterned
<administratively transferred to [H10W 72/01936](#)>
- D H01L 2224/0344 by transfer printing
<administratively transferred to [H10W 72/01936](#)>
- D H01L 2224/03442 using a powder
<administratively transferred to [H10W 72/01936](#)>
- D H01L 2224/03444 in gaseous form
<administratively transferred to [H10W 72/01938](#)>
- D H01L 2224/0345 Physical vapour deposition [PVD], e.g. evaporation, or sputtering
<administratively transferred to [H10W 72/01938](#)>
- D H01L 2224/03452 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01938](#)>
- D H01L 2224/0346 Plating
<administratively transferred to [H10W 72/01935](#)>
- D H01L 2224/03462 Electroplating
<administratively transferred to [H10W 72/01935](#)>
- D H01L 2224/03464 Electroless plating
<administratively transferred to [H10W 72/01935](#)>
- D H01L 2224/03466 Conformal deposition, i.e. blanket deposition of a conformal layer on a patterned surface
<administratively transferred to [H10W 72/01931](#)>
- D H01L 2224/0347 using a lift-off mask
<administratively transferred to [H10W 72/01955](#)>
- D H01L 2224/03472 Profile of the lift-off mask
<administratively transferred to [H10W 72/01955](#)>
- D H01L 2224/03474 Multilayer masks
<administratively transferred to [H10W 72/01955](#)>
- D H01L 2224/0348 Permanent masks, i.e. masks left in the finished device, e.g. passivation layers
<administratively transferred to [H10W 72/01955](#)>
- D H01L 2224/035 by chemical or physical modification of a pre-existing or pre-deposited material
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03502 Pre-existing or pre-deposited material
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03505 Sintering
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/0351 Anodisation
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03515 Curing and solidification, e.g. of a photosensitive material
<administratively transferred to [H10W 72/01961](#)>

- D H01L 2224/0352 Self-assembly, e.g. self-agglomeration of the material in a fluid
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03522 Auxiliary means therefor, e.g. for self-assembly activation
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03524 with special adaptation of the surface of the body to be connected or of an auxiliary substrate, e.g. surface shape specially adapted for the self-assembly process
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/0355 Selective modification
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03552 using a laser or a focussed ion beam [FIB]
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/03554 Stereolithography, i.e. solidification of a pattern defined by a laser trace in a photosensitive resin
<administratively transferred to [H10W 72/01961](#)>
- D H01L 2224/036 by patterning a pre-deposited material
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/03602 Mechanical treatment, e.g. polishing, grinding
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/0361 Physical or chemical etching
<administratively transferred to [H10W 72/01953](#)>
- D H01L 2224/03612 by physical means only
<administratively transferred to [H10W 72/01953](#)>
- D H01L 2224/03614 by chemical means only
<administratively transferred to [H10W 72/01953](#)>
- D H01L 2224/03616 Chemical mechanical polishing [CMP]
<administratively transferred to [H10W 72/01953](#)>
- D H01L 2224/03618 with selective exposure, development and removal of a photosensitive material, e.g. of a photosensitive conductive resin
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/0362 Photolithography
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/03622 using masks
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/0363 using a laser or a focused ion beam [FIB]
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/03632 Ablation by means of a laser or focused ion beam [FIB]
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/037 involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/038 Post-treatment of the bonding area
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/0381 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/01971](#)>

- D H01L 2224/0382 Applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03821 Spray coating
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03822 by dipping, e.g. in a solder bath
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03823 Immersion coating, e.g. in a solder bath
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03824 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03825 Plating, e.g. electroplating, electroless plating
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03826 Physical vapour deposition [PVD], e.g. evaporation, or sputtering
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03827 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/019](#) and [H10W 72/923](#)>
- D H01L 2224/03828 Applying flux
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03829 Applying a precursor material
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/0383 Reworking, e.g. shaping
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/03831 involving a chemical process, e.g. etching the bonding area
<administratively transferred to [H10W 72/01953](#)>
- D H01L 2224/0384 involving a mechanical process, e.g. planarising the bonding area
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/03845 Chemical mechanical polishing [CMP]
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/03848 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03849 Reflowing
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/039 Methods of manufacturing bonding areas involving a specific sequence of method steps
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03901 with repetition of the same manufacturing step
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03902 Multiple masking steps
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03903 using different masks
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03906 with modification of the same mask
<administratively transferred to [H10W 72/019](#)>

- D H01L 2224/0391 Forming a passivation layer after forming the bonding area
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03912 the bump being used as a mask for patterning the bonding area
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03914 the bonding area, e.g. under bump metallisation [UBM], being used as a mask for patterning other parts
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03916 a passivation layer being used as a mask for patterning the bonding area
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/0392 specifically adapted to include a probing step
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/03921 by repairing the bonding area damaged by the probing step
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/04 . . . Structure, shape, material or disposition of the bonding areas prior to the connecting process
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/0401 Bonding areas specifically adapted for bump connectors, e.g. under bump metallisation [UBM]
<administratively transferred to [H10W 72/29](#)>
- D H01L 2224/04026 Bonding areas specifically adapted for layer connectors
<administratively transferred to [H10W 72/59](#)>
- D H01L 2224/04034 Bonding areas specifically adapted for strap connectors
<administratively transferred to [H10W 72/691](#)>
- D H01L 2224/04042 Bonding areas specifically adapted for wire connectors, e.g. wirebond pads
<administratively transferred to [H10W 72/59](#)>
- D H01L 2224/0405 Bonding areas specifically adapted for tape automated bonding [TAB] connectors
<administratively transferred to [H10W 72/709](#)>
- D H01L 2224/04073 Bonding areas specifically adapted for connectors of different types
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/04105 Bonding areas formed on an encapsulation of the semiconductor or solid-state body, e.g. bonding areas on chip-scale packages
<administratively transferred to [H10W 72/9413](#)>
- D H01L 2224/05 of an individual bonding area
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/05001 Internal layers
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05005 Structure
<administratively transferred to [H10W 72/923](#) and [H10W 72/921](#)>
- D H01L 2224/05006 Dual damascene structure
<administratively transferred to [H10W 72/923](#) and [H10W 72/921](#)>
- D H01L 2224/05007 comprising a core and a coating
<administratively transferred to [H10W 72/923](#)>

- D H01L 2224/05008 Bonding area integrally formed with a redistribution layer on the semiconductor or solid-state body, e.g.
<administratively transferred to [H10W 72/923](#) and [H10W 72/9223](#)>
- D H01L 2224/05009 Bonding area integrally formed with a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/923](#) and [H10W 72/9226](#)>
- D H01L 2224/0501 Shape
<administratively transferred to [H10W 72/923](#) and [H10W 72/931](#)>
- D H01L 2224/05011 comprising apertures or cavities
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05012 in top view
<administratively transferred to [H10W 72/923](#) and [H10W 72/932](#)>
- D H01L 2224/05013 being rectangular
<administratively transferred to [H10W 72/923](#) and [H10W 72/932](#)>
- D H01L 2224/05014 being square
<administratively transferred to [H10W 72/923](#) and [H10W 72/932](#)>
- D H01L 2224/05015 being circular or elliptic
<administratively transferred to [H10W 72/923](#) and [H10W 72/932](#)>
- D H01L 2224/05016 in side view
<administratively transferred to [H10W 72/923](#) and [H10W 72/934](#)>
- D H01L 2224/05017 comprising protrusions or indentations
<administratively transferred to [H10W 72/923](#) and [H10W 72/934](#)>
- D H01L 2224/05018 being a conformal layer on a patterned surface
<administratively transferred to [H10W 72/923](#) and [H10W 72/934](#)>
- D H01L 2224/05019 being a non-conformal layer on a patterned surface
<administratively transferred to [H10W 72/923](#) and [H10W 72/934](#)>
- D H01L 2224/0502 Disposition
<administratively transferred to [H10W 72/923](#) and [H10W 72/941](#)>
- D H01L 2224/05022 the internal layer being at least partially embedded in the surface
<administratively transferred to [H10W 72/923](#) and [H10W 72/9415](#)>
- D H01L 2224/05023 the whole internal layer protruding from the surface
<administratively transferred to [H10W 72/923](#) and [H10W 72/9415](#)>
- D H01L 2224/05024 the internal layer being disposed on a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/923](#) and [H10W 72/942](#)>
- D H01L 2224/05025 the internal layer being disposed on a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/923](#) and [H10W 72/942](#)>
- D H01L 2224/05026 the internal layer being disposed in a recess of the surface
<administratively transferred to [H10W 72/923](#) and [H10W 72/9415](#)>
- D H01L 2224/05027 the internal layer extending out of an opening
<administratively transferred to [H10W 72/923](#) and [H10W 72/9415](#)>

- D H01L 2224/05073 Single internal layer
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05075 Plural internal layers
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05076 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/923](#) and [H10W 72/921](#)>
- D H01L 2224/05078 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/923](#) and [H10W 72/924](#)>
- D H01L 2224/0508 being stacked
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05082 Two-layer arrangements
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05083 Three-layer arrangements
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05084 Four-layer arrangements
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05085 with additional elements, e.g. vias arrays, interposed between the stacked layers
<administratively transferred to [H10W 72/923](#) and [H10W 72/9232](#)>
- D H01L 2224/05086 Structure of the additional element
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05087 being a via with at least a lining layer
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05088 Shape of the additional element
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05089 Disposition of the additional element
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/0509 of a single via
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05091 at the center of the internal layers
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05092 at the periphery of the internal layers
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05093 of a plurality of vias
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05094 at the center of the internal layers
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05095 at the periphery of the internal layers
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05096 Uniform arrangement, i.e. array
<administratively transferred to [H10W 72/9232](#)>

- D H01L 2224/05097 Random arrangement
<administratively transferred to [H10W 72/9232](#)>
- D H01L 2224/05098 Material of the additional element
<administratively transferred to [H10W 72/923](#) and [H10W 72/9232](#)>
- D H01L 2224/05099 Material
<administratively transferred to [H10W 72/923](#) and [H10W 72/951](#)>
- D H01L 2224/051 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05101 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05105 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05109 Indium [In] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05111 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05113 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05114 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05116 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05117 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05118 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/0512 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05123 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05124 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>

D	H01L 2224/05138	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05139	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05144	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05147	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05149	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05155	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05157	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/0516	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05163	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05164	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05166	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05169	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/0517	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05171	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >
D	H01L 2224/05172	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/923 and H10W 72/952 >

- D H01L 2224/05173 Rhodium [Rh] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05176 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05178 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05179 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/0518 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05181 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05183 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05184 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05186 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05187 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05188 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/0519 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/923](#) and [H10W 72/952](#)>
- D H01L 2224/05191 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/923](#) and [H10W 72/953](#)>
- D H01L 2224/05193 with a principal constituent of the material being a solid not provided for in groups H01L 2224/051–H01L 2224/05191, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/923](#) and [H10W 72/953](#)>
- D H01L 2224/05194 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/051–H01L 2224/05191
<administratively transferred to [H10W 72/923](#) and [H10W 72/953](#)>
- D H01L 2224/05195 with a principal constituent of the material being a gas not provided for in groups H01L 2224/051–H01L 2224/05191
<administratively transferred to [H10W 72/923](#) and [H10W 72/953](#)>

- D H01L 2224/05198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/923](#) and [H10W 72/925](#)>
- D H01L 2224/05199 Material of the matrix
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/052 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05201 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05205 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05209 Indium [In] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05211 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05213 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05214 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05216 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05217 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05218 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/0522 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05223 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/05224	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05238	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05239	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05244	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05247	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05249	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05255	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05257	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0526	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05263	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05264	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05266	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05269	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0527	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05271	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>

D	H01L 2224/05272	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05273	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05276	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05278	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05279	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0528	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05281	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05283	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05284	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05286	. . . . .	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>
D	H01L 2224/05287	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>
D	H01L 2224/05288	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>
D	H01L 2224/0529	. . . . .	with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>
D	H01L 2224/05291	. . . . .	The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>

- D H01L 2224/05293 with a principal constituent of the material being a solid not provided for in groups H01L 2224/052 - H01L 2224/05291, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/05294 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/052 - H01L 2224/05291
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/05295 with a principal constituent of the material being a gas not provided for in groups H01L 2224/052 - H01L 2224/05291
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/05298 Fillers
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/05299 Base material
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/053 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05301 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05305 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05309 Indium [In] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05311 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05313 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05314 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05316 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/05317	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05318	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0532	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05323	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05324	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05338	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05339	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05344	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05347	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05349	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05355	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05357	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0536	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05363	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05364	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>

D	H01L 2224/05366	• • • • • Titanium [Ti] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05369	• • • • • Platinum [Pt] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0537	• • • • • Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05371	• • • • • Chromium [Cr] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05372	• • • • • Vanadium [V] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05373	• • • • • Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05376	• • • • • Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05378	• • • • • Iridium [Ir] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05379	• • • • • Niobium [Nb] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0538	• • • • • Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05381	• • • • • Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05383	• • • • • Rhenium [Re] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05384	• • • • • Tungsten [W] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05386	• • • • • with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>
D	H01L 2224/05387	• • • • • Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/953 simultaneously>

- D H01L 2224/05388 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/0539 with a principal constituent of the material being a polymer,
e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05391 The principal constituent being an elastomer, e.g. silicones,
isoprene, neoprene
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/05393 with a principal constituent of the material being a solid not
provided for in groups H01L 2224/053 – H01L 2224/05391,
e.g. allotropes of carbon, fullerene, graphite, carbon-
nanotubes, diamond
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05394 with a principal constituent of the material being a liquid not
provided for in groups H01L 2224/053 – H01L 2224/05391
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05395 with a principal constituent of the material being a gas not
provided for in groups H01L 2224/053 – H01L 2224/05391
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05398 with a principal constituent of the material being a combination
of two or more materials in the form of a matrix with a filler, i.e.
being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05399 Coating material
<administratively transferred to [H10W 72/923](#) and
[H10W 72/925](#)>
- D H01L 2224/054 with a principal constituent of the material being a metal or a
metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic
[As], antimony [Sb], tellurium [Te] and polonium [Po], and
alloys thereof
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/952](#) simultaneously>
- D H01L 2224/05401 the principal constituent melting at a temperature of less
than 400°C
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05405 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05409 Indium [In] as principal constituent
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/05411	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05413	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05414	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05416	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05417	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05418	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/0542	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05423	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05424	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05438	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05439	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05444	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05447	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05449	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/05455	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/923 , H10W 72/925 , and H10W 72/952 simultaneously>

D	H01L 2224/05457	. . . . .	<p>Cobalt [Co] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/0546	. . . . .	<p>Iron [Fe] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05463	. . . . .	<p>the principal constituent melting at a temperature of greater than 1550°C</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05464	. . . . .	<p>Palladium [Pd] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05466	. . . . .	<p>Titanium [Ti] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05469	. . . . .	<p>Platinum [Pt] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/0547	. . . . .	<p>Zirconium [Zr] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05471	. . . . .	<p>Chromium [Cr] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05472	. . . . .	<p>Vanadium [V] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05473	. . . . .	<p>Rhodium [Rh] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05476	. . . . .	<p>Ruthenium [Ru] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05478	. . . . .	<p>Iridium [Ir] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05479	. . . . .	<p>Niobium [Nb] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/0548	. . . . .	<p>Molybdenum [Mo] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>
D	H01L 2224/05481	. . . . .	<p>Tantalum [Ta] as principal constituent</p> <p><administratively transferred to H10W 72/923, H10W 72/925, and H10W 72/952 simultaneously></p>

- D H01L 2224/05483 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05484 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/05486 with a principal constituent of the material being a non
metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/05488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/0549 with a principal constituent of the material being a polymer,
e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05491 The principal constituent being an elastomer, e.g. silicones,
isoprene, neoprene
<administratively transferred to [H10W 72/923](#),
[H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/05493 with a principal constituent of the material being a solid not
provided for in groups H01L 2224/054 - H01L 2224/05491,
e.g. allotropes of carbon, fullerene, graphite, carbon-
nanotubes, diamond
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05494 with a principal constituent of the material being a liquid not
provided for in groups H01L 2224/054 - H01L 2224/05491
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05495 with a principal constituent of the material being a gas not
provided for in groups H01L 2224/054 - H01L 2224/05491
<administratively transferred to [H10W 72/923](#), [H10W 72/925](#),
and [H10W 72/953](#) simultaneously>
- D H01L 2224/05498 with a principal constituent of the material being a combination
of two or more materials in the form of a matrix with a filler, i.e.
being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/923](#) and
[H10W 72/925](#)>
- D H01L 2224/05499 Shape or distribution of the fillers
<administratively transferred to [H10W 72/923](#) and
[H10W 72/925](#)>
- D H01L 2224/0554 External layer
<administratively transferred to [H10W 72/923](#)>

- D H01L 2224/05541 Structure
<administratively transferred to [H10W 72/921](#)>
- D H01L 2224/05546 Dual damascene structure
<administratively transferred to [H10W 72/921](#)>
- D H01L 2224/05547 comprising a core and a coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05548 Bonding area integrally formed with a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/922](#)>
- D H01L 2224/0555 Shape
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/05551 comprising apertures or cavities
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/05552 in top view
<administratively transferred to [H10W 72/932](#)>
- D H01L 2224/05553 being rectangular
<administratively transferred to [H10W 72/932](#)>
- D H01L 2224/05554 being square
<administratively transferred to [H10W 72/932](#)>
- D H01L 2224/05555 being circular or elliptic
<administratively transferred to [H10W 72/932](#)>
- D H01L 2224/05556 in side view
<administratively transferred to [H10W 72/934](#)>
- D H01L 2224/05557 comprising protrusions or indentations
<administratively transferred to [H10W 72/934](#)>
- D H01L 2224/05558 conformal layer on a patterned surface
<administratively transferred to [H10W 72/934](#)>
- D H01L 2224/05559 non-conformal layer on a patterned surface
<administratively transferred to [H10W 72/934](#)>
- D H01L 2224/0556 Disposition
<administratively transferred to [H10W 72/941](#)>
- D H01L 2224/05561 On the entire surface of the internal layer
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/05562 On the entire exposed surface of the internal layer
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/05563 Only on parts of the surface of the internal layer
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/05564 Only on the bonding interface of the bonding area
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/05565 Only outside the bonding interface of the bonding area
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/05566 Both on and outside the bonding interface of the bonding area
<administratively transferred to [H10W 72/942](#)>

- D H01L 2224/05567 the external layer being at least partially embedded in the surface
<administratively transferred to [H10W 72/9415](#)>
- D H01L 2224/05568 the whole external layer protruding from the surface
<administratively transferred to [H10W 72/9415](#)>
- D H01L 2224/05569 the external layer being disposed on a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/0557 the external layer being disposed on a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/942](#)>
- D H01L 2224/05571 the external layer being disposed in a recess of the surface
<administratively transferred to [H10W 72/9415](#)>
- D H01L 2224/05572 the external layer extending out of an opening
<administratively transferred to [H10W 72/9415](#)>
- D H01L 2224/05573 Single external layer
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/05575 Plural external layers
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05576 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05578 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/0558 being stacked
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05582 Two-layer coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05583 Three-layer coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05584 Four-layer coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/05599 Material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/056 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/05601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/05605 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/05609 Indium [In] as principal constituent
<administratively transferred to [H10W 72/952](#)>

D	H01L 2224/05611	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05613	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05614	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05616	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05617	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/952 >
D	H01L 2224/05618	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/0562	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05623	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05624	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05638	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/05639	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05644	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05647	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05649	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05655	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05657	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/0566	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05663	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/05664	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05666	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/952 >

D	H01L 2224/05669	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/0567	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05671	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05672	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05673	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05676	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05678	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05679	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/0568	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05681	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05683	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05684	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/05686	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/953 >
D	H01L 2224/05687	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/953 >
D	H01L 2224/05688	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/953 >
D	H01L 2224/0569	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy <administratively transferred to H10W 72/953 >
D	H01L 2224/05691	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/953 >
D	H01L 2224/05693	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/056 – H01L 2224/05691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/953 >
D	H01L 2224/05694	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/056 – H01L 2224/05691 <administratively transferred to H10W 72/953 >

- D H01L 2224/05695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/056 – H01L 2224/05691
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/05698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/925](#)>
- D H01L 2224/05699 Material of the matrix
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/057 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05705 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05709 Indium [In] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05711 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05713 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05714 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05716 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05717 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05718 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/0572 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>

D	H01L 2224/05723	• • • • •	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05724	• • • • •	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05738	• • • • •	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05739	• • • • •	Silver [Ag] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05744	• • • • •	Gold [Au] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05747	• • • • •	Copper [Cu] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05749	• • • • •	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05755	• • • • •	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05757	• • • • •	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0576	• • • • •	Iron [Fe] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05763	• • • • •	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05764	• • • • •	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05766	• • • • •	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05769	• • • • •	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0577	• • • • •	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

D	H01L 2224/05771	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05772	Vanadium [V] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05773	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05776	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05778	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05779	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0578	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05781	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05783	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05784	Tungsten [W] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05786	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/05787	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/05788	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/0579	with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/05791	The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/925 and H10W 72/953 >

- D H01L 2224/05793 with a principal constituent of the material being a solid not provided for in groups H01L 2224/057 - H01L 2224/05791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05794 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/057 - H01L 2224/05791
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05795 with a principal constituent of the material being a gas not provided for in groups H01L 2224/057 - H01L 2224/05791
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05798 Fillers
<administratively transferred to [H10W 72/925](#)>
- D H01L 2224/05799 Base material
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/058 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05801 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05805 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05809 Indium [In] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05811 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05813 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05814 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05816 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>

D	H01L 2224/05817	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05818	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0582	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05823	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05824	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05838	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05839	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05844	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05847	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05849	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05855	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05857	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0586	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05863	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05864	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

D	H01L 2224/05866	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05869	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0587	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05871	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05872	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05873	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05876	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05878	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05879	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0588	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05881	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05883	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05884	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05886	. . . . .	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/05887	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/925 and H10W 72/953 >

- D H01L 2224/05888 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/0589 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05891 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05893 with a principal constituent of the material being a solid not provided for in groups H01L 2224/058 – H01L 2224/05891, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05894 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/058 – H01L 2224/05891
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05895 with a principal constituent of the material being a gas not provided for in groups H01L 2224/058 – H01L 2224/05891
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05898 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05899 Coating material
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/059 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05901 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05905 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05909 Indium [In] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>

D	H01L 2224/05911	• • • • •	Tin [Sn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05913	• • • • •	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05914	• • • • •	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05916	• • • • •	Lead [Pb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05917	• • • • •	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05918	• • • • •	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0592	• • • • •	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05923	• • • • •	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05924	• • • • •	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05938	• • • • •	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05939	• • • • •	Silver [Ag] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05944	• • • • •	Gold [Au] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05947	• • • • •	Copper [Cu] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05949	• • • • •	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05955	• • • • •	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

D	H01L 2224/05957	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0596	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05963	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05964	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05966	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05969	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0597	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05971	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05972	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05973	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05976	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05978	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05979	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/0598	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/05981	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

- D H01L 2224/05983 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05984 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/05986 with a principal constituent of the material being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05987 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05988 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/0599 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05991 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05993 with a principal constituent of the material being a solid not provided for in groups H01L 2224/059 – H01L 2224/05991, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05994 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/059 – H01L 2224/05991
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05995 with a principal constituent of the material being a gas not provided for in groups H01L 2224/059 – H01L 2224/05991
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05998 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/05999 Shape or distribution of the fillers
<administratively transferred to [H10W 72/925](#)>
- D H01L 2224/06 of a plurality of bonding areas
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/0601 Structure
<administratively transferred to [H10W 72/927](#)>

- D H01L 2224/0603 Bonding areas having different sizes, e.g. different heights or widths
<administratively transferred to [H10W 72/926](#)>
- D H01L 2224/0605 Shape
<administratively transferred to [H10W 72/936](#)>
- D H01L 2224/06051 Bonding areas having different shapes
<administratively transferred to [H10W 72/936](#)>
- D H01L 2224/061 Disposition
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06102 the bonding areas being at different heights
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/0612 Layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/0613 Square or rectangular array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06131 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06132 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06133 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06134 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06135 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06136 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06137 with specially adapted redistribution layers [RDL]
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06138 being disposed in a single wiring level, i.e. planar layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06139 being disposed in different wiring levels, i.e. resurf layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/0614 Circular array, i.e. array with radial symmetry
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06141 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06142 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06143 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/9445](#)>

- D H01L 2224/06144 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06145 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06146 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06147 with specially adapted redistribution layers [RDL]
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06148 being disposed in a single wiring level, i.e. planar layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06149 being disposed in different wiring levels, i.e. resurf layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/0615 Mirror array, i.e. array having only a reflection symmetry, i.e. bilateral symmetry
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06151 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06152 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06153 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06154 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06155 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06156 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06157 with specially adapted redistribution layers [RDL]
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06158 being disposed in a single wiring level, i.e. planar layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06159 being disposed in different wiring levels, i.e. resurf layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/0616 Random array, i.e. array with no symmetry
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06163 with a staggered arrangement
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06164 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#)>

- D H01L 2224/06165 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06166 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06167 with specially adapted redistribution layers [RDL]
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06168 being disposed in a single wiring level, i.e. planar layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06169 being disposed in different wiring levels, i.e. resurf layout
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06177 Combinations of arrays with different layouts
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/06179 Corner adaptations, i.e. disposition of the bonding areas at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/9445](#)>
- D H01L 2224/0618 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06181 On opposite sides of the body
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06182 with specially adapted redistribution layers [RDL]
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06183 On contiguous sides of the body
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06187 with specially adapted redistribution layers [RDL]
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06188 being disposed in a single wiring level, i.e. planar layout
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/06189 being disposed in different wiring levels, i.e. resurf layout
<administratively transferred to [H10W 72/944](#)>
- D H01L 2224/065 Material
<administratively transferred to [H10W 72/957](#)>
- D H01L 2224/06505 Bonding areas having different materials
<administratively transferred to [H10W 72/957](#)>
- D H01L 2224/0651 Function
<administratively transferred to [H10W 72/967](#)>
- D H01L 2224/06515 Bonding areas having different functions
<administratively transferred to [H10W 72/967](#)>
- D H01L 2224/06517 including bonding areas providing primarily mechanical bonding
<administratively transferred to [H10W 72/967](#) and [H10W 72/963](#)>
- D H01L 2224/06519 including bonding areas providing primarily thermal dissipation
<administratively transferred to [H10W 72/967](#) and [H10W 72/965](#)>

- D H01L 2224/07 . . . Structure, shape, material or disposition of the bonding areas after the connecting process
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/08 of an individual bonding area
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/0801 Structure
<administratively transferred to [H10W 80/721](#)>
- D H01L 2224/0805 Shape
<administratively transferred to [H10W 80/732](#)>
- D H01L 2224/08052 in top view
<administratively transferred to [H10W 80/732](#) and [H10W 72/932](#)>
- D H01L 2224/08053 being non-uniform along the bonding area
<administratively transferred to [H10W 80/732](#) and [H10W 72/932](#)>
- D H01L 2224/08054 being rectangular
<administratively transferred to [H10W 80/732](#) and [H10W 72/932](#)>
- D H01L 2224/08055 being square
<administratively transferred to [H10W 80/732](#) and [H10W 72/932](#)>
- D H01L 2224/08056 being circular or elliptic
<administratively transferred to [H10W 80/732](#) and [H10W 72/932](#)>
- D H01L 2224/08057 in side view
<administratively transferred to [H10W 80/732](#) and [H10W 72/934](#)>
- D H01L 2224/08058 being non-uniform along the bonding area
<administratively transferred to [H10W 80/732](#) and [H10W 72/934](#)>
- D H01L 2224/08059 comprising protrusions or indentations
<administratively transferred to [H10W 80/732](#) and [H10W 72/934](#)>
- D H01L 2224/0807 of bonding interfaces, e.g. interlocking features
<administratively transferred to [H10W 80/732](#)>
- D H01L 2224/081 Disposition
<administratively transferred to [H10W 80/743](#)>
- D H01L 2224/08111 the bonding area being disposed in a recess of the surface of the body
<administratively transferred to [H10W 80/743](#) and [H10W 72/9415](#)>
- D H01L 2224/08112 the bonding area being at least partially embedded in the surface of the body
<administratively transferred to [H10W 80/743](#) and [H10W 72/9415](#)>
- D H01L 2224/08113 the whole bonding area protruding from the surface of the body
<administratively transferred to [H10W 80/743](#) and [H10W 72/9415](#)>
- D H01L 2224/0812 the bonding area connecting directly to another bonding area, i.e. connectorless bonding, e.g. bumpless bonding
<administratively transferred to [H10W 80/701](#)>
- D H01L 2224/08121 the connected bonding areas being not aligned with respect to each other
<administratively transferred to [H10W 80/701](#)>

- D H01L 2224/08123 the bonding area connecting directly to at least two bonding areas
<administratively transferred to [H10W 80/701](#)>
- D H01L 2224/08135 the bonding area connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
<administratively transferred to [H10W 90/791](#)>
- D H01L 2224/08137 the bodies being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/792](#)>
- D H01L 2224/08145 the bodies being stacked
<administratively transferred to [H10W 90/792](#)>
- D H01L 2224/08146 the bonding area connecting to a via connection in the body
<administratively transferred to [H10W 90/792](#)>
- D H01L 2224/08147 the bonding area connecting to a bonding area disposed in a recess of the surface of the body
<administratively transferred to [H10W 90/792](#)>
- D H01L 2224/08148 the bonding area connecting to a bonding area protruding from the surface of the body
<administratively transferred to [H10W 90/792](#)>
- D H01L 2224/08151 the bonding area connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
<administratively transferred to [H10W 90/791](#)>
- D H01L 2224/08153 the body and the item being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/791](#)>
- D H01L 2224/08155 the item being non-metallic, e.g. being an insulating substrate with or without metallisation
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/0816 the bonding area connecting to a pin of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08163 the bonding area connecting to a potential ring of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08165 the bonding area connecting to a via metallisation of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08167 the bonding area connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08168 the bonding area connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08175 the item being metallic
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08183 the bonding area connecting to a potential ring of the item
<administratively transferred to [H10W 90/796](#)>

- D H01L 2224/08187 the bonding area connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08188 the bonding area connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08195 the item being a discrete passive component
<administratively transferred to [H10W 90/798](#)>
- D H01L 2224/08197 the bonding area connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/798](#)>
- D H01L 2224/08198 the bonding area connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/798](#)>
- D H01L 2224/08221 the body and the item being stacked
<administratively transferred to [H10W 90/791](#)>
- D H01L 2224/08225 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/0823 the bonding area connecting to a pin of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08233 the bonding area connecting to a potential ring of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08235 the bonding area connecting to a via metallisation of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08237 the bonding area connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08238 the bonding area connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/794](#)>
- D H01L 2224/08245 the item being metallic
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08253 the bonding area connecting to a potential ring of the item
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08257 the bonding area connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08258 the bonding area connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/796](#)>
- D H01L 2224/08265 the item being a discrete passive component
<administratively transferred to [H10W 90/798](#)>
- D H01L 2224/08267 the bonding area connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/798](#)>

- D H01L 2224/08268 the bonding area connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/798](#)>
- D H01L 2224/085 Material
<administratively transferred to [H10W 80/754](#)>
- D H01L 2224/08501 at the bonding interface
<administratively transferred to [H10W 80/754](#)>
- D H01L 2224/08502 comprising an eutectic alloy
<administratively transferred to [H10W 72/9524](#) and [H10W 80/754](#)>
- D H01L 2224/08503 comprising an intermetallic compound
<administratively transferred to [H10W 72/9528](#) and [H10W 80/754](#)>
- D H01L 2224/08505 outside the bonding interface
<administratively transferred to [H10W 80/754](#)>
- D H01L 2224/08506 comprising an eutectic alloy
<administratively transferred to [H10W 72/9524](#) and [H10W 80/754](#)>
- D H01L 2224/09 of a plurality of bonding areas
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/0901 Structure
<administratively transferred to [H10W 80/721](#) and [H10W 72/927](#)>
- D H01L 2224/0903 Bonding areas having different sizes, e.g. different diameters, heights or widths
<administratively transferred to [H10W 80/721](#) and [H10W 72/926](#)>
- D H01L 2224/0905 Shape
<administratively transferred to [H10W 72/936](#) and [H10W 80/732](#)>
- D H01L 2224/09051 Bonding areas having different shapes
<administratively transferred to [H10W 72/936](#) and [H10W 80/732](#)>
- D H01L 2224/09055 of their bonding interfaces
<administratively transferred to [H10W 72/936](#) and [H10W 80/732](#)>
- D H01L 2224/091 Disposition
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/09102 the bonding areas being at different heights
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/09103 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/09104 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/0912 Layout
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/0913 Square or rectangular array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09132 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>

- D H01L 2224/09133 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09134 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09135 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/0914 Circular array, i.e. array with radial symmetry
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09142 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09143 with a staggered arrangement
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09144 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09145 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/0915 Mirror array, i.e. array having only a reflection symmetry, i.e. bilateral symmetry
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09151 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09152 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09153 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09154 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09155 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>

- D H01L 2224/09156 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/0916 Random array, i.e. array with no symmetry
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09163 with a staggered arrangement
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09164 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09165 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09177 Combinations of arrays with different layouts
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/09179 Corner adaptations, i.e. disposition of the bonding areas at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/9445](#) and [H10W 80/743](#)>
- D H01L 2224/0918 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/09181 On opposite sides of the body
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/09183 On contiguous sides of the body
<administratively transferred to [H10W 72/944](#) and [H10W 80/743](#)>
- D H01L 2224/095 Material
<administratively transferred to [H10W 72/957](#) and [H10W 80/754](#)>
- D H01L 2224/09505 Bonding areas having different materials
<administratively transferred to [H10W 72/957](#) and [H10W 80/754](#)>
- D H01L 2224/0951 Function
<administratively transferred to [H10W 72/967](#)>
- D H01L 2224/09515 Bonding areas having different functions
<administratively transferred to [H10W 72/967](#)>
- D H01L 2224/09517 including bonding areas providing primarily mechanical support
<administratively transferred to [H10W 72/967](#) and [H10W 72/963](#)>
- D H01L 2224/09519 including bonding areas providing primarily thermal dissipation
<administratively transferred to [H10W 72/967](#) and [H10W 72/965](#)>
- D H01L 2224/10 . . . Bump connectors; Manufacturing methods related thereto
<administratively transferred to [H10W 72/20](#)>
- D H01L 2224/1012 . . . Auxiliary members for bump connectors, e.g. spacers
<administratively transferred to [H10W 72/281](#)>

- D H01L 2224/10122 being formed on the semiconductor or solid-state body to be connected
<administratively transferred to [H10W 72/281](#)>
- D H01L 2224/10125 Reinforcing structures
<administratively transferred to [H10W 72/283](#)>
- D H01L 2224/10126 Bump collar
<administratively transferred to [H10W 72/283](#)>
- D H01L 2224/10135 Alignment aids
<administratively transferred to [H10W 72/285](#)>
- D H01L 2224/10145 Flow barriers
<administratively transferred to [H10W 72/287](#)>
- D H01L 2224/10152 being formed on an item to be connected not being a semiconductor or solid-state body
<administratively transferred to [H10W 72/281](#)>
- D H01L 2224/10155 Reinforcing structures
<administratively transferred to [H10W 72/283](#)>
- D H01L 2224/10156 Bump collar
<administratively transferred to [H10W 72/283](#)>
- D H01L 2224/10165 Alignment aids
<administratively transferred to [H10W 72/285](#)>
- D H01L 2224/10175 Flow barriers
<administratively transferred to [H10W 72/287](#)>
- D H01L 2224/11 . . . Manufacturing methods
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11001 Involving a temporary auxiliary member not forming part of the manufacturing apparatus, e.g. removable or sacrificial coating, film or substrate
<administratively transferred to [H10W 72/01204](#)>
- D H01L 2224/11002 for supporting the semiconductor or solid-state body
<administratively transferred to [H10W 72/01204](#)>
- D H01L 2224/11003 for holding or transferring the bump preform
<administratively transferred to [H10W 72/01204](#)>
- D H01L 2224/11005 for aligning the bump connector, e.g. marks, spacers
<administratively transferred to [H10W 72/01204](#)>
- D H01L 2224/11009 for protecting parts during manufacture
<administratively transferred to [H10W 72/01204](#)>
- D H01L 2224/11011 Involving a permanent auxiliary member, i.e. a member which is left at least partly in the finished device, e.g. coating, dummy feature
<administratively transferred to [H10W 72/01208](#)>
- D H01L 2224/11013 for holding or confining the bump connector, e.g. solder flow barrier
<administratively transferred to [H10W 72/01208](#)>
- D H01L 2224/11015 for aligning the bump connector, e.g. marks, spacers
<administratively transferred to [H10W 72/01208](#)>
- D H01L 2224/11019 for protecting parts during the process
<administratively transferred to [H10W 72/01208](#)>

- D H01L 2224/111 Manufacture and pre-treatment of the bump connector preform
<administratively transferred to [H10W 72/01212](#)>
- D H01L 2224/1111 Shaping
<administratively transferred to [H10W 72/01212](#)>
- D H01L 2224/1112 Applying permanent coating
<administratively transferred to [H10W 72/01212](#)>
- D H01L 2224/113 by local deposition of the material of the bump connector
<administratively transferred to [H10W 72/01221](#)>
- D H01L 2224/1131 in liquid form
<administratively transferred to [H10W 72/01223](#)>
- D H01L 2224/11312 Continuous flow, e.g. using a microsyringe, a pump, a nozzle or extrusion
<administratively transferred to [H10W 72/01223](#)>
- D H01L 2224/11318 by dispensing droplets
<administratively transferred to [H10W 72/01223](#)>
- D H01L 2224/1132 Screen-printing, i.e. using a stencil
<administratively transferred to [H10W 72/01223](#)>
- D H01L 2224/1133 in solid form
<administratively transferred to [H10W 72/01225](#)>
- D H01L 2224/11332 using a powder
<administratively transferred to [H10W 72/01225](#)>
- D H01L 2224/11334 using preformed bumps
<administratively transferred to [H10W 72/01225](#)>
- D H01L 2224/1134 Stud bumping, i.e. using a wire-bonding apparatus
<administratively transferred to [H10W 72/01225](#)>
- D H01L 2224/114 by blanket deposition of the material of the bump connector
<administratively transferred to [H10W 72/01231](#)>
- D H01L 2224/1141 in liquid form
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/11416 Spin coating
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/11418 Spray coating
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/1142 Curtain coating
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/11422 by dipping, e.g. in a solder bath
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/11424 Immersion coating, e.g. in a solder bath
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/11426 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/01233](#)>
- D H01L 2224/11428 Wave coating
<administratively transferred to [H10W 72/01233](#)>

- D H01L 2224/1143 in solid form
<administratively transferred to [H10W 72/01236](#)>
- D H01L 2224/11436 Lamination of a preform, e.g. foil, sheet or layer
<administratively transferred to [H10W 72/01236](#)>
- D H01L 2224/11438 the preform being at least partly pre-patterned
<administratively transferred to [H10W 72/01236](#)>
- D H01L 2224/1144 by transfer printing
<administratively transferred to [H10W 72/01236](#)>
- D H01L 2224/11442 using a powder
<administratively transferred to [H10W 72/01236](#)>
- D H01L 2224/11444 in gaseous form
<administratively transferred to [H10W 72/01238](#)>
- D H01L 2224/1145 Physical vapour deposition [PVD], e.g. evaporation, or sputtering
<administratively transferred to [H10W 72/01238](#)>
- D H01L 2224/11452 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01238](#)>
- D H01L 2224/1146 Plating
<administratively transferred to [H10W 72/01235](#)>
- D H01L 2224/11462 Electroplating
<administratively transferred to [H10W 72/01235](#)>
- D H01L 2224/11464 Electroless plating
<administratively transferred to [H10W 72/01235](#)>
- D H01L 2224/11466 Conformal deposition, i.e. blanket deposition of a conformal layer on a patterned surface
<administratively transferred to [H10W 72/01231](#)>
- D H01L 2224/1147 using a lift-off mask
<administratively transferred to [H10W 72/01255](#)>
- D H01L 2224/11472 Profile of the lift-off mask
<administratively transferred to [H10W 72/01255](#)>
- D H01L 2224/11474 Multilayer masks
<administratively transferred to [H10W 72/01255](#)>
- D H01L 2224/1148 Permanent masks, i.e. masks left in the finished device, e.g. passivation layers
<administratively transferred to [H10W 72/01255](#)>
- D H01L 2224/115 by chemical or physical modification of a pre-existing or pre-deposited material
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11502 Pre-existing or pre-deposited material
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11505 Sintering
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/1151 Anodisation
<administratively transferred to [H10W 72/01261](#)>

- D H01L 2224/11515 Curing and solidification, e.g. of a photosensitive bump material
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/1152 Self-assembly, e.g. self-agglomeration of the bump material in a fluid
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11522 Auxiliary means therefor, e.g. for self-assembly activation
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11524 with special adaptation of the surface or of an auxiliary substrate, e.g. surface shape specially adapted for the self-assembly process
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11526 involving the material of the bonding area, e.g. bonding pad or under bump metallisation [UBM]
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/1155 Selective modification
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11552 using a laser or a focussed ion beam [FIB]
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/11554 Stereolithography, i.e. solidification of a pattern defined by a laser trace in a photosensitive resin
<administratively transferred to [H10W 72/01261](#)>
- D H01L 2224/116 by patterning a pre-deposited material
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/11602 Mechanical treatment, e.g. polishing, grinding
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/1161 Physical or chemical etching
<administratively transferred to [H10W 72/01253](#)>
- D H01L 2224/11612 by physical means only
<administratively transferred to [H10W 72/01253](#)>
- D H01L 2224/11614 by chemical means only
<administratively transferred to [H10W 72/01253](#)>
- D H01L 2224/11616 Chemical mechanical polishing [CMP]
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/11618 with selective exposure, development and removal of a photosensitive bump material, e.g. of a photosensitive conductive resin
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/1162 using masks
<administratively transferred to [H10W 72/01255](#)>
- D H01L 2224/11622 Photolithography
<administratively transferred to [H10W 72/01255](#)>
- D H01L 2224/1163 using a laser or a focused ion beam [FIB]
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/11632 Ablation by means of a laser or focused ion beam [FIB]
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/117 involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/012](#)>

- D H01L 2224/118 Post-treatment of the bump connector
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/1181 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/01271](#)>
- D H01L 2224/1182 Applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11821 Spray coating
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11822 by dipping, e.g. in a solder bath
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11823 Immersion coating, e.g. in a solder bath
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11824 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11825 Plating, e.g. electroplating, electroless plating
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11826 Physical vapour deposition [PVD], e.g. evaporation, or sputtering
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/11827 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01215](#)>
- D H01L 2224/1183 Reworking, e.g. shaping
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/11831 involving a chemical process, e.g. etching the bump connector
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/1184 involving a mechanical process, e.g. planarising the bump connector
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/11845 Chemical mechanical polishing [CMP]
<administratively transferred to [H10W 72/01251](#)>
- D H01L 2224/11848 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/01265](#)>
- D H01L 2224/11849 Reflowing
<administratively transferred to [H10W 72/01257](#)>
- D H01L 2224/119 Methods of manufacturing bump connectors involving a specific sequence of method steps
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11901 with repetition of the same manufacturing step
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11902 Multiple masking steps
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11903 using different masks
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11906 with modification of the same mask
<administratively transferred to [H10W 72/012](#)>

- D H01L 2224/1191 Forming a passivation layer after forming the bump connector
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11912 the bump being used as a mask for patterning other parts
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11914 the under bump metallisation [UBM] being used as a mask for patterning other parts
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/11916 a passivation layer being used as a mask for patterning other parts
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/12 . . . Structure, shape, material or disposition of the bump connectors prior to the connecting process
<administratively transferred to [H10W 72/20](#)>
- D H01L 2224/12105 Bump connectors formed on an encapsulation of the semiconductor or solid-state body, e.g. bumps on chip-scale packages
<administratively transferred to [H10W 72/241](#)>
- D H01L 2224/13 of an individual bump connector
<administratively transferred to [H10W 72/20](#)>
- D H01L 2224/13001 Core members of the bump connector
<administratively transferred to [H10W 72/20](#)>
- D H01L 2224/13005 Structure
<administratively transferred to [H10W 72/221](#)>
- D H01L 2224/13006 Bump connector larger than the underlying bonding area, e.g. than the under bump metallisation [UBM]
<administratively transferred to [H10W 72/221](#)>
- D H01L 2224/13007 Bump connector smaller than the underlying bonding area, e.g. than the under bump metallisation [UBM]
<administratively transferred to [H10W 72/221](#)>
- D H01L 2224/13008 Bump connector integrally formed with a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/221](#)>
- D H01L 2224/13009 Bump connector integrally formed with a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/221](#)>
- D H01L 2224/1301 Shape
<administratively transferred to [H10W 72/231](#)>
- D H01L 2224/13011 comprising apertures or cavities, e.g. hollow bump
<administratively transferred to [H10W 72/231](#)>
- D H01L 2224/13012 in top view
<administratively transferred to [H10W 72/232](#)>
- D H01L 2224/13013 being rectangular or square
<administratively transferred to [H10W 72/232](#)>
- D H01L 2224/13014 being circular or elliptic
<administratively transferred to [H10W 72/232](#)>
- D H01L 2224/13015 comprising protrusions or indentations
<administratively transferred to [H10W 72/232](#)>

- D H01L 2224/13016 in-side-view
<administratively transferred to [H10W 72/234](#)>
- D H01L 2224/13017 being non-uniform along the bump connector
<administratively transferred to [H10W 72/234](#)>
- D H01L 2224/13018 comprising protrusions or indentations
<administratively transferred to [H10W 72/234](#)>
- D H01L 2224/13019 at the bonding interface of the bump connector, i.e. on the surface of the bump connector
<administratively transferred to [H10W 72/234](#)>
- D H01L 2224/1302 Disposition
<administratively transferred to [H10W 72/241](#)>
- D H01L 2224/13021 the bump connector being disposed in a recess of the surface
<administratively transferred to [H10W 72/242](#)>
- D H01L 2224/13022 the bump connector being at least partially embedded in the surface
<administratively transferred to [H10W 72/242](#)>
- D H01L 2224/13023 the whole bump connector protruding from the surface
<administratively transferred to [H10W 72/242](#)>
- D H01L 2224/13024 the bump connector being disposed on a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/244](#)>
- D H01L 2224/13025 the bump connector being disposed on a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/244](#)>
- D H01L 2224/13026 relative to the bonding area, e.g. bond pad, of the semiconductor or solid-state body
<administratively transferred to [H10W 72/244](#)>
- D H01L 2224/13027 the bump connector being offset with respect to the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/244](#)>
- D H01L 2224/13028 the bump connector being disposed on at least two separate bonding areas, e.g. bond pads
<administratively transferred to [H10W 72/244](#)>
- D H01L 2224/13075 Plural core members
<administratively transferred to [H10W 72/224](#)>
- D H01L 2224/13076 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/224](#)>
- D H01L 2224/13078 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/224](#)>
- D H01L 2224/1308 being stacked
<administratively transferred to [H10W 72/222](#)>
- D H01L 2224/13082 Two-layer arrangements
<administratively transferred to [H10W 72/222](#)>
- D H01L 2224/13083 Three-layer arrangements
<administratively transferred to [H10W 72/222](#)>

- D H01L 2224/13084 Four-layer arrangements
<administratively transferred to [H10W 72/222](#)>
- D H01L 2224/13099 Material
<administratively transferred to [H10W 72/251](#)>
- D H01L 2224/131 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13101 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13105 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13109 Indium [In] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13111 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13113 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13114 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13116 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13117 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13118 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/1312 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13123 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13124 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13138 the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13139 Silver [Ag] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13144 Gold [Au] as principal constituent
<administratively transferred to [H10W 72/252](#)>
- D H01L 2224/13147 Copper [Cu] as principal constituent
<administratively transferred to [H10W 72/252](#)>

D	H01L 2224/13149	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13155	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13157	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/1316	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13163	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/252 >
D	H01L 2224/13164	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13166	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13169	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/1317	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13171	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13172	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13173	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13176	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13178	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13179	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/1318	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13181	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13183	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13184	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/252 >
D	H01L 2224/13186	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/253 >

- D H01L 2224/13187 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/13188 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/1319 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/13191 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/13193 with a principal constituent of the material being a solid not provided for in groups H01L 2224/131 – H01L 2224/13191, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/13194 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/131 – H01L 2224/13191
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/13195 with a principal constituent of the material being a gas not provided for in groups H01L 2224/131 – H01L 2224/13191
<administratively transferred to [H10W 72/253](#)>
- D H01L 2224/13198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/13199 Material of the matrix
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/132 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13201 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13205 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13209 Indium [In] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13211 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13213 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>

D	H01L 2224/13214	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13216	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13217	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13218	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1322	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13223	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13224	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13238	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13239	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13244	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13247	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13249	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13255	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13257	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1326	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >

D	H01L 2224/13263	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13264	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13266	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13269	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1327	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13271	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13272	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13273	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13276	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13278	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13279	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1328	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13281	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13283	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13284	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >

- D H01L 2224/13286 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13287 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13288 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/1329 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13291 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13293 with a principal constituent of the material being a solid not provided for in groups H01L 2224/132 - H01L 2224/13291, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13294 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/132 - H01L 2224/13291
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13295 with a principal constituent of the material being a gas not provided for in groups H01L 2224/132 - H01L 2224/13291
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13298 Fillers
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/13299 Base material
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/133 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/13301 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13305 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>

D	H01L 2224/13309	. . . . .	Indium [In] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13311	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13313	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13314	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13316	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13317	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13318	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1332	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13323	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13324	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13338	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13339	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13344	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13347	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13349	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >

D	H01L 2224/13355	• • • • •	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13357	• • • • •	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1336	• • • • •	Iron [Fe] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13363	• • • • •	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13364	• • • • •	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13366	• • • • •	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13369	• • • • •	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1337	• • • • •	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13371	• • • • •	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13372	• • • • •	Vanadium [V] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13373	• • • • •	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13376	• • • • •	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13378	• • • • •	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13379	• • • • •	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1338	• • • • •	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >

- D H01L 2224/13381 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13383 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13384 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13386 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13387 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13388 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/1339 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13391 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13393 with a principal constituent of the material being a solid not provided for in groups H01L 2224/133 – H01L 2224/13391, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13394 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/133 – H01L 2224/13391
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13395 with a principal constituent of the material being a gas not provided for in groups H01L 2224/133 – H01L 2224/13391
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13398 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/13399 Coating material
<administratively transferred to [H10W 72/225](#)>

D	H01L 2224/134	with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/225 >
D	H01L 2224/13401	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13405	Gallium [Ga] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13409	Indium [In] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13411	Tin [Sn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13413	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13414	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13416	Lead [Pb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13417	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13418	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1342	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13423	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13424	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13438	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/225 and H10W 72/252 >

D	H01L 2224/13439	. . . . .	• Silver [Ag] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13444	. . . . .	• Gold [Au] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13447	. . . . .	• Copper [Cu] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13449	. . . . .	• Manganese [Mn] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13455	. . . . .	• Nickel [Ni] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13457	. . . . .	• Cobalt [Co] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1346	. . . . .	• Iron [Fe] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13463	. . . . .	• the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13464	. . . . .	• Palladium [Pd] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13466	. . . . .	• Titanium [Ti] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13469	. . . . .	• Platinum [Pt] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/1347	. . . . .	• Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13471	. . . . .	• Chromium [Cr] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13472	. . . . .	• Vanadium [V] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >
D	H01L 2224/13473	. . . . .	• Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/225 and H10W 72/252 >

- D H01L 2224/13476 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13478 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13479 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/1348 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13481 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13483 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13484 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/225](#) and [H10W 72/252](#)>
- D H01L 2224/13486 with a principal constituent of the material being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/1349 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/134 - H01L 2224/13491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/134 - H01L 2224/13491
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>

- D H01L 2224/13495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/134 - H01L 2224/13494
<administratively transferred to [H10W 72/225](#) and [H10W 72/253](#)>
- D H01L 2224/13498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/13499 Shape or distribution of the fillers
<administratively transferred to [H10W 72/225](#)>
- D H01L 2224/1354 Coating
<administratively transferred to [H10W 72/222](#)>
- D H01L 2224/13541 Structure
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/1355 Shape
<administratively transferred to [H10W 72/235](#)>
- D H01L 2224/13551 being non-uniform
<administratively transferred to [H10W 72/235](#)>
- D H01L 2224/13552 comprising protrusions or indentations
<administratively transferred to [H10W 72/235](#)>
- D H01L 2224/13553 at the bonding interface of the bump connector, i.e. on the surface of the bump connector
<administratively transferred to [H10W 72/235](#)>
- D H01L 2224/1356 Disposition
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/13561 On the entire surface of the core, i.e. integral coating
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/13562 On the entire exposed surface of the core
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/13563 Only on parts of the surface of the core, i.e. partial coating
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/13564 Only on the bonding interface of the bump connector
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/13565 Only outside the bonding interface of the bump connector
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/13566 Both on and outside the bonding interface of the bump connector
<administratively transferred to [H10W 72/245](#)>
- D H01L 2224/1357 Single coating layer
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/13575 Plural coating layers
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/13576 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/223](#)>

- D H01L 2224/13578 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/1358 being stacked
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/13582 Two-layer coating
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/13583 Three-layer coating
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/13584 Four-layer coating
<administratively transferred to [H10W 72/223](#)>
- D H01L 2224/13599 Material
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/136 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13605 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13609 Indium [In] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13611 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13613 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13614 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13616 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13617 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13618 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/1362 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13623 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13624 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 72/255](#)>

D	H01L 2224/13638	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13639	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13644	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13647	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13649	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13655	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13657	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1366	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13664	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13666	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13669	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1367	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13671	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13672	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13673	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13676	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13678	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13679	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1368	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/255 >

- D H01L 2224/13681 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13683 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13684 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13686 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13687 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/1369 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/136 – H01L 2224/13691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/136 – H01L 2224/13691
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/136 – H01L 2224/13691
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13699 Material of the matrix
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/137 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13705 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/255](#)>

D	H01L 2224/13709	. . . . . Indium [In] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13711	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13713	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13714	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13716	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13717	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13718	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1372	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13723	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13724	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13738	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13739	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13744	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13747	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13749	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13755	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13757	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1376	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13763	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13764	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/255 >

D	H01L 2224/13766	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13769	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1377	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13771	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13772	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13773	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13776	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13778	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13779	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1378	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13781	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13783	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13784	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13786	. . . . . with a principal constituent of the material being a non-metallic, non-metallloid inorganic material <administratively transferred to H10W 72/255 >
D	H01L 2224/13787	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/255 >
D	H01L 2224/13788	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/255 >
D	H01L 2224/1379	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/255 >
D	H01L 2224/13791	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/255 >
D	H01L 2224/13793	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/137 - H01L 2224/13791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/255 >

D	H01L 2224/13794	. . . . .	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/137 - H01L 2224/13791 <administratively transferred to H10W 72/255 >
D	H01L 2224/13795	. . . . .	with a principal constituent of the material being a gas not provided for in groups H01L 2224/137 - H01L 2224/13791 <administratively transferred to H10W 72/255 >
D	H01L 2224/13798	. . . . .	Fillers <administratively transferred to H10W 72/255 >
D	H01L 2224/13799	. . . . .	Base material <administratively transferred to H10W 72/255 >
D	H01L 2224/138	. . . . .	with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/255 >
D	H01L 2224/13801	. . . . .	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13805	. . . . .	Gallium [Ga] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13809	. . . . .	Indium [In] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13811	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13813	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13814	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13816	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13817	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13818	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1382	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13823	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13824	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13838	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/255 >

D	H01L 2224/13839	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13844	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13847	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13849	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13855	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13857	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1386	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13863	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13864	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13866	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13869	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1387	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13871	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13872	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13873	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13876	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13878	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13879	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1388	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13881	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13883	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/255 >

- D H01L 2224/13884 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13886 with a principal constituent of the material being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13887 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13888 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/1389 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13891 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13893 with a principal constituent of the material being a solid not provided for in groups H01L 2224/138 - H01L 2224/13891, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13894 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/138 - H01L 2224/13891
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13895 with a principal constituent of the material being a gas not provided for in groups H01L 2224/138 - H01L 2224/13891
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13898 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13899 Coating material
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/139 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13901 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13905 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13909 Indium [In] as principal constituent
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13911 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/255](#)>

D	H01L 2224/13913	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13914	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13916	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13917	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13918	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1392	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13923	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13924	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13938	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13939	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13944	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13947	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13949	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13955	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13957	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1396	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13963	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/255 >
D	H01L 2224/13964	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13966	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13969	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/255 >

D	H01L 2224/1397	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13971	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13972	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13973	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13976	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13978	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13979	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/1398	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13981	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13983	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13984	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/255 >
D	H01L 2224/13986	. . . . . with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/255 >
D	H01L 2224/13987	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/255 >
D	H01L 2224/13988	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/255 >
D	H01L 2224/1399	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/255 >
D	H01L 2224/13991	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/255 >
D	H01L 2224/13993	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/139 - H01L 2224/13991, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/255 >
D	H01L 2224/13994	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/139 - H01L 2224/13991 <administratively transferred to H10W 72/255 >

- D H01L 2224/13995 with a principal constituent of the material being a gas not provided for in groups H01L 2224/139 – H01L 2224/13994
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13998 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/13999 Shape or distribution of the fillers
<administratively transferred to [H10W 72/255](#)>
- D H01L 2224/14 of a plurality of bump connectors
<administratively transferred to [H10W 72/20](#)>
- D H01L 2224/1401 Structure
<administratively transferred to [H10W 72/228](#)>
- D H01L 2224/1403 Bump connectors having different sizes, e.g. different diameters, heights or widths
<administratively transferred to [H10W 72/227](#)>
- D H01L 2224/1405 Shape
<administratively transferred to [H10W 72/231](#)>
- D H01L 2224/14051 Bump connectors having different shapes
<administratively transferred to [H10W 72/237](#)>
- D H01L 2224/141 Disposition
<administratively transferred to [H10W 72/247](#)>
- D H01L 2224/14104 relative to the bonding areas, e.g. bond pads, of the semiconductor or solid-state body
<administratively transferred to [H10W 72/244](#) and [H10W 72/247](#)>
- D H01L 2224/1411 the bump connectors being bonded to at least one common bonding area
<administratively transferred to [H10W 72/244](#) and [H10W 72/247](#)>
- D H01L 2224/1412 Layout
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/1413 Square or rectangular array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14131 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14132 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14133 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14134 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14135 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/248](#)>

- D H01L 2224/14136 Covering only the central area of the surface to be connected;
i.e. central arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/1414 Circular array, i.e. array with radial symmetry
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14141 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14142 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14143 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14144 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14145 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14146 Covering only the central area of the surface to be connected;
i.e. central arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/1415 Mirror array, i.e. array having only a reflection symmetry, i.e. bilateral symmetry
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14151 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14152 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14153 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14154 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14155 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14156 Covering only the central area of the surface to be connected;
i.e. central arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/1416 Random layout, i.e. layout with no symmetry
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14163 with a staggered arrangement
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14164 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/248](#)>

- D H01L 2224/14165 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14166 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14177 Combinations of arrays with different layouts
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14179 Corner adaptations, i.e. disposition of the bump connectors at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/1418 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14181 On opposite sides of the body
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14183 On contiguous sides of the body
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/145 Material
<administratively transferred to [H10W 72/248](#)>
- D H01L 2224/14505 Bump connectors having different materials
<administratively transferred to [H10W 72/257](#)>
- D H01L 2224/1451 Function
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/14515 Bump connectors having different functions
<administratively transferred to [H10W 72/267](#)>
- D H01L 2224/14517 including bump connectors providing primarily mechanical bonding
<administratively transferred to [H10W 72/267](#) and [H10W 72/263](#)>
- D H01L 2224/14519 including bump connectors providing primarily thermal dissipation
<administratively transferred to [H10W 72/267](#) and [H10W 72/265](#)>
- D H01L 2224/15 Structure, shape, material or disposition of the bump connectors after the connecting process
<administratively transferred to [H10W 72/07251](#) and [H10W 72/20](#)>
- D H01L 2224/16 of an individual bump connector
<administratively transferred to [H10W 72/07251](#) and [H10W 72/20](#)>
- D H01L 2224/1601 Structure
<administratively transferred to [H10W 72/07252](#) and [H10W 72/221](#)>
- D H01L 2224/16012 relative to the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/07252](#) and [H10W 72/221](#)>
- D H01L 2224/16013 the bump connector being larger than the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/07252](#) and [H10W 72/221](#)>
- D H01L 2224/16014 the bump connector being smaller than the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/07252](#) and [H10W 72/221](#)>

- D H01L 2224/1605 Shape
<administratively transferred to [H10W 72/07253](#) and [H10W 72/231](#)>
- D H01L 2224/16052 in top view
<administratively transferred to [H10W 72/07253](#) and [H10W 72/232](#)>
- D H01L 2224/16054 being rectangular or square
<administratively transferred to [H10W 72/07253](#) and [H10W 72/232](#)>
- D H01L 2224/16055 being circular or elliptic
<administratively transferred to [H10W 72/07253](#) and [H10W 72/232](#)>
- D H01L 2224/16056 comprising protrusions or indentations
<administratively transferred to [H10W 72/07253](#) and [H10W 72/232](#)>
- D H01L 2224/16057 in side view
<administratively transferred to [H10W 72/07253](#) and [H10W 72/234](#)>
- D H01L 2224/16058 being non-uniform along the bump connector
<administratively transferred to [H10W 72/07253](#) and [H10W 72/234](#)>
- D H01L 2224/16059 comprising protrusions or indentations
<administratively transferred to [H10W 72/07253](#) and [H10W 72/234](#)>
- D H01L 2224/1607 of bonding interfaces, e.g. interlocking features
<administratively transferred to [H10W 72/07253](#) and [H10W 72/234](#)>
- D H01L 2224/161 Disposition
<administratively transferred to [H10W 72/07254](#) and [H10W 72/241](#)>
- D H01L 2224/16104 relative to the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/07254](#) and [H10W 72/244](#)>
- D H01L 2224/16105 the bump connector connecting bonding areas being not aligned with respect to each other
<administratively transferred to [H10W 72/07254](#) and [H10W 72/244](#)>
- D H01L 2224/16106 the bump connector connecting one bonding area to at least two respective bonding areas
<administratively transferred to [H10W 72/07254](#) and [H10W 72/244](#)>
- D H01L 2224/16108 the bump connector not being orthogonal to the surface
<administratively transferred to [H10W 72/07254](#) and [H10W 72/242](#)>
- D H01L 2224/16111 the bump connector being disposed in a recess of the surface
<administratively transferred to [H10W 72/07254](#) and [H10W 72/242](#)>
- D H01L 2224/16112 the bump connector being at least partially embedded in the surface
<administratively transferred to [H10W 72/07254](#) and [H10W 72/242](#)>
- D H01L 2224/16113 the whole bump connector protruding from the surface
<administratively transferred to [H10W 72/07254](#) and [H10W 72/242](#)>
- D H01L 2224/1613 the bump connector connecting within a semiconductor or solid-state body, i.e. connecting two bonding areas on the same semiconductor or solid-state body
<administratively transferred to [H10W 72/07254](#) and [H10W 72/242](#)>
- D H01L 2224/16135 the bump connector connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
<administratively transferred to [H10W 90/721](#)>

- D H01L 2224/16137 the bodies being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/723](#)>
- D H01L 2224/16141 the bodies being arranged on opposite sides of a substrate, e.g. mirror arrangements
<administratively transferred to [H10W 90/721](#)>
- D H01L 2224/16145 the bodies being stacked
<administratively transferred to [H10W 90/722](#)>
- D H01L 2224/16146 the bump connector connecting to a via connection in the semiconductor or solid-state body
<administratively transferred to [H10W 90/722](#)>
- D H01L 2224/16147 the bump connector connecting to a bonding area disposed in a recess of the surface
<administratively transferred to [H10W 90/722](#)>
- D H01L 2224/16148 the bump connector connecting to a bonding area protruding from the surface
<administratively transferred to [H10W 90/722](#)>
- D H01L 2224/16151 the bump connector connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
<administratively transferred to [H10W 90/721](#)>
- D H01L 2224/16153 the body and the item being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/721](#)>
- D H01L 2224/16155 the item being non-metallic, e.g. being an insulating substrate with or without metallisation
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/16157 the bump connector connecting to a bond pad of the item
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/1616 the bump connector connecting to a pin of the item
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/16163 the bump connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/16165 the bump connector connecting to a via metallisation of the item
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/16167 the bump connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/16168 the bump connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/725](#)>
- D H01L 2224/16175 the item being metallic
<administratively transferred to [H10W 90/727](#)>
- D H01L 2224/16183 the bump connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/727](#)>

- D H01L 2224/16187 the bump connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/727](#)>
- D H01L 2224/16188 the bump connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/727](#)>
- D H01L 2224/16195 the item being a discrete passive component
<administratively transferred to [H10W 90/729](#)>
- D H01L 2224/16197 the bump connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/729](#)>
- D H01L 2224/16198 the bump connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/729](#)>
- D H01L 2224/16221 the body and the item being stacked
<administratively transferred to [H10W 90/721](#)>
- D H01L 2224/16225 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/16227 the bump connector connecting to a bond pad of the item
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/1623 the bump connector connecting to a pin of the item
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/16233 the bump connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/16235 the bump connector connecting to a via metallisation of the item
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/16237 the bump connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/16238 the bump connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/1624 the bump connector connecting between the body and an opposite side of the item with respect to the body
<administratively transferred to [H10W 90/724](#)>
- D H01L 2224/16245 the item being metallic
<administratively transferred to [H10W 90/726](#)>
- D H01L 2224/16253 the bump connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/726](#)>
- D H01L 2224/16257 the bump connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/726](#)>
- D H01L 2224/16258 the bump connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/726](#)>

- D H01L 2224/1626 the bump connector connecting between the body and an opposite side of the item with respect to the body
<administratively transferred to [H10W 90/726](#)>
- D H01L 2224/16265 the item being a discrete passive component
<administratively transferred to [H10W 90/728](#)>
- D H01L 2224/16267 the bump connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/728](#)>
- D H01L 2224/16268 the bump connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/728](#)>
- D H01L 2224/165 Material
<administratively transferred to [H10W 72/07255](#) and [H10W 72/251](#)>
- D H01L 2224/16501 at the bonding interface
<administratively transferred to [H10W 72/07255](#) and [H10W 72/251](#)>
- D H01L 2224/16502 comprising an eutectic alloy
<administratively transferred to [H10W 72/07255](#) and [H10W 72/2524](#)>
- D H01L 2224/16503 comprising an intermetallic compound
<administratively transferred to [H10W 72/07255](#) and [H10W 72/2528](#)>
- D H01L 2224/16505 outside the bonding interface, e.g. in the bulk of the bump connector
<administratively transferred to [H10W 72/07255](#) and [H10W 72/251](#)>
- D H01L 2224/16506 comprising an eutectic alloy
<administratively transferred to [H10W 72/07255](#) and [H10W 72/2524](#)>
- D H01L 2224/16507 comprising an intermetallic compound
<administratively transferred to [H10W 72/07255](#) and [H10W 72/2528](#)>
- D H01L 2224/17 of a plurality of bump connectors
<administratively transferred to [H10W 72/07251](#) and [H10W 72/20](#)>
- D H01L 2224/1701 Structure
<administratively transferred to [H10W 72/07252](#) and [H10W 72/228](#)>
- D H01L 2224/1703 Bump connectors having different sizes, e.g. different diameters, heights or widths
<administratively transferred to [H10W 72/07252](#) and [H10W 72/227](#)>
- D H01L 2224/1705 Shape
<administratively transferred to [H10W 72/231](#) and [H10W 72/07253](#)>
- D H01L 2224/17051 Bump connectors having different shapes
<administratively transferred to [H10W 72/237](#) and [H10W 72/07253](#)>
- D H01L 2224/17055 of their bonding interfaces
<administratively transferred to [H10W 72/237](#) and [H10W 72/07253](#)>
- D H01L 2224/171 Disposition
<administratively transferred to [H10W 72/07254](#) and [H10W 72/247](#)>

- D H01L 2224/17104 relative to the bonding areas, e.g. bond pads
<administratively transferred to [H10W 72/07254](#), [H10W 72/244](#), and [H10W 72/247](#) simultaneously>
- D H01L 2224/17106 the bump connectors being bonded to at least one common bonding area
<administratively transferred to [H10W 72/07254](#), [H10W 72/244](#), and [H10W 72/247](#) simultaneously>
- D H01L 2224/17107 the bump connectors connecting two common bonding areas
<administratively transferred to [H10W 72/07254](#), [H10W 72/244](#), and [H10W 72/247](#) simultaneously>
- D H01L 2224/1712 Layout
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/1713 Square or rectangular array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17132 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17133 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17134 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17135 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17136 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/1714 Circular array, i.e. array with radial symmetry
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17142 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17143 with a staggered arrangement
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17144 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17145 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>

- D H01L 2224/17146 Covering only the central area of the surface to be connected; i.e. central arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/1715 Mirror array, i.e. array having only a reflection symmetry, i.e. bilateral symmetry
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17151 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17152 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17153 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17154 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17155 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17156 Covering only the central area of the surface to be connected; i.e. central arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/1716 Random layout, i.e. layout with no symmetry
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17163 with a staggered arrangement
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17164 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17165 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17166 Covering only the central area of the surface to be connected; i.e. central arrangements
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/17177 Combinations of arrays with different layouts
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>

- D H01L 2224/17179 Corner adaptations, i.e. disposition of the bump connectors at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/07254](#) and [H10W 72/248](#)>
- D H01L 2224/1718 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/07254](#) and [H10W 72/247](#)>
- D H01L 2224/17181 On opposite sides of the body
<administratively transferred to [H10W 72/07254](#) and [H10W 72/247](#)>
- D H01L 2224/17183 On contiguous sides of the body
<administratively transferred to [H10W 72/07254](#) and [H10W 72/247](#)>
- D H01L 2224/175 Material
<administratively transferred to [H10W 72/07255](#) and [H10W 72/257](#)>
- D H01L 2224/17505 Bump connectors having different materials
<administratively transferred to [H10W 72/07255](#) and [H10W 72/257](#)>
- D H01L 2224/1751 Function
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/17515 Bump connectors having different functions
<administratively transferred to [H10W 72/267](#)>
- D H01L 2224/17517 including bump connectors providing primarily mechanical support
<administratively transferred to [H10W 72/267](#) and [H10W 72/263](#)>
- D H01L 2224/17519 including bump connectors providing primarily thermal dissipation
<administratively transferred to [H10W 72/267](#) and [H10W 72/265](#)>
- D H01L 2224/18 High density interconnect [HDI] connectors; Manufacturing methods related thereto
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/19 Manufacturing methods of high density interconnect preforms
<administratively transferred to [H10W 70/09](#)>
- D H01L 2224/20 Structure, shape, material or disposition of high density interconnect preforms
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/21 of an individual HDI interconnect
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/2101 Structure
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/2105 Shape
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/211 Disposition
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/214 Connecting portions
<administratively transferred to [H10W 70/6528](#)>
- D H01L 2224/215 Material
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/22 of a plurality of HDI interconnects
<administratively transferred to [H10W 70/60](#)>

D	H01L 2224/2201	. . . . . Structure <administratively transferred to H10W 70/60 >
D	H01L 2224/2205	. . . . . Shape <administratively transferred to H10W 70/60 >
D	H01L 2224/221	. . . . . Disposition <administratively transferred to H10W 70/60 >
D	H01L 2224/224	. . . . . Connecting portions <administratively transferred to H10W 70/6528 >
D	H01L 2224/225	. . . . . Material <administratively transferred to H10W 70/60 >
D	H01L 2224/22505	. . . . . HDI interconnects having different materials <administratively transferred to H10W 70/60 >
D	H01L 2224/23	. . . Structure, shape, material or disposition of the high-density interconnect connectors after the connecting process <administratively transferred to H10W 70/60 >
D	H01L 2224/24	. . . . of an individual high-density interconnect connector <administratively transferred to H10W 70/60 >
D	H01L 2224/2401	. . . . . Structure <administratively transferred to H10W 70/60 >
D	H01L 2224/24011	. . . . . Deposited, e.g. MCM-D type <administratively transferred to H10W 70/60 >
D	H01L 2224/2402	. . . . . Laminated, e.g. MCM-L type <administratively transferred to H10W 70/60 >
D	H01L 2224/2405	. . . . . Shape <administratively transferred to H10W 70/60 >
D	H01L 2224/24051	. . . . . Conformal with the semiconductor or solid-state device <administratively transferred to H10W 70/60 >
D	H01L 2224/241	. . . . . Disposition <administratively transferred to H10W 70/60 >
D	H01L 2224/24101	. . . . . Connecting bonding areas at the same height <administratively transferred to H10W 70/60 >
D	H01L 2224/24105	. . . . . Connecting bonding areas at different heights <administratively transferred to H10W 70/6523 >
D	H01L 2224/2413	. . . . . Connecting within a semiconductor or solid-state body <administratively transferred to H10W 70/60 >
D	H01L 2224/24135	. . . . . Connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip <administratively transferred to H10W 90/00 >
D	H01L 2224/24137	. . . . . the bodies being arranged next to each other, e.g. on a common substrate <administratively transferred to H10W 90/10 >
D	H01L 2224/24141	. . . . . the bodies being arranged on opposite sides of a substrate, e.g. mirror arrangements <administratively transferred to H10W 90/20 >

- D H01L 2224/24145 the bodies being stacked
<administratively transferred to [H10W 90/22](#)>
- D H01L 2224/24146 the HDI interconnect connecting to the same level of the lower semiconductor or solid-state body at which the upper semiconductor or solid-state body is mounted
<administratively transferred to [H10W 90/22](#)>
- D H01L 2224/24147 the HDI interconnect not connecting to the same level of the lower semiconductor or solid-state body at which the upper semiconductor or solid-state body is mounted, e.g. the upper semiconductor or solid-state body being mounted in a cavity or on a protrusion of the lower semiconductor or solid-state body
<administratively transferred to [H10W 90/22](#)>
- D H01L 2224/24151 Connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24153 the body and the item being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24155 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24175 the item being metallic
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24195 the item being a discrete passive component
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24221 the body and the item being stacked
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24225 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24226 the HDI interconnect connecting to the same level of the item at which the semiconductor or solid-state body is mounted, e.g. the item being planar
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24227 the HDI interconnect not connecting to the same level of the item at which the semiconductor or solid-state body is mounted, e.g. the semiconductor or solid-state body being mounted in a cavity or on a protrusion of the item
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24245 the item being metallic
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24246 the HDI interconnect connecting to the same level of the item at which the semiconductor or solid-state body is mounted, e.g. the item being planar
<administratively transferred to [H10W 90/00](#)>

- D H01L 2224/24247 the HDI interconnect not connecting to the same level of the item at which the semiconductor or solid-state body is mounted, e.g. the semiconductor or solid-state body being mounted in a cavity or on a protrusion of the item
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/24265 the item being a discrete passive component
<administratively transferred to [H10W 90/00](#)>
- D H01L 2224/244 Connecting portions
<administratively transferred to [H10W 70/6528](#)>
- D H01L 2224/245 Material
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/2499 Auxiliary members for HDI interconnects, e.g. spacers, alignment aids
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/24991 being formed on the semiconductor or solid-state body to be connected
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/24992 Flow barrier
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/24996 being formed on an item to be connected not being a semiconductor or solid-state body
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/24997 Flow barrier
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/24998 Reinforcing structures, e.g. ramp-like support
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/25 of a plurality of high-density interconnect connectors
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/2501 Structure
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/2505 Shape
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/251 Disposition
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/25105 Connecting at different heights
<administratively transferred to [H10W 70/6523](#)>
- D H01L 2224/2511 the connectors being bonded to at least one common bonding area
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/25111 the connectors connecting two common bonding areas
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/25112 the connectors connecting a common bonding area on the semiconductor or solid-state body to different bonding areas outside the body
<administratively transferred to [H10W 70/60](#)>

- D H01L 2224/25113 the connectors connecting different bonding areas on the semiconductor or solid-state body to a common bonding area outside the body
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/2512 Layout
<administratively transferred to [H10W 70/654](#)>
- D H01L 2224/25171 Fan-out arrangements
<administratively transferred to [H10W 70/655](#)>
- D H01L 2224/25174 Stacked arrangements
<administratively transferred to [H10W 70/654](#)>
- D H01L 2224/25175 Parallel arrangements
<administratively transferred to [H10W 70/654](#)>
- D H01L 2224/25177 Combinations of a plurality of arrangements
<administratively transferred to [H10W 70/654](#)>
- D H01L 2224/2518 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 70/60](#)>
- D H01L 2224/254 Connecting portions
<administratively transferred to [H10W 70/6528](#)>
- D H01L 2224/2541 the connecting portions being stacked
<administratively transferred to [H10W 70/6528](#)>
- D H01L 2224/2543 the connecting portions being staggered
<administratively transferred to [H10W 70/6528](#)>
- D H01L 2224/255 Material
<administratively transferred to [H10W 70/65](#)>
- D H01L 2224/26 . . . Layer connectors, e.g. plate connectors, solder or adhesive layers; Manufacturing methods related thereto
<administratively transferred to [H10W 72/30](#)>
- D H01L 2224/2612 . . . Auxiliary members for layer connectors, e.g. spacers
<administratively transferred to [H10W 72/381](#)>
- D H01L 2224/26122 . . . being formed on the semiconductor or solid-state body to be connected
<administratively transferred to [H10W 72/381](#)>
- D H01L 2224/26125 . . . Reinforcing structures
<administratively transferred to [H10W 72/383](#)>
- D H01L 2224/26135 . . . Alignment aids
<administratively transferred to [H10W 72/385](#)>
- D H01L 2224/26145 . . . Flow barriers
<administratively transferred to [H10W 72/387](#)>
- D H01L 2224/26152 . . . being formed on an item to be connected not being a semiconductor or solid-state body
<administratively transferred to [H10W 72/381](#)>
- D H01L 2224/26155 . . . Reinforcing structures
<administratively transferred to [H10W 72/383](#)>

- D H01L 2224/26165 Alignment aids
<administratively transferred to [H10W 72/385](#)>
- D H01L 2224/26175 Flow barriers
<administratively transferred to [H10W 72/387](#)>
- D H01L 2224/27 . . . Manufacturing methods
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27001 Involving a temporary auxiliary member not forming part of the manufacturing apparatus, e.g. removable or sacrificial coating, film or substrate
<administratively transferred to [H10W 72/01304](#)>
- D H01L 2224/27002 for supporting the semiconductor or solid-state body
<administratively transferred to [H10W 72/01304](#)>
- D H01L 2224/27003 for holding or transferring the layer preform
<administratively transferred to [H10W 72/01304](#)>
- D H01L 2224/27005 for aligning the layer connector, e.g. marks, spacers
<administratively transferred to [H10W 72/01304](#)>
- D H01L 2224/27009 for protecting parts during manufacture
<administratively transferred to [H10W 72/01304](#)>
- D H01L 2224/27011 Involving a permanent auxiliary member, i.e. a member which is left at least partly in the finished device, e.g. coating, dummy feature
<administratively transferred to [H10W 72/01308](#)>
- D H01L 2224/27013 for holding or confining the layer connector, e.g. solder flow barrier
<administratively transferred to [H10W 72/01308](#)>
- D H01L 2224/27015 for aligning the layer connector, e.g. marks, spacers
<administratively transferred to [H10W 72/01308](#)>
- D H01L 2224/27019 for protecting parts during the process
<administratively transferred to [H10W 72/01308](#)>
- D H01L 2224/271 Manufacture and pre-treatment of the layer connector preform
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/2711 Shaping
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/2712 Applying permanent coating
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/273 by local deposition of the material of the layer connector
<administratively transferred to [H10W 72/01321](#)>
- D H01L 2224/2731 in liquid form
<administratively transferred to [H10W 72/01323](#)>
- D H01L 2224/27312 Continuous flow, e.g. using a microsyringe, a pump, a nozzle or extrusion
<administratively transferred to [H10W 72/01323](#)>
- D H01L 2224/27318 by dispensing droplets
<administratively transferred to [H10W 72/01323](#)>
- D H01L 2224/2732 Screen-printing, i.e. using a stencil
<administratively transferred to [H10W 72/01323](#)>

- D H01L 2224/2733 in solid form
<administratively transferred to [H10W 72/01325](#)>
- D H01L 2224/27332 using a powder
<administratively transferred to [H10W 72/01325](#)>
- D H01L 2224/27334 using preformed layer
<administratively transferred to [H10W 72/01325](#)>
- D H01L 2224/274 by blanket deposition of the material of the layer connector
<administratively transferred to [H10W 72/01331](#)>
- D H01L 2224/2741 in liquid form
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/27416 Spin-coating
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/27418 Spray coating
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/2742 Curtain-coating
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/27422 by dipping, e.g. in a solder bath
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/27424 Immersion coating, e.g. in a solder bath
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/27426 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/27428 Wave-coating
<administratively transferred to [H10W 72/01333](#)>
- D H01L 2224/2743 in solid form
<administratively transferred to [H10W 72/01336](#)>
- D H01L 2224/27436 Lamination of a preform, e.g. foil, sheet or layer
<administratively transferred to [H10W 72/01336](#)>
- D H01L 2224/27438 the preform being at least partly pre-patterned
<administratively transferred to [H10W 72/01336](#)>
- D H01L 2224/2744 by transfer printing
<administratively transferred to [H10W 72/01336](#)>
- D H01L 2224/27442 using a powder
<administratively transferred to [H10W 72/01336](#)>
- D H01L 2224/27444 in gaseous form
<administratively transferred to [H10W 72/01338](#)>
- D H01L 2224/2745 Physical vapour deposition [PVD], e.g. evaporation, or sputtering
<administratively transferred to [H10W 72/01338](#)>
- D H01L 2224/27452 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01338](#)>
- D H01L 2224/2746 Plating
<administratively transferred to [H10W 72/01335](#)>

- D H01L 2224/27462 Electroplating
<administratively transferred to [H10W 72/01335](#)>
- D H01L 2224/27464 Electroless-plating
<administratively transferred to [H10W 72/01335](#)>
- D H01L 2224/27466 Conformal deposition, i.e. blanket deposition of a conformal layer on a patterned surface
<administratively transferred to [H10W 72/01331](#)>
- D H01L 2224/2747 using a lift-off mask
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27472 Profile of the lift-off mask
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27474 Multilayer masks
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/2748 Permanent masks, i.e. masks left in the finished device, e.g. passivation layers
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/275 by chemical or physical modification of a pre-existing or pre-deposited material
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27502 Pre-existing or pre-deposited material
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27505 Sintering
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/2751 Anodisation
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27515 Curing and solidification, e.g. of a photosensitive layer material
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/2752 Self-assembly, e.g. self-agglomeration of the layer material in a fluid
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27522 Auxiliary means therefor, e.g. for self-assembly activation
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27524 with special adaptation of the surface or of an auxiliary substrate, e.g. surface shape specially adapted for the self-assembly process
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27526 involving the material of the bonding area, e.g. bonding pad
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/2755 Selective modification
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27552 using a laser or a focussed ion beam [FIB]
<administratively transferred to [H10W 72/01361](#)>
- D H01L 2224/27554 Stereolithography, i.e. solidification of a pattern defined by a laser trace in a photosensitive resin
<administratively transferred to [H10W 72/01361](#)>

- D H01L 2224/276 by patterning a pre-deposited material
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/27602 Mechanical treatment, e.g. polishing, grinding
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/2761 Physical or chemical etching
<administratively transferred to [H10W 72/01353](#)>
- D H01L 2224/27612 by physical means only
<administratively transferred to [H10W 72/01353](#)>
- D H01L 2224/27614 by chemical means only
<administratively transferred to [H10W 72/01353](#)>
- D H01L 2224/27616 Chemical mechanical polishing [CMP]
<administratively transferred to [H10W 72/01353](#)>
- D H01L 2224/27618 with selective exposure, development and removal of a photosensitive layer material, e.g. of a photosensitive conductive resin
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/2762 using masks
<administratively transferred to [H10W 72/01355](#)>
- D H01L 2224/27622 Photolithography
<administratively transferred to [H10W 72/01355](#)>
- D H01L 2224/2763 using a laser or a focused ion beam [FIB]
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/27632 Ablation by means of a laser or focused ion beam [FIB]
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/277 involving monitoring, e.g. feedback-loop
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/278 Post-treatment of the layer connector
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/2781 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/01371](#)>
- D H01L 2224/2782 Applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/27821 Spray coating
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/27822 by dipping, e.g. in a solder bath
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/27823 Immersion coating, e.g. in a solder bath
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/27824 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/27825 Plating, e.g. electroplating, electroless plating
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/27826 Physical vapour deposition [PVD], e.g. evaporation, or sputtering
<administratively transferred to [H10W 72/01315](#)>

- D H01L 2224/27827 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01315](#)>
- D H01L 2224/2783 Reworking, e.g. shaping
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/27831 involving a chemical process, e.g. etching the layer connector
<administratively transferred to [H10W 72/01353](#)>
- D H01L 2224/2784 involving a mechanical process, e.g. planarising the layer connector
<administratively transferred to [H10W 72/01351](#)>
- D H01L 2224/27845 Chemical mechanical polishing [CMP]
<administratively transferred to [H10W 72/01359](#)>
- D H01L 2224/27848 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/01365](#)>
- D H01L 2224/27849 Reflowing
<administratively transferred to [H10W 72/01357](#)>
- D H01L 2224/279 Methods of manufacturing layer connectors involving a specific sequence of method steps
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27901 with repetition of the same manufacturing step
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27902 Multiple masking steps
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27903 using different masks
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27906 with modification of the same mask
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/2791 Forming a passivation layer after forming the layer connector
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27912 the layer being used as a mask for patterning other parts
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/27916 a passivation layer being used as a mask for patterning other parts
<administratively transferred to [H10W 72/013](#)>
- D H01L 2224/28 Structure, shape, material or disposition of the layer connectors prior to the connecting process
<administratively transferred to [H10W 72/30](#)>
- D H01L 2224/28105 Layer connectors formed on an encapsulation of the semiconductor or solid-state body, e.g. layer connectors on chip-scale packages
<administratively transferred to [H10W 72/341](#)>
- D H01L 2224/29 of an individual layer connector
<administratively transferred to [H10W 72/30](#)>
- D H01L 2224/29001 Core members of the layer connector
<administratively transferred to [H10W 72/30](#)>
- D H01L 2224/29005 Structure
<administratively transferred to [H10W 72/321](#)>

- D H01L 2224/29006 Layer connector larger than the underlying bonding area
<administratively transferred to [H10W 72/321](#)>
- D H01L 2224/29007 Layer connector smaller than the underlying bonding area
<administratively transferred to [H10W 72/321](#)>
- D H01L 2224/29008 Layer connector integrally formed with a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/321](#)>
- D H01L 2224/29009 Layer connector integrally formed with a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/321](#)>
- D H01L 2224/2901 Shape
<administratively transferred to [H10W 72/331](#)>
- D H01L 2224/29011 comprising apertures or cavities
<administratively transferred to [H10W 72/331](#)>
- D H01L 2224/29012 in top view
<administratively transferred to [H10W 72/332](#)>
- D H01L 2224/29013 being rectangular or square
<administratively transferred to [H10W 72/332](#)>
- D H01L 2224/29014 being circular or elliptic
<administratively transferred to [H10W 72/332](#)>
- D H01L 2224/29015 comprising protrusions or indentations
<administratively transferred to [H10W 72/332](#)>
- D H01L 2224/29016 in side view
<administratively transferred to [H10W 72/334](#)>
- D H01L 2224/29017 being non-uniform along the layer connector
<administratively transferred to [H10W 72/334](#)>
- D H01L 2224/29018 comprising protrusions or indentations
<administratively transferred to [H10W 72/334](#)>
- D H01L 2224/29019 at the bonding interface of the layer connector, i.e. on the surface of the layer connector
<administratively transferred to [H10W 72/334](#)>
- D H01L 2224/2902 Disposition
<administratively transferred to [H10W 72/341](#)>
- D H01L 2224/29021 the layer connector being disposed in a recess of the surface
<administratively transferred to [H10W 72/342](#)>
- D H01L 2224/29022 the layer connector being at least partially embedded in the surface
<administratively transferred to [H10W 72/342](#)>
- D H01L 2224/29023 the whole layer connector protruding from the surface
<administratively transferred to [H10W 72/342](#)>
- D H01L 2224/29024 the layer connector being disposed on a redistribution layer on the semiconductor or solid-state body
<administratively transferred to [H10W 72/344](#)>

- D H01L 2224/29025 the layer connector being disposed on a via connection of the semiconductor or solid-state body
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29026 relative to the bonding area, e.g. bond pad, of the semiconductor or solid-state body
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29027 the layer connector being offset with respect to the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29028 the layer connector being disposed on at least two separate bonding areas, e.g. bond pads
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29034 the layer connector covering only portions of the surface to be connected
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29035 covering only the peripheral area of the surface to be connected
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29036 covering only the central area of the surface to be connected
<administratively transferred to [H10W 72/344](#)>
- D H01L 2224/29075 Plural core members
<administratively transferred to [H10W 72/321](#)>
- D H01L 2224/29076 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/321](#)>
- D H01L 2224/29078 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/324](#)>
- D H01L 2224/2908 being stacked
<administratively transferred to [H10W 72/322](#)>
- D H01L 2224/29082 Two-layer arrangements
<administratively transferred to [H10W 72/322](#)>
- D H01L 2224/29083 Three-layer arrangements
<administratively transferred to [H10W 72/322](#)>
- D H01L 2224/29084 Four-layer arrangements
<administratively transferred to [H10W 72/322](#)>
- D H01L 2224/29099 Material
<administratively transferred to [H10W 72/351](#)>
- D H01L 2224/291 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/352](#)>
- D H01L 2224/29101 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/352](#)>
- D H01L 2224/29105 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/352](#)>

D	H01L 2224/29109	. . . . . Indium [In] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29111	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29113	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29114	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29116	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29117	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/352 >
D	H01L 2224/29118	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/2912	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29123	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29124	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29138	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/352 >
D	H01L 2224/29139	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29144	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29147	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29149	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29155	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29157	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/2916	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29163	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/352 >
D	H01L 2224/29164	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/352 >

D	H01L 2224/29166	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29169	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/2917	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29171	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29172	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29173	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29176	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29178	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29179	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/2918	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29181	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29183	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29184	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/352 >
D	H01L 2224/29186	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/353 >
D	H01L 2224/29187	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/353 >
D	H01L 2224/29188	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/353 >
D	H01L 2224/2919	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy <administratively transferred to H10W 72/354 >
D	H01L 2224/29191	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/354 >
D	H01L 2224/29193	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/291 – H01L 2224/29191, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/353 >

- D H01L 2224/29194 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/291 – H01L 2224/29191
<administratively transferred to [H10W 72/353](#)>
- D H01L 2224/29195 with a principal constituent of the material being a gas not provided for in groups H01L 2224/291 – H01L 2224/29191
<administratively transferred to [H10W 72/353](#)>
- D H01L 2224/29198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/325](#) and [H10W 72/351](#)>
- D H01L 2224/29199 Material of the matrix
<administratively transferred to [H10W 72/325](#) and [H10W 72/351](#)>
- D H01L 2224/292 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29201 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29205 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29209 Indium [In] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29211 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29213 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29214 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29216 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29217 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29218 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>

D	H01L 2224/2922	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29223	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29224	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29238	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29239	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29244	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29247	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29249	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29255	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29257	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2926	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29263	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29264	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29266	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29269	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >

D	H01L 2224/2927	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29271	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29272	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29273	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29276	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29278	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29279	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2928	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29281	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29283	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29284	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29286	. . . . .	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/325 and H10W 72/353 >
D	H01L 2224/29287	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/325 and H10W 72/353 >
D	H01L 2224/29288	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/325 and H10W 72/353 >
D	H01L 2224/2929	. . . . .	with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/325 and H10W 72/354 >

D	H01L 2224/29291	. . . . .	<p>The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene</p> <p><administratively transferred to H10W 72/325 and H10W 72/354></p>
D	H01L 2224/29293	. . . . .	<p>with a principal constituent of the material being a solid not provided for in groups H01L 2224/292 – H01L 2224/29291, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond</p> <p><administratively transferred to H10W 72/325 and H10W 72/353></p>
D	H01L 2224/29294	. . . . .	<p>with a principal constituent of the material being a liquid not provided for in groups H01L 2224/292 – H01L 2224/29291</p> <p><administratively transferred to H10W 72/325 and H10W 72/353></p>
D	H01L 2224/29295	. . . . .	<p>with a principal constituent of the material being a gas not provided for in groups H01L 2224/292 – H01L 2224/29291</p> <p><administratively transferred to H10W 72/325 and H10W 72/353></p>
D	H01L 2224/29298	. . . . .	<p>Fillers</p> <p><administratively transferred to H10W 72/325 and H10W 72/351></p>
D	H01L 2224/29299	. . . . .	<p>Base material</p> <p><administratively transferred to H10W 72/325 and H10W 72/351></p>
D	H01L 2224/293	. . . . .	<p>with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>
D	H01L 2224/29301	. . . . .	<p>the principal constituent melting at a temperature of less than 400°C</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>
D	H01L 2224/29305	. . . . .	<p>Gallium [Ga] as principal constituent</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>
D	H01L 2224/29309	. . . . .	<p>Indium [In] as principal constituent</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>
D	H01L 2224/29311	. . . . .	<p>Tin [Sn] as principal constituent</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>
D	H01L 2224/29313	. . . . .	<p>Bismuth [Bi] as principal constituent</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>
D	H01L 2224/29314	. . . . .	<p>Thallium [Tl] as principal constituent</p> <p><administratively transferred to H10W 72/325 and H10W 72/352></p>

D	H01L 2224/29316	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29317	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29318	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2932	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29323	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29324	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29338	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29339	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29344	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29347	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29349	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29355	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29357	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2936	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29363	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/325 and H10W 72/352 >

D	H01L 2224/29364	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29366	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29369	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2937	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29371	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29372	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29373	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29376	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29378	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29379	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2938	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29381	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29383	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29384	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29386	. . . . .	with a principal constituent of the material being a non metallic, non metalloid inorganic material <administratively transferred to H10W 72/325 and H10W 72/353 >

- D H01L 2224/29387 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29388 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/2939 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/325](#) and [H10W 72/354](#)>
- D H01L 2224/29391 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/325](#) and [H10W 72/354](#)>
- D H01L 2224/29393 with a principal constituent of the material being a solid not provided for in groups H01L 2224/293 – H01L 2224/29391, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29394 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/293 – H01L 2224/29391
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29395 with a principal constituent of the material being a gas not provided for in groups H01L 2224/293 – H01L 2224/29391
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29398 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/325](#) and [H10W 72/351](#)>
- D H01L 2224/29399 Coating material
<administratively transferred to [H10W 72/325](#) and [H10W 72/351](#)>
- D H01L 2224/294 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29401 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29405 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>

D	H01L 2224/29409	. . . . .	Indium [In] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29411	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29413	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29414	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29416	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29417	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29418	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2942	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29423	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29424	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29438	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29439	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29444	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29447	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29449	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >

D	H01L 2224/29455	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29457	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2946	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29463	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29464	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29466	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29469	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2947	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29471	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29472	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29473	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29476	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29478	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/29479	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >
D	H01L 2224/2948	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/325 and H10W 72/352 >

- D H01L 2224/29481 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29483 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29484 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/325](#) and [H10W 72/352](#)>
- D H01L 2224/29486 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/2949 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/325](#) and [H10W 72/354](#)>
- D H01L 2224/29491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/325](#) and [H10W 72/354](#)>
- D H01L 2224/29493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/294 – H01L 2224/29491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/294 – H01L 2224/29491
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/294 – H01L 2224/29491
<administratively transferred to [H10W 72/325](#) and [H10W 72/353](#)>
- D H01L 2224/29498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/325](#) and [H10W 72/351](#)>
- D H01L 2224/29499 Shape or distribution of the fillers
<administratively transferred to [H10W 72/325](#) and [H10W 72/351](#)>

- D H01L 2224/2954 Coating
<administratively transferred to [H10W 72/322](#)>
- D H01L 2224/29541 Structure
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/2955 Shape
<administratively transferred to [H10W 72/335](#)>
- D H01L 2224/29551 being non-uniform
<administratively transferred to [H10W 72/335](#)>
- D H01L 2224/29552 comprising protrusions or indentations
<administratively transferred to [H10W 72/335](#)>
- D H01L 2224/29553 at the bonding interface of the layer connector, i.e. on the surface of the layer connector
<administratively transferred to [H10W 72/335](#)>
- D H01L 2224/2956 Disposition
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/29561 On the entire surface of the core, i.e. integral coating
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/29562 On the entire exposed surface of the core
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/29563 Only on parts of the surface of the core, i.e. partial coating
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/29564 Only on the bonding interface of the layer connector
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/29565 Only outside the bonding interface of the layer connector
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/29566 Both on and outside the bonding interface of the layer connector
<administratively transferred to [H10W 72/345](#)>
- D H01L 2224/2957 Single coating layer
<administratively transferred to [H10W 72/322](#)>
- D H01L 2224/29575 Plural coating layers
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/29576 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/29578 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/2958 being stacked
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/29582 Two-layer coating
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/29583 Three-layer coating
<administratively transferred to [H10W 72/323](#)>
- D H01L 2224/29584 Four-layer coating
<administratively transferred to [H10W 72/323](#)>

D	H01L 2224/29599	. . . . . Material <administratively transferred to H10W 72/355 and H10W 72/351 >
D	H01L 2224/296	. . . . . with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29601	. . . . . the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29605	. . . . . Gallium [Ga] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29609	. . . . . Indium [In] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29611	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29613	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29614	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29616	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29617	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29618	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/2962	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29623	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29624	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29638	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/355 and H10W 72/352 >

D	H01L 2224/29639	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29644	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29647	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29649	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29655	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29657	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/2966	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29664	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29666	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29669	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/2967	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29671	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29672	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >
D	H01L 2224/29673	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/355 and H10W 72/352 >

- D H01L 2224/29676 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/29678 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/29679 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/2968 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/29681 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/29683 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/29684 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/355](#) and [H10W 72/352](#)>
- D H01L 2224/29686 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/355](#) and [H10W 72/353](#)>
- D H01L 2224/29687 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/355](#) and [H10W 72/353](#)>
- D H01L 2224/29688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/355](#) and [H10W 72/353](#)>
- D H01L 2224/2969 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/355](#) and [H10W 72/354](#)>
- D H01L 2224/29691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/355](#) and [H10W 72/354](#)>
- D H01L 2224/29693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/296 – H01L 2224/29691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/355](#) and [H10W 72/353](#)>
- D H01L 2224/29694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/296 – H01L 2224/29691
<administratively transferred to [H10W 72/355](#) and [H10W 72/353](#)>
- D H01L 2224/29695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/296 – H01L 2224/29691
<administratively transferred to [H10W 72/355](#) and [H10W 72/353](#)>

- D H01L 2224/29698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/351](#) simultaneously>
- D H01L 2224/29699 Material of the matrix
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/351](#) simultaneously>
- D H01L 2224/297 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29705 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29709 Indium [In] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29711 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29713 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29714 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29716 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29717 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29718 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/2972 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29723 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#), and [H10W 72/352](#) simultaneously>

D	H01L 2224/29724	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29738	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29739	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29744	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29747	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29749	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29755	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29757	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2976	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29763	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29764	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29766	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29769	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2977	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29771	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>

D	H01L 2224/29772	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29773	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29776	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29778	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29779	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2978	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29781	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29783	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29784	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29786	. . . . .	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/353 simultaneously>
D	H01L 2224/29787	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/353 simultaneously>
D	H01L 2224/29788	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/353 simultaneously>
D	H01L 2224/2979	. . . . .	with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/354 simultaneously>
D	H01L 2224/29791	. . . . .	The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/354 simultaneously>

D	H01L 2224/29793	• • • • •	<p>with a principal constituent of the material being a solid not provided for in groups H01L 2224/297 - H01L 2224/29791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/353 simultaneously></p>
D	H01L 2224/29794	• • • • •	<p>with a principal constituent of the material being a liquid not provided for in groups H01L 2224/297 - H01L 2224/29791</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/353 simultaneously></p>
D	H01L 2224/29795	• • • • •	<p>with a principal constituent of the material being a gas not provided for in groups H01L 2224/297 - H01L 2224/29791</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/353 simultaneously></p>
D	H01L 2224/29798	• • • • •	<p>Fillers</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/351 simultaneously></p>
D	H01L 2224/29799	• • • • •	<p>Base material</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/351 simultaneously></p>
D	H01L 2224/298	• • • • •	<p>with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29801	• • • • •	<p>the principal constituent melting at a temperature of less than 400°C</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29805	• • • • •	<p>Gallium [Ga] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29809	• • • • •	<p>Indium [In] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29811	• • • • •	<p>Tin [Sn] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29813	• • • • •	<p>Bismuth [Bi] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29814	• • • • •	<p>Thallium [Tl] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29816	• • • • •	<p>Lead [Pb] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>

D	H01L 2224/29817	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29818	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2982	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29823	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29824	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29838	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29839	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29844	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29847	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29849	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29855	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29857	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2986	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29863	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29864	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>

D	H01L 2224/29866	• • • • • Titanium [Ti] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29869	• • • • • Platinum [Pt] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2987	• • • • • Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29871	• • • • • Chromium [Cr] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29872	• • • • • Vanadium [V] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29873	• • • • • Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29876	• • • • • Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29878	• • • • • Iridium [Ir] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29879	• • • • • Niobium [Nb] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2988	• • • • • Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29881	• • • • • Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29883	• • • • • Rhenium [Re] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29884	• • • • • Tungsten [W] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29886	• • • • • with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/353 simultaneously>
D	H01L 2224/29887	• • • • • Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/353 simultaneously>

- D H01L 2224/29888 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/353](#) simultaneously>
- D H01L 2224/2989 with a principal constituent of the material being a polymer,
e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/354](#) simultaneously>
- D H01L 2224/29891 The principal constituent being an elastomer, e.g. silicones,
isoprene, neoprene
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/354](#) simultaneously>
- D H01L 2224/29893 with a principal constituent of the material being a solid not
provided for in groups H01L 2224/298 – H01L 2224/29891,
e.g. allotropes of carbon, fullerene, graphite, carbon-
nanotubes, diamond
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29894 with a principal constituent of the material being a liquid not
provided for in groups H01L 2224/298 – H01L 2224/29891
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29895 with a principal constituent of the material being a gas not
provided for in groups H01L 2224/298 – H01L 2224/29891
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29898 with a principal constituent of the material being a combination
of two or more materials in the form of a matrix with a filler, i.e.
being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/351](#) simultaneously>
- D H01L 2224/29899 Coating material
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/351](#) simultaneously>
- D H01L 2224/299 with a principal constituent of the material being a metal or a
metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic
[As], antimony [Sb], tellurium [Te] and polonium [Po], and
alloys thereof
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/352](#) simultaneously>
- D H01L 2224/29901 the principal constituent melting at a temperature of less
than 400°C
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29905 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29909 Indium [In] as principal constituent
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/352](#) simultaneously>

D	H01L 2224/29911	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29913	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29914	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29916	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29917	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29918	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/2992	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29923	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29924	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29938	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29939	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29944	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29947	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29949	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>
D	H01L 2224/29955	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/355 , H10W 72/325 , and H10W 72/352 simultaneously>

D	H01L 2224/29957	. . . . .	<p>Cobalt [Co] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/2996	. . . . .	<p>Iron [Fe] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29963	. . . . .	<p>the principal constituent melting at a temperature of greater than 1550°C</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29964	. . . . .	<p>Palladium [Pd] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29966	. . . . .	<p>Titanium [Ti] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29969	. . . . .	<p>Platinum [Pt] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/2997	. . . . .	<p>Zirconium [Zr] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29971	. . . . .	<p>Chromium [Cr] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29972	. . . . .	<p>Vanadium [V] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29973	. . . . .	<p>Rhodium [Rh] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29976	. . . . .	<p>Ruthenium [Ru] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29978	. . . . .	<p>Iridium [Ir] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29979	. . . . .	<p>Niobium [Nb] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/2998	. . . . .	<p>Molybdenum [Mo] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>
D	H01L 2224/29981	. . . . .	<p>Tantalum [Ta] as principal constituent</p> <p><administratively transferred to H10W 72/355, H10W 72/325, and H10W 72/352 simultaneously></p>

- D H01L 2224/29983 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29984 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/352](#) simultaneously>
- D H01L 2224/29986 with a principal constituent of the material being a non
metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29987 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/353](#) simultaneously>
- D H01L 2224/29988 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/353](#) simultaneously>
- D H01L 2224/2999 with a principal constituent of the material being a polymer,
e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/354](#) simultaneously>
- D H01L 2224/29991 The principal constituent being an elastomer, e.g. silicones;
isoprene, neoprene
<administratively transferred to [H10W 72/355](#),
[H10W 72/325](#), and [H10W 72/354](#) simultaneously>
- D H01L 2224/29993 with a principal constituent of the material being a solid not
provided for in groups H01L 2224/299 – H01L 2224/29991,
e.g. allotropes of carbon, fullerene, graphite, carbon-
nanotubes, diamond
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29994 with a principal constituent of the material being a liquid not
provided for in groups H01L 2224/299 – H01L 2224/29991
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29995 with a principal constituent of the material being a gas not
provided for in groups H01L 2224/299 – H01L 2224/29991
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/353](#) simultaneously>
- D H01L 2224/29998 with a principal constituent of the material being a combination
of two or more materials in the form of a matrix with a filler, i.e.
being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/351](#) simultaneously>
- D H01L 2224/29999 Shape or distribution of the fillers
<administratively transferred to [H10W 72/355](#), [H10W 72/325](#),
and [H10W 72/351](#) simultaneously>
- D H01L 2224/30 of a plurality of layer connectors
<administratively transferred to [H10W 72/30](#)>

- D H01L 2224/3001 Structure
<administratively transferred to [H10W 72/328](#)>
- D H01L 2224/3003 Layer connectors having different sizes, e.g. different heights or widths
<administratively transferred to [H10W 72/327](#)>
- D H01L 2224/3005 Shape
<administratively transferred to [H10W 72/337](#)>
- D H01L 2224/30051 Layer connectors having different shapes
<administratively transferred to [H10W 72/337](#)>
- D H01L 2224/301 Disposition
<administratively transferred to [H10W 72/347](#)>
- D H01L 2224/30104 relative to the bonding areas, e.g. bond pads, of the semiconductor or solid-state body
<administratively transferred to [H10W 72/347](#) and [H10W 72/344](#)>
- D H01L 2224/3011 the layer connectors being bonded to at least one common bonding area
<administratively transferred to [H10W 72/347](#) and [H10W 72/344](#)>
- D H01L 2224/3012 Layout
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/3013 Square or rectangular array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30131 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30132 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30133 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30134 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30135 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30136 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/3014 Circular array, i.e. array with radial symmetry
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30141 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30142 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30143 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/348](#)>

- D H01L 2224/30145 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30146 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/3015 Mirror array, i.e. array having only a reflection symmetry, i.e. bilateral symmetry
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30151 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30152 being non uniform, i.e. having a non uniform pitch across the array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30153 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30154 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30155 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30156 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/3016 Random layout, i.e. layout with no symmetry
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30163 with a staggered arrangement
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30164 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30165 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30166 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30177 Combinations of arrays with different layouts
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/30179 Corner adaptations, i.e. disposition of the layer connectors at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/348](#)>
- D H01L 2224/3018 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/347](#)>
- D H01L 2224/30181 On opposite sides of the body
<administratively transferred to [H10W 72/347](#)>

- D H01L 2224/30183 On-contiguous-sides-of-the-body
<administratively transferred to [H10W 72/347](#)>
- D H01L 2224/305 Material
<administratively transferred to [H10W 72/357](#)>
- D H01L 2224/30505 Layer-connectors-having-different-materials
<administratively transferred to [H10W 72/357](#)>
- D H01L 2224/3051 Function
<administratively transferred to [H10W 72/367](#)>
- D H01L 2224/30515 Layer-connectors-having-different-functions
<administratively transferred to [H10W 72/367](#)>
- D H01L 2224/30517 including-layer-connectors-providing-primarily-mechanical-bonding
<administratively transferred to [H10W 72/367](#)>
- D H01L 2224/30519 including-layer-connectors-providing-primarily-thermal-dissipation
<administratively transferred to [H10W 72/367](#) and [H10W 72/365](#)>
- D H01L 2224/31 . . . Structure, shape, material or disposition of the layer connectors after the connecting process
<administratively transferred to [H10W 72/07351](#) and [H10W 72/30](#)>
- D H01L 2224/32 of-an-individual-layer-connector
<administratively transferred to [H10W 72/07351](#) and [H10W 72/30](#)>
- D H01L 2224/3201 Structure
<administratively transferred to [H10W 72/07352](#) and [H10W 72/321](#)>
- D H01L 2224/32012 relative to the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/07352](#) and [H10W 72/321](#)>
- D H01L 2224/32013 the-layer-connector-being-larger-than-the-bonding-area, e.g. bond pad
<administratively transferred to [H10W 72/07352](#) and [H10W 72/321](#)>
- D H01L 2224/32014 the-layer-connector-being-smaller-than-the-bonding-area, e.g. bond pad
<administratively transferred to [H10W 72/07352](#) and [H10W 72/321](#)>
- D H01L 2224/3205 Shape
<administratively transferred to [H10W 72/07353](#) and [H10W 72/331](#)>
- D H01L 2224/32052 in-top-view
<administratively transferred to [H10W 72/07353](#) and [H10W 72/332](#)>
- D H01L 2224/32053 being-non-uniform-along-the-layer-connector
<administratively transferred to [H10W 72/07353](#) and [H10W 72/332](#)>
- D H01L 2224/32054 being-rectangular-or-square
<administratively transferred to [H10W 72/07353](#) and [H10W 72/332](#)>
- D H01L 2224/32055 being-circular-or-elliptic
<administratively transferred to [H10W 72/07353](#) and [H10W 72/332](#)>
- D H01L 2224/32056 comprising-protrusions-or-indentations
<administratively transferred to [H10W 72/07353](#) and [H10W 72/332](#)>
- D H01L 2224/32057 in-side-view
<administratively transferred to [H10W 72/07353](#) and [H10W 72/334](#)>

- D H01L 2224/32058 being non-uniform along the layer connector
<administratively transferred to [H10W 72/07353](#) and [H10W 72/334](#)>
- D H01L 2224/32059 comprising protrusions or indentations
<administratively transferred to [H10W 72/07353](#) and [H10W 72/334](#)>
- D H01L 2224/3207 of bonding interfaces, e.g. interlocking features
<administratively transferred to [H10W 72/07353](#) and [H10W 72/331](#)>
- D H01L 2224/321 Disposition
<administratively transferred to [H10W 72/07354](#) and [H10W 72/341](#)>
- D H01L 2224/32104 relative to the bonding area, e.g. bond pad
<administratively transferred to [H10W 72/07354](#) and [H10W 72/344](#)>
- D H01L 2224/32105 the layer connector connecting bonding areas being not aligned with respect to each other
<administratively transferred to [H10W 72/07354](#) and [H10W 72/344](#)>
- D H01L 2224/32106 the layer connector connecting one bonding area to at least two respective bonding areas
<administratively transferred to [H10W 72/07354](#) and [H10W 72/344](#)>
- D H01L 2224/32111 the layer connector being disposed in a recess of the surface
<administratively transferred to [H10W 72/07354](#) and [H10W 72/342](#)>
- D H01L 2224/32112 the layer connector being at least partially embedded in the surface
<administratively transferred to [H10W 72/07354](#) and [H10W 72/342](#)>
- D H01L 2224/32113 the whole layer connector protruding from the surface
<administratively transferred to [H10W 72/07354](#) and [H10W 72/342](#)>
- D H01L 2224/3213 the layer connector connecting within a semiconductor or solid-state body, i.e. connecting two bonding areas on the same semiconductor or solid-state body
<administratively transferred to [H10W 72/07354](#) and [H10W 72/341](#)>
- D H01L 2224/32135 the layer connector connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
<administratively transferred to [H10W 90/731](#)>
- D H01L 2224/32137 the bodies being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/733](#)>
- D H01L 2224/32141 the bodies being arranged on opposite sides of a substrate, e.g. mirror arrangements
<administratively transferred to [H10W 90/731](#)>
- D H01L 2224/32145 the bodies being stacked
<administratively transferred to [H10W 90/732](#)>
- D H01L 2224/32146 the layer connector connecting to a via connection in the semiconductor or solid-state body
<administratively transferred to [H10W 90/732](#)>
- D H01L 2224/32147 the layer connector connecting to a bonding area disposed in a recess of the surface
<administratively transferred to [H10W 90/732](#)>
- D H01L 2224/32148 the layer connector connecting to a bonding area protruding from the surface
<administratively transferred to [H10W 90/732](#)>

- D H01L 2224/32151 the layer connector connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
<administratively transferred to [H10W 90/731](#)>
- D H01L 2224/32153 the body and the item being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/731](#)>
- D H01L 2224/32155 the item being non-metallic, e.g. being an insulating substrate with or without metallisation
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/32157 the layer connector connecting to a bond pad of the item
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/3216 the layer connector connecting to a pin of the item
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/32163 the layer connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/32165 the layer connector connecting to a via metallisation of the item
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/32167 the layer connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/32168 the layer connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/735](#)>
- D H01L 2224/32175 the item being metallic
<administratively transferred to [H10W 90/737](#)>
- D H01L 2224/32183 the layer connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/737](#)>
- D H01L 2224/32187 the layer connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/737](#)>
- D H01L 2224/32188 the layer connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/737](#)>
- D H01L 2224/32195 the item being a discrete passive component
<administratively transferred to [H10W 90/739](#)>
- D H01L 2224/32197 the layer connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/739](#)>
- D H01L 2224/32198 the layer connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/739](#)>
- D H01L 2224/32221 the body and the item being stacked
<administratively transferred to [H10W 90/731](#)>

- D H01L 2224/32225 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/32227 the layer connector connecting to a bond pad of the item
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/3223 the layer connector connecting to a pin of the item
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/32233 the layer connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/32235 the layer connector connecting to a via metallisation of the item
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/32237 the layer connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/32238 the layer connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/3224 the layer connector connecting between the body and an opposite side of the item with respect to the body
<administratively transferred to [H10W 90/734](#)>
- D H01L 2224/32245 the item being metallic
<administratively transferred to [H10W 90/736](#)>
- D H01L 2224/32253 the layer connector connecting to a potential ring of the item
<administratively transferred to [H10W 90/736](#)>
- D H01L 2224/32257 the layer connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/736](#)>
- D H01L 2224/32258 the layer connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/736](#)>
- D H01L 2224/3226 the layer connector connecting between the body and an opposite side of the item with respect to the body
<administratively transferred to [H10W 90/736](#)>
- D H01L 2224/32265 the item being a discrete passive component
<administratively transferred to [H10W 90/738](#)>
- D H01L 2224/32267 the layer connector connecting to a bonding area disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/738](#)>
- D H01L 2224/32268 the layer connector connecting to a bonding area protruding from the surface of the item
<administratively transferred to [H10W 90/738](#)>
- D H01L 2224/325 Material
<administratively transferred to [H10W 72/07355](#) and [H10W 72/351](#)>
- D H01L 2224/32501 at the bonding interface
<administratively transferred to [H10W 72/07355](#) and [H10W 72/351](#)>

- D H01L 2224/32502 comprising an eutectic alloy
<administratively transferred to [H10W 72/07355](#) and [H10W 72/3524](#)>
- D H01L 2224/32503 comprising an intermetallic compound
<administratively transferred to [H10W 72/07355](#) and [H10W 72/3528](#)>
- D H01L 2224/32505 outside the bonding interface, e.g. in the bulk of the layer connector
<administratively transferred to [H10W 72/07355](#) and [H10W 72/351](#)>
- D H01L 2224/32506 comprising an eutectic alloy
<administratively transferred to [H10W 72/07355](#) and [H10W 72/3524](#)>
- D H01L 2224/32507 comprising an intermetallic compound
<administratively transferred to [H10W 72/07355](#) and [H10W 72/3528](#)>
- D H01L 2224/33 of a plurality of layer connectors
<administratively transferred to [H10W 72/07351](#) and [H10W 72/30](#)>
- D H01L 2224/3301 Structure
<administratively transferred to [H10W 72/07352](#) and [H10W 72/328](#)>
- D H01L 2224/3303 Layer connectors having different sizes, e.g. different heights or widths
<administratively transferred to [H10W 72/07352](#) and [H10W 72/327](#)>
- D H01L 2224/3305 Shape
<administratively transferred to [H10W 72/07353](#) and [H10W 72/337](#)>
- D H01L 2224/33051 Layer connectors having different shapes
<administratively transferred to [H10W 72/07353](#) and [H10W 72/337](#)>
- D H01L 2224/33055 of their bonding interfaces
<administratively transferred to [H10W 72/07353](#) and [H10W 72/337](#)>
- D H01L 2224/331 Disposition
<administratively transferred to [H10W 72/07354](#) and [H10W 72/347](#)>
- D H01L 2224/33104 relative to the bonding areas, e.g. bond pads
<administratively transferred to [H10W 72/07354](#), [H10W 72/344](#), and [H10W 72/347](#) simultaneously>
- D H01L 2224/33106 the layer connectors being bonded to at least one common bonding area
<administratively transferred to [H10W 72/07354](#), [H10W 72/344](#), and [H10W 72/347](#) simultaneously>
- D H01L 2224/33107 the layer connectors connecting two common bonding areas
<administratively transferred to [H10W 72/07354](#), [H10W 72/344](#), and [H10W 72/347](#) simultaneously>
- D H01L 2224/3312 Layout
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/3313 Square or rectangular array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>

- D H01L 2224/33132 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33133 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33134 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33135 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/3314 Circular array, i.e. array with radial symmetry
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33142 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33143 with a staggered arrangement
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33144 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33145 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/3315 Mirror array, i.e. array having only a reflection symmetry, i.e. bilateral symmetry
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33151 being uniform, i.e. having a uniform pitch across the array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33152 being non-uniform, i.e. having a non-uniform pitch across the array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33153 with a staggered arrangement, e.g. depopulated array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33154 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>

- D H01L 2224/33155 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33156 Covering only the central area of the surface to be connected, i.e. central arrangements
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/3316 Random layout, i.e. layout with no symmetry
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33163 with a staggered arrangement
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33164 covering only portions of the surface to be connected
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33165 Covering only the peripheral area of the surface to be connected, i.e. peripheral arrangements
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33177 Combinations of arrays with different layouts
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/33179 Corner adaptations, i.e. disposition of the layer connectors at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/07354](#) and [H10W 72/348](#)>
- D H01L 2224/3318 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/07354](#) and [H10W 72/347](#)>
- D H01L 2224/33181 On opposite sides of the body
<administratively transferred to [H10W 72/07354](#) and [H10W 72/347](#)>
- D H01L 2224/33183 On contiguous sides of the body
<administratively transferred to [H10W 72/07354](#) and [H10W 72/347](#)>
- D H01L 2224/335 Material
<administratively transferred to [H10W 72/07355](#) and [H10W 72/357](#)>
- D H01L 2224/33505 Layer connectors having different materials
<administratively transferred to [H10W 72/07355](#) and [H10W 72/357](#)>
- D H01L 2224/3351 Function
<administratively transferred to [H10W 72/07351](#) and [H10W 72/367](#)>
- D H01L 2224/33515 Layer connectors having different functions
<administratively transferred to [H10W 72/07351](#) and [H10W 72/367](#)>
- D H01L 2224/33517 including layer connectors providing primarily mechanical support
<administratively transferred to [H10W 72/07351](#) and [H10W 72/367](#)>
- D H01L 2224/33519 including layer connectors providing primarily thermal dissipation
<administratively transferred to [H10W 72/07351](#), [H10W 72/365](#), and [H10W 72/367](#) simultaneously>

- D H01L 2224/34 • • Strap-connectors, e.g. copper straps for grounding power devices;
Manufacturing methods related thereto
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/35 • • • Manufacturing methods
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/35001 • • • • Involving a temporary auxiliary member not forming part of the
 manufacturing apparatus, e.g. removable or sacrificial coating, film or
 substrate
 <administratively transferred to [H10W 72/01604](#)>
- D H01L 2224/351 • • • • Pre-treatment of the preform-connector
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/3512 • • • • • Applying permanent coating, e.g. in-situ coating
 <administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35125 • • • • • • Plating, e.g. electroplating, electroless plating
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/352 • • • • Mechanical processes
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/3521 • • • • • Pulling
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/355 • • • • Modification of a pre-existing material
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/3551 • • • • • Sintering
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/3552 • • • • • Anodisation
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/357 • • • • Involving monitoring, e.g. feedback loop
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/358 • • • • Post-treatment of the connector
 <administratively transferred to [H10W 72/016](#)>
- D H01L 2224/3581 • • • • • Cleaning, e.g. oxide removal step, desmearing
 <administratively transferred to [H10W 72/01671](#)>
- D H01L 2224/3582 • • • • • • Applying permanent coating, e.g. in-situ coating
 <administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35821 • • • • • • • Spray-coating
 <administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35822 • • • • • • • Dip-coating
 <administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35823 • • • • • • • Immersion coating, e.g. solder bath
 <administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35824 • • • • • • • Chemical solution deposition [CSD], i.e. using a liquid precursor
 <administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35825 • • • • • • • Plating, e.g. electroplating, electroless plating
 <administratively transferred to [H10W 72/01615](#)>

- D H01L 2224/35826 Physical vapour deposition [PVD], e.g. evaporation, sputtering
<administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/35827 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01615](#)>
- D H01L 2224/3583 Reworking
<administratively transferred to [H10W 72/01651](#)>
- D H01L 2224/35831 with a chemical process, e.g. with etching of the connector
<administratively transferred to [H10W 72/01661](#) and [H10W 72/01653](#)>
- D H01L 2224/35847 with a mechanical process, e.g. with flattening of the connector
<administratively transferred to [H10W 72/01661](#)>
- D H01L 2224/35848 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/35985 Methods of manufacturing strap connectors involving a specific sequence of method steps
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/35986 with repetition of the same manufacturing step
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/36 Structure, shape, material or disposition of the strap connectors prior to the connecting process
<administratively transferred to [H10W 72/60](#)>
- D H01L 2224/37 of an individual strap connector
<administratively transferred to [H10W 72/60](#)>
- D H01L 2224/37001 Core members of the connector
<administratively transferred to [H10W 72/60](#)>
- D H01L 2224/37005 Structure
<administratively transferred to [H10W 72/621](#)>
- D H01L 2224/3701 Shape
<administratively transferred to [H10W 72/631](#)>
- D H01L 2224/37011 comprising apertures or cavities
<administratively transferred to [H10W 72/631](#)>
- D H01L 2224/37012 Cross-sectional shape
<administratively transferred to [H10W 72/634](#)>
- D H01L 2224/37013 being non-uniform along the connector
<administratively transferred to [H10W 72/634](#)>
- D H01L 2224/3702 Disposition
<administratively transferred to [H10W 72/641](#)>
- D H01L 2224/37025 Plural core members
<administratively transferred to [H10W 72/624](#)>
- D H01L 2224/37026 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/624](#)>
- D H01L 2224/37028 Side-to-side arrangements
<administratively transferred to [H10W 72/624](#)>

- D H01L 2224/3703 Stacked arrangements
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37032 Two-layer arrangements
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37033 Three-layer arrangements
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37034 Four-layer arrangements
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37099 Material
<administratively transferred to [H10W 72/651](#)>
- D H01L 2224/371 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37101 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37105 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37109 Indium [In] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37111 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37113 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37114 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37116 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37117 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37118 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/3712 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37123 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37124 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37138 the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C
<administratively transferred to [H10W 72/652](#)>

D	H01L 2224/37139	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37144	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37147	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37149	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37155	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37157	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/3716	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37163	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/652 >
D	H01L 2224/37164	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37166	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37169	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/3717	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37171	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37172	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37173	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37176	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37178	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37179	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/3718	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37181	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/652 >
D	H01L 2224/37183	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/652 >

- D H01L 2224/37184 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/652](#)>
- D H01L 2224/37186 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37187 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37188 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/3719 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37191 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37193 with a principal constituent of the material being a solid not provided for in groups H01L 2224/371 – H01L 2224/37191, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37194 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/371 – H01L 2224/37191
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37195 with a principal constituent of the material being a gas not provided for in groups H01L 2224/371 – H01L 2224/37191
<administratively transferred to [H10W 72/653](#)>
- D H01L 2224/37198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/625](#)>
- D H01L 2224/37199 Material of the matrix
<administratively transferred to [H10W 72/625](#)>
- D H01L 2224/372 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>
- D H01L 2224/37201 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>
- D H01L 2224/37205 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>
- D H01L 2224/37209 Indium [In] as principal constituent
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>

D	H01L 2224/37211	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37213	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37214	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37216	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37217	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37218	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3722	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37223	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37224	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37238	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37239	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37244	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37247	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37249	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37255	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >

D	H01L 2224/37257	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3726	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37263	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37264	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37266	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37269	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3727	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37271	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37272	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37273	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37276	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37278	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37279	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3728	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37281	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >

- D H01L 2224/37283 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>
- D H01L 2224/37284 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>
- D H01L 2224/37286 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37287 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37288 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/3729 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37291 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37293 with a principal constituent of the material being a solid not provided for in groups H01L 2224/372 - H01L 2224/37291, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37294 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/372 - H01L 2224/37291
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37295 with a principal constituent of the material being a gas not provided for in groups H01L 2224/372 - H01L 2224/37291
<administratively transferred to [H10W 72/625](#) and [H10W 72/653](#)>
- D H01L 2224/37298 Fillers
<administratively transferred to [H10W 72/625](#) and [H10W 72/651](#)>
- D H01L 2224/37299 Base material
<administratively transferred to [H10W 72/625](#) and [H10W 72/651](#)>
- D H01L 2224/373 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/625](#) and [H10W 72/652](#)>

D	H01L 2224/37301	. . . . .	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37305	. . . . .	Gallium [Ga] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37309	. . . . .	Indium [In] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37311	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37313	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37314	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37316	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37317	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37318	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3732	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37323	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37324	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37338	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37339	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37344	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >

D	H01L 2224/37347	. . . . .	• Copper [Cu] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37349	. . . . .	• Manganese [Mn] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37355	. . . . .	• Nickel [Ni] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37357	. . . . .	• Cobalt [Co] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3736	. . . . .	• Iron [Fe] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37363	. . . . .	• the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37364	. . . . .	• Palladium [Pd] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37366	. . . . .	• Titanium [Ti] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37369	. . . . .	• Platinum [Pt] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3737	. . . . .	• Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37371	. . . . .	• Chromium [Cr] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37372	. . . . .	• Vanadium [V] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37373	. . . . .	• Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37376	. . . . .	• Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37378	. . . . .	• Iridium [Ir] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >

D	H01L 2224/37379	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/3738	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37381	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37383	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37384	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/625 and H10W 72/652 >
D	H01L 2224/37386	. . . . .	with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37387	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37388	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/3739	. . . . .	with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37391	. . . . .	The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37393	. . . . .	with a principal constituent of the material being a solid not provided for in groups H01L 2224/373 - H01L 2224/37391, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37394	. . . . .	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/373 - H01L 2224/37391 <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37395	. . . . .	with a principal constituent of the material being a gas not provided for in groups H01L 2224/373 - H01L 2224/37391 <administratively transferred to H10W 72/625 and H10W 72/653 >

D	H01L 2224/37398	with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams <administratively transferred to H10W 72/625 and H10W 72/653 >
D	H01L 2224/37399	Coating material <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/651 simultaneously>
D	H01L 2224/374	with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37401	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37405	Gallium [Ga] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37409	Indium [In] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37411	Tin [Sn] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37413	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37414	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37416	Lead [Pb] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37417	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37418	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/3742	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37423	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>

D	H01L 2224/37424	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37438	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37439	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37444	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37447	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37449	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37455	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37457	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/3746	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37463	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37464	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37466	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37469	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/3747	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37471	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>

D	H01L 2224/37472	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37473	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37476	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37478	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37479	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/3748	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37481	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37483	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37484	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/652 simultaneously>
D	H01L 2224/37486	. . . . .	with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/653 simultaneously>
D	H01L 2224/37487	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/653 simultaneously>
D	H01L 2224/37488	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/653 simultaneously>
D	H01L 2224/3749	. . . . .	with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/653 simultaneously>
D	H01L 2224/37491	. . . . .	The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/625 , H10W 72/655 , and H10W 72/653 simultaneously>

- D H01L 2224/37493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/374 - H01L 2224/37491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/625](#), [H10W 72/655](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/374 - H01L 2224/37491
<administratively transferred to [H10W 72/625](#), [H10W 72/655](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/374 - H01L 2224/37491
<administratively transferred to [H10W 72/625](#), [H10W 72/655](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/625](#), [H10W 72/655](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37499 Shape or distribution of the fillers
<administratively transferred to [H10W 72/625](#) and [H10W 72/655](#)>
- D H01L 2224/3754 Coating
<administratively transferred to [H10W 72/622](#)>
- D H01L 2224/37541 Structure
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/3755 Shape
<administratively transferred to [H10W 72/635](#)>
- D H01L 2224/3756 Disposition, e.g. coating on a part of the core
<administratively transferred to [H10W 72/645](#)>
- D H01L 2224/37565 Single coating layer
<administratively transferred to [H10W 72/622](#)>
- D H01L 2224/3757 Plural coating layers
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37572 Two-layer stack coating
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37573 Three-layer stack coating
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37574 Four-layer stack coating
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37576 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37578 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/623](#)>
- D H01L 2224/37599 Material
<administratively transferred to [H10W 72/655](#)>

D	H01L 2224/376	<ul style="list-style-type: none"> with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37601	<ul style="list-style-type: none"> the principal constituent melting at a temperature of less than 400°C <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37605	<ul style="list-style-type: none"> Gallium [Ga] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37609	<ul style="list-style-type: none"> Indium [In] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37611	<ul style="list-style-type: none"> Tin [Sn] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37613	<ul style="list-style-type: none"> Bismuth [Bi] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37614	<ul style="list-style-type: none"> Thallium [Tl] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37616	<ul style="list-style-type: none"> Lead [Pb] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37617	<ul style="list-style-type: none"> the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37618	<ul style="list-style-type: none"> Zinc [Zn] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/3762	<ul style="list-style-type: none"> Antimony [Sb] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37623	<ul style="list-style-type: none"> Magnesium [Mg] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37624	<ul style="list-style-type: none"> Aluminium [Al] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37638	<ul style="list-style-type: none"> the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <p><administratively transferred to H10W 72/655 and H10W 72/652></p>
D	H01L 2224/37639	<ul style="list-style-type: none"> Silver [Ag] as principal constituent <p><administratively transferred to H10W 72/655 and H10W 72/652></p>

D	H01L 2224/37644	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37647	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37649	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37655	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37657	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/3766	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37664	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37666	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37669	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/3767	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37671	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37672	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37673	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >
D	H01L 2224/37676	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/655 and H10W 72/652 >

- D H01L 2224/37678 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/655](#) and [H10W 72/652](#)>
- D H01L 2224/37679 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/655](#) and [H10W 72/652](#)>
- D H01L 2224/3768 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/655](#) and [H10W 72/652](#)>
- D H01L 2224/37681 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/655](#) and [H10W 72/652](#)>
- D H01L 2224/37683 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/655](#) and [H10W 72/652](#)>
- D H01L 2224/37684 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/655](#) and [H10W 72/652](#)>
- D H01L 2224/37686 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37687 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/3769 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/376 – H01L 2224/37691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/376 – H01L 2224/37691
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/376 – H01L 2224/37691
<administratively transferred to [H10W 72/655](#) and [H10W 72/653](#)>
- D H01L 2224/37698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/651](#) simultaneously>

D	H01L 2224/37699	. . . . .	Material of the matrix <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/651 simultaneously>
D	H01L 2224/377	. . . . .	with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37701	. . . . .	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37705	. . . . .	Gallium [Ga] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37709	. . . . .	Indium [In] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37711	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37713	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37714	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37716	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37717	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37718	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3772	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37723	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37724	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>

D	H01L 2224/37738	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37739	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37744	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37747	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37749	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37755	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37757	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3776	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37763	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37764	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37766	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37769	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3777	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37771	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37772	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>

D	H01L 2224/37773	<p>• • • • • Rhodium [Rh] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37776	<p>• • • • • Ruthenium [Ru] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37778	<p>• • • • • Iridium [Ir] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37779	<p>• • • • • Niobium [Nb] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/3778	<p>• • • • • Molybdenum [Mo] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37781	<p>• • • • • Tantalum [Ta] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37783	<p>• • • • • Rhenium [Re] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37784	<p>• • • • • Tungsten [W] as principal constituent</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/652 simultaneously></p>
D	H01L 2224/37786	<p>• • • • • with a principal constituent of the material being a non-metallic, non-metalloid inorganic material</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/653 simultaneously></p>
D	H01L 2224/37787	<p>• • • • • Ceramics, e.g. crystalline carbides, nitrides or oxides</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/653 simultaneously></p>
D	H01L 2224/37788	<p>• • • • • Glasses, e.g. amorphous oxides, nitrides or fluorides</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/653 simultaneously></p>
D	H01L 2224/3779	<p>• • • • • with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/653 simultaneously></p>
D	H01L 2224/37791	<p>• • • • • The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/653 simultaneously></p>
D	H01L 2224/37793	<p>• • • • • with a principal constituent of the material being a solid not provided for in groups H01L 2224/377 - H01L 2224/37791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond</p> <p><administratively transferred to H10W 72/655, H10W 72/625, and H10W 72/653 simultaneously></p>

D	H01L 2224/37794	with a principal constituent of the material being a liquid not provided for in groups H01L 2224/377 - H01L 2224/37791 <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/653 simultaneously>
D	H01L 2224/37795	with a principal constituent of the material being a gas not provided for in groups H01L 2224/377 - H01L 2224/37791 <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/653 simultaneously>
D	H01L 2224/37798	Fillers <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/651 simultaneously>
D	H01L 2224/37799	Base material <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/651 simultaneously>
D	H01L 2224/378	with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37801	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37805	Gallium [Ga] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37809	Indium [In] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37811	Tin [Sn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37813	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37814	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37816	Lead [Pb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37817	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37818	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>

D	H01L 2224/3782	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37823	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37824	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37838	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37839	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37844	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37847	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37849	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37855	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37857	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3786	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37863	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37864	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37866	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37869	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>

D	H01L 2224/3787	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37871	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37872	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37873	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37876	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37878	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37879	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3788	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37881	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37883	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37884	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37886	. . . . . with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/653 simultaneously>
D	H01L 2224/37887	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/653 simultaneously>
D	H01L 2224/37888	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/653 simultaneously>
D	H01L 2224/3789	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/653 simultaneously>

- D H01L 2224/37891 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37893 with a principal constituent of the material being a solid not provided for in groups H01L 2224/378 – H01L 2224/37891, e.g. allotropes of carbon, fullerene, graphite, carbon nanotubes, diamond
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37894 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/378 – H01L 2224/37891
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37895 with a principal constituent of the material being a gas not provided for in groups H01L 2224/378 – H01L 2224/37891
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37898 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/651](#) simultaneously>
- D H01L 2224/37899 Coating material
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/651](#) simultaneously>
- D H01L 2224/379 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/652](#) simultaneously>
- D H01L 2224/37901 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/652](#) simultaneously>
- D H01L 2224/37905 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/652](#) simultaneously>
- D H01L 2224/37909 Indium [In] as principal constituent
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/652](#) simultaneously>
- D H01L 2224/37911 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/652](#) simultaneously>
- D H01L 2224/37913 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/652](#) simultaneously>

D	H01L 2224/37914	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37916	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37917	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37918	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3792	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37923	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37924	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37938	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37939	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37944	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37947	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37949	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37955	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37957	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3796	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>

D	H01L 2224/37963	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37964	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37966	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37969	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3797	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37971	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37972	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37973	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37976	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37978	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37979	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/3798	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37981	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37983	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>
D	H01L 2224/37984	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/655 , H10W 72/625 , and H10W 72/652 simultaneously>

- D H01L 2224/37986 with a principal constituent of the material being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37987 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37988 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/3799 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37991 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37993 with a principal constituent of the material being a solid not provided for in groups H01L 2224/379 - H01L 2224/37991, e.g. allotropes of carbon, fullerene, graphite, carbon nanotubes, diamond
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37994 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/379 - H01L 2224/37991
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37995 with a principal constituent of the material being a gas not provided for in groups H01L 2224/379 - H01L 2224/37991
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37998 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/655](#), [H10W 72/625](#), and [H10W 72/653](#) simultaneously>
- D H01L 2224/37999 Shape or distribution of the fillers
<administratively transferred to [H10W 72/655](#) and [H10W 72/625](#)>
- D H01L 2224/38 of a plurality of strap connectors
<administratively transferred to [H10W 72/60](#)>
- D H01L 2224/39 . . . Structure, shape, material or disposition of the strap connectors after the connecting process
<administratively transferred to [H10W 72/60](#) and [H10W 72/07651](#)>
- D H01L 2224/40 of an individual strap connector
<administratively transferred to [H10W 72/60](#) and [H10W 72/07651](#)>
- D H01L 2224/4001 Structure
<administratively transferred to [H10W 72/07652](#) and [H10W 72/621](#)>

- D H01L 2224/4005 Shape
<administratively transferred to [H10W 72/07653](#) and [H10W 72/631](#)>
- D H01L 2224/4007 of bonding interfaces, e.g. interlocking features
<administratively transferred to [H10W 72/07653](#) and [H10W 72/631](#)>
- D H01L 2224/4009 Loop-shape
<administratively transferred to [H10W 72/07653](#) and [H10W 72/631](#)>
- D H01L 2224/40091 Arched
<administratively transferred to [H10W 72/07653](#)>
- D H01L 2224/40095 Kinked
<administratively transferred to [H10W 72/07653](#)>
- D H01L 2224/401 Disposition
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/40101 Connecting bonding areas at the same height, e.g. horizontal bond
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/40105 Connecting bonding areas at different heights
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/40106 the connector being orthogonal to a side surface of the semiconductor or solid-state body, e.g. parallel layout
<administratively transferred to [H10W 72/642](#)>
- D H01L 2224/40108 the connector not being orthogonal to a side surface of the semiconductor or solid-state body, e.g. fanned-out connectors, radial layout
<administratively transferred to [H10W 72/643](#)>
- D H01L 2224/40111 the strap connector extending above another semiconductor or solid-state body
<administratively transferred to [H10W 72/07654](#)>
- D H01L 2224/4013 Connecting within a semiconductor or solid-state body, i.e. fly strap, bridge strap
<administratively transferred to [H10W 72/644](#)>
- D H01L 2224/40132 with an intermediate bond, e.g. continuous strap daisy chain
<administratively transferred to [H10W 72/644](#)>
- D H01L 2224/40135 Connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
<administratively transferred to [H10W 90/761](#)>
- D H01L 2224/40137 the bodies being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/763](#)>
- D H01L 2224/40139 with an intermediate bond, e.g. continuous strap daisy chain
<administratively transferred to [H10W 90/763](#)>
- D H01L 2224/40141 the bodies being arranged on opposite sides of a substrate, e.g. mirror arrangements
<administratively transferred to [H10W 90/761](#)>
- D H01L 2224/40145 the bodies being stacked
<administratively transferred to [H10W 90/762](#)>

- D H01L 2224/40147 with an intermediate bond, e.g. continuous strap daisy chain
<administratively transferred to [H10W 90/762](#)>
- D H01L 2224/40151 Connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
<administratively transferred to [H10W 90/761](#)>
- D H01L 2224/40153 the body and the item being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/761](#)>
- D H01L 2224/40155 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/40157 Connecting the strap to a bond pad of the item
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/40158 the bond pad being disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/40159 the bond pad protruding from the surface of the item
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/4016 Connecting the strap to a pin of the item
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/40163 Connecting the strap to a potential ring of the item
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/40165 Connecting the strap to a via metallisation of the item
<administratively transferred to [H10W 90/765](#)>
- D H01L 2224/40175 the item being metallic
<administratively transferred to [H10W 90/767](#)>
- D H01L 2224/40177 Connecting the strap to a bond pad of the item
<administratively transferred to [H10W 90/767](#)>
- D H01L 2224/40178 the bond pad being disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/767](#)>
- D H01L 2224/40179 the bond pad protruding from the surface of the item
<administratively transferred to [H10W 90/767](#)>
- D H01L 2224/40183 Connecting the strap to a potential ring of the item
<administratively transferred to [H10W 90/767](#)>
- D H01L 2224/40195 the item being a discrete passive component
<administratively transferred to [H10W 90/769](#)>
- D H01L 2224/40221 the body and the item being stacked
<administratively transferred to [H10W 90/761](#)>
- D H01L 2224/40225 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/764](#)>
- D H01L 2224/40227 Connecting the strap to a bond pad of the item
<administratively transferred to [H10W 90/764](#)>

D	H01L 2224/40228	. . . . . the bond pad being disposed in a recess of the surface of the item <administratively transferred to H10W 90/764 >
D	H01L 2224/40229	. . . . . the bond pad protruding from the surface of the item <administratively transferred to H10W 90/764 >
D	H01L 2224/4023	. . . . . Connecting the strap to a pin of the item <administratively transferred to H10W 90/764 >
D	H01L 2224/40233	. . . . . Connecting the strap to a potential ring of the item <administratively transferred to H10W 90/764 >
D	H01L 2224/40235	. . . . . Connecting the strap to a via metallisation of the item <administratively transferred to H10W 90/764 >
D	H01L 2224/40237	. . . . . Connecting the strap to a die pad of the item <administratively transferred to H10W 90/764 >
D	H01L 2224/4024	. . . . . Connecting between the body and an opposite side of the item with respect to the body <administratively transferred to H10W 90/764 >
D	H01L 2224/40245	. . . . . the item being metallic <administratively transferred to H10W 90/766 >
D	H01L 2224/40247	. . . . . Connecting the strap to a bond pad of the item <administratively transferred to H10W 90/766 >
D	H01L 2224/40248	. . . . . the bond pad being disposed in a recess of the surface of the item <administratively transferred to H10W 90/766 >
D	H01L 2224/40249	. . . . . the bond pad protruding from the surface of the item <administratively transferred to H10W 90/766 >
D	H01L 2224/40253	. . . . . Connecting the strap to a potential ring of the item <administratively transferred to H10W 90/766 >
D	H01L 2224/40257	. . . . . Connecting the strap to a die pad of the item <administratively transferred to H10W 90/766 >
D	H01L 2224/4026	. . . . . Connecting between the body and an opposite side of the item with respect to the body <administratively transferred to H10W 90/766 >
D	H01L 2224/40265	. . . . . the item being a discrete passive component <administratively transferred to H10W 90/768 >
D	H01L 2224/404	. . . . . Connecting portions <administratively transferred to H10W 72/60 >
D	H01L 2224/4046	. . . . . with multiple bonds on the same bonding area <administratively transferred to H10W 72/07653 >
D	H01L 2224/40475	. . . . . connected to auxiliary connecting means on the bonding areas <administratively transferred to H10W 72/646 >
D	H01L 2224/40477	. . . . . being a pre-ball (i.e. a ball formed by capillary bonding) <administratively transferred to H10W 72/646 >
D	H01L 2224/40479	. . . . . on the semiconductor or solid-state body <administratively transferred to H10W 72/646 >

- D H01L 2224/4048 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/40484 being a plurality of pre-balls disposed side-to-side
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/40486 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/40487 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/40491 being an additional member attached to the bonding area through an adhesive or solder, e.g. buffer pad
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/40496 not being interposed between the connector and the bonding area
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/40499 Material of the auxiliary connecting means
<administratively transferred to [H10W 72/646](#)>
- D H01L 2224/405 Material
<administratively transferred to [H10W 72/07655](#)>
- D H01L 2224/40505 at the bonding interface
<administratively transferred to [H10W 72/07655](#)>
- D H01L 2224/40506 comprising an eutectic alloy
<administratively transferred to [H10W 72/07655](#) and [H10W 72/6524](#)>
- D H01L 2224/40507 comprising an intermetallic compound
<administratively transferred to [H10W 72/6528](#)>
- D H01L 2224/4051 Morphology of the connecting portion, e.g. grain-size distribution
<administratively transferred to [H10W 72/07655](#)>
- D H01L 2224/4052 Bonding interface between the connecting portion and the bonding area
<administratively transferred to [H10W 72/07655](#)>
- D H01L 2224/4099 Auxiliary members for strap connectors, e.g. flow-barriers, spacers
<administratively transferred to [H10W 72/681](#)>
- D H01L 2224/40991 being formed on the semiconductor or solid-state body to be connected
<administratively transferred to [H10W 72/681](#)>
- D H01L 2224/40992 Reinforcing structures
<administratively transferred to [H10W 72/683](#)>
- D H01L 2224/40993 Alignment aids
<administratively transferred to [H10W 72/685](#)>
- D H01L 2224/40996 being formed on an item to be connected not being a semiconductor or solid-state body
<administratively transferred to [H10W 72/681](#)>
- D H01L 2224/40997 Reinforcing structures
<administratively transferred to [H10W 72/683](#)>

- D H01L 2224/40998 Alignment aids
<administratively transferred to [H10W 72/685](#)>
- D H01L 2224/41 of a plurality of strap-connectors
<administratively transferred to [H10W 72/60](#)>
- D H01L 2224/4101 Structure
<administratively transferred to [H10W 72/627](#) and [H10W 72/07652](#)>
- D H01L 2224/4103 Connectors having different sizes
<administratively transferred to [H10W 72/627](#) and [H10W 72/07652](#)>
- D H01L 2224/4105 Shape
<administratively transferred to [H10W 72/631](#)>
- D H01L 2224/41051 Connectors having different shapes
<administratively transferred to [H10W 72/637](#)>
- D H01L 2224/41052 Different loop heights
<administratively transferred to [H10W 72/637](#)>
- D H01L 2224/411 Disposition
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/41105 Connecting at different heights
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/41107 on the semiconductor or solid-state body being
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/41109 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/647](#)>
- D H01L 2224/4111 the connectors being bonded to at least one common bonding area;
e.g. daisy chain
<administratively transferred to [H10W 72/647](#) and [H10W 72/6478](#)>
- D H01L 2224/41111 the connectors connecting two common bonding areas
<administratively transferred to [H10W 72/647](#) and [H10W 72/6478](#)>
- D H01L 2224/41112 the connectors connecting a common bonding area on the
semiconductor or solid-state body to different bonding areas outside
the body, e.g. diverging straps
<administratively transferred to [H10W 72/647](#) and [H10W 72/6478](#)>
- D H01L 2224/41113 the connectors connecting different bonding areas on the
semiconductor or solid-state body to a common bonding area
outside the body, e.g. converging straps
<administratively transferred to [H10W 72/647](#) and [H10W 72/6478](#)>
- D H01L 2224/4112 Layout
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/4117 Crossed straps
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/41171 Fan-out arrangements
<administratively transferred to [H10W 72/647](#) and [H10W 72/643](#)>
- D H01L 2224/41173 Radial fan-out arrangements
<administratively transferred to [H10W 72/647](#) and [H10W 72/643](#)>

- D H01L 2224/41174 Stacked arrangements
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/41175 Parallel arrangements
<administratively transferred to [H10W 72/647](#) and [H10W 72/642](#)>
- D H01L 2224/41176 Strap connectors having the same loop shape and height
<administratively transferred to [H10W 72/647](#) and [H10W 72/642](#)>
- D H01L 2224/41177 Combinations of different arrangements
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/41179 Corner adaptations, i.e. disposition of the strap connectors at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/4118 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/414 Connecting portions
<administratively transferred to [H10W 72/60](#)>
- D H01L 2224/4141 the connecting portions being stacked
<administratively transferred to [H10W 72/647](#) and [H10W 72/646](#)>
- D H01L 2224/41421 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/647](#) and [H10W 72/646](#)>
- D H01L 2224/41422 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/647](#) and [H10W 72/646](#)>
- D H01L 2224/4143 the connecting portions being staggered
<administratively transferred to [H10W 72/647](#) and [H10W 72/07654](#)>
- D H01L 2224/415 Material
<administratively transferred to [H10W 72/07655](#)>
- D H01L 2224/41505 Connectors having different materials
<administratively transferred to [H10W 72/07655](#) and [H10W 72/657](#)>
- D H01L 2224/42 . . . Wire connectors; Manufacturing methods related thereto
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/43 . . . Manufacturing methods
<administratively transferred to [H10W 72/015](#)>
- D H01L 2224/43001 Involving a temporary auxiliary member not forming part of the manufacturing apparatus, e.g. removable or sacrificial coating, film or substrate
<administratively transferred to [H10W 72/01504](#)>
- D H01L 2224/431 Pre-treatment of the preform connector
<administratively transferred to [H10W 72/015](#)>
- D H01L 2224/4312 Applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43125 Plating, e.g. electroplating, electroless plating
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/432 Mechanical processes
<administratively transferred to [H10W 72/015](#)>

- D H01L 2224/4321 Pulling
<administratively transferred to [H10W 72/01551](#)>
- D H01L 2224/435 Modification of a pre-existing material
<administratively transferred to [H10W 72/01561](#)>
- D H01L 2224/4351 Sintering
<administratively transferred to [H10W 72/01561](#)>
- D H01L 2224/4352 Anodisation
<administratively transferred to [H10W 72/01561](#)>
- D H01L 2224/437 Involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/015](#)>
- D H01L 2224/438 Post-treatment of the connector
<administratively transferred to [H10W 72/015](#)>
- D H01L 2224/4381 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/01571](#)>
- D H01L 2224/4382 Applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43821 Spray coating
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43822 Dip coating
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43823 Immersion coating, e.g. solder bath
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43824 Chemical solution deposition [CSD], i.e. using a liquid precursor
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43825 Plating, e.g. electroplating, electroless plating
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43826 Physical vapour deposition [PVD], e.g. evaporation, sputtering
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/43827 Chemical vapour deposition [CVD], e.g. laser CVD
<administratively transferred to [H10W 72/01515](#)>
- D H01L 2224/4383 Reworking
<administratively transferred to [H10W 72/01551](#)>
- D H01L 2224/43831 with a chemical process, e.g. with etching of the connector
<administratively transferred to [H10W 72/01553](#)>
- D H01L 2224/43847 with a mechanical process, e.g. with flattening of the connector
<administratively transferred to [H10W 72/01561](#)>
- D H01L 2224/43848 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/01565](#)>
- D H01L 2224/43985 Methods of manufacturing wire connectors involving a specific sequence of method steps
<administratively transferred to [H10W 72/015](#)>
- D H01L 2224/43986 with repetition of the same manufacturing step
<administratively transferred to [H10W 72/015](#)>

- D H01L 2224/44 . . . Structure, shape, material or disposition of the wire connectors prior to the connecting process
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/45 of an individual wire connector
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/45001 Core members of the connector
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/45005 Structure
<administratively transferred to [H10W 72/521](#)>
- D H01L 2224/4501 Shape
<administratively transferred to [H10W 72/531](#)>
- D H01L 2224/45012 Cross-sectional shape
<administratively transferred to [H10W 72/533](#)>
- D H01L 2224/45013 being non-uniform along the connector
<administratively transferred to [H10W 72/533](#)>
- D H01L 2224/45014 Ribbon connectors, e.g. rectangular cross-section
<administratively transferred to [H10W 72/534](#)>
- D H01L 2224/45015 being circular
- D H01L 2224/45016 being elliptic
<administratively transferred to [H10W 72/533](#)>
- D H01L 2224/4502 Disposition
<administratively transferred to [H10W 72/541](#)>
- D H01L 2224/45025 Plural core members
<administratively transferred to [H10W 72/524](#)>
- D H01L 2224/45026 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/524](#)>
- D H01L 2224/45028 Side-to-side arrangements
<administratively transferred to [H10W 72/524](#)>
- D H01L 2224/4503 Stacked arrangements
<administratively transferred to [H10W 72/522](#)>
- D H01L 2224/45032 Two-layer arrangements
<administratively transferred to [H10W 72/522](#)>
- D H01L 2224/45033 Three-layer arrangements
<administratively transferred to [H10W 72/522](#)>
- D H01L 2224/45034 Four-layer arrangements
<administratively transferred to [H10W 72/522](#)>
- D H01L 2224/45099 Material
<administratively transferred to [H10W 72/551](#)>
- D H01L 2224/451 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/552](#)>

D	H01L 2224/45101	. . . . .	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/552 >
D	H01L 2224/45105	. . . . .	Gallium (Ga) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45109	. . . . .	Indium (In) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45111	. . . . .	Tin (Sn) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45113	. . . . .	Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45114	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45116	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45117	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/552 >
D	H01L 2224/45118	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/4512	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45123	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45124	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45138	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/552 >
D	H01L 2224/45139	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45144	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45147	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45149	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45155	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45157	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/4516	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/552 >

D	H01L 2224/45163	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/552 >
D	H01L 2224/45164	. . . . . Palladium (Pd) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45166	. . . . . Titanium (Ti) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45169	. . . . . Platinum (Pt) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/4517	. . . . . Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45171	. . . . . Chromium (Cr) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45172	. . . . . Vanadium (V) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45173	. . . . . Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45176	. . . . . Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45178	. . . . . Iridium (Ir) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45179	. . . . . Niobium (Nb) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/4518	. . . . . Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45181	. . . . . Tantalum (Ta) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45183	. . . . . Rhenium (Re) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45184	. . . . . Tungsten (W) as principal constituent <administratively transferred to H10W 72/552 >
D	H01L 2224/45186	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/553 >
D	H01L 2224/45187	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/553 >
D	H01L 2224/45188	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/553 >
D	H01L 2224/4519	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/553 >
D	H01L 2224/45191	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/553 >

- D H01L 2224/45193 with a principal constituent of the material being a solid not provided for in groups H01L 2224/451 – H01L 2224/45191, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/553](#)>
- D H01L 2224/45194 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/451 – H01L 2224/45191
<administratively transferred to [H10W 72/553](#)>
- D H01L 2224/45195 with a principal constituent of the material being a gas not provided for in groups H01L 2224/451 – H01L 2224/45191
<administratively transferred to [H10W 72/553](#)>
- D H01L 2224/45198 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/525](#) and [H10W 72/551](#)>
- D H01L 2224/45199 Material of the matrix
<administratively transferred to [H10W 72/525](#) and [H10W 72/551](#)>
- D H01L 2224/452 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45201 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45205 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45209 Indium (In) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45211 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45213 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45214 Thallium (Tl) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45216 Lead (Pb) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45217 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>

D	H01L 2224/45218	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4522	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45223	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45224	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45238	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C
D	H01L 2224/45239	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45244	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45247	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45249	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45255	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45257	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4526	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45263	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45264	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45266	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >

D	H01L 2224/45269	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4527	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45271	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45272	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45273	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45276	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45278	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45279	. . . . .	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4528	. . . . .	Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45281	. . . . .	Tantalum (Ta) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45283	. . . . .	Rhenium (Re) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45284	. . . . .	Tungsten (W) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45286	. . . . .	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/525 and H10W 72/553 >
D	H01L 2224/45287	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/525 and H10W 72/553 >
D	H01L 2224/45288	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/525 and H10W 72/553 >

- D H01L 2224/4529 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45291 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45293 with a principal constituent of the material being a solid not provided for in groups H01L 2224/452 - H01L 2224/45291, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45294 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/452 - H01L 2224/45291
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45295 with a principal constituent of the material being a gas not provided for in groups H01L 2224/452 - H01L 2224/45291
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45298 Fillers
<administratively transferred to [H10W 72/525](#)>
- D H01L 2224/45299 Base material
<administratively transferred to [H10W 72/525](#)>
- D H01L 2224/453 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
- D H01L 2224/45301 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45305 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45309 Indium (In) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45311 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45313 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45314 Thallium (Tl) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>

D	H01L 2224/45316	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45317	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45318	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4532	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45323	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45324	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/5524 >
D	H01L 2224/45338	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45339	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45344	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/5522 >
D	H01L 2224/45347	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/5525 >
D	H01L 2224/45349	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45355	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45357	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4536	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45363	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/525 and H10W 72/552 >

D	H01L 2224/45364	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45366	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45369	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4537	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45371	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45372	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45373	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45376	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45378	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45379	. . . . .	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4538	. . . . .	Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45381	. . . . .	Tantalum (Ta) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45383	. . . . .	Rhenium (Re) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45384	. . . . .	Tungsten (W) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45386	. . . . .	with a principal constituent of the material being a non metallic, non metalloid inorganic material <administratively transferred to H10W 72/525 and H10W 72/553 >

- D H01L 2224/45387 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45388 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/4539 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45391 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45393 with a principal constituent of the material being a solid not provided for in groups H01L 2224/453 - H01L 2224/45391, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45394 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/453 - H01L 2224/45391
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45395 with a principal constituent of the material being a gas not provided for in groups H01L 2224/453 - H01L 2224/45391
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45398 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45399 Coating material
<administratively transferred to [H10W 72/525](#) and [H10W 72/551](#)>
- D H01L 2224/454 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45401 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45405 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>

D	H01L 2224/45409	. . . . .	Indium (In) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45411	. . . . .	Tin (Sn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45413	. . . . .	Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45414	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45416	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45417	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45418	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4542	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45423	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45424	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45438	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45439	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45444	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45447	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45449	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >

D	H01L 2224/45455	• • • • •	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45457	• • • • •	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4546	• • • • •	Iron (Fe) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45463	• • • • •	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45464	• • • • •	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45466	• • • • •	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45469	• • • • •	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4547	• • • • •	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45471	• • • • •	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45472	• • • • •	Vanadium (V) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45473	• • • • •	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45476	• • • • •	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45478	• • • • •	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/45479	• • • • •	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >
D	H01L 2224/4548	• • • • •	Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/525 and H10W 72/552 >

- D H01L 2224/45481 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45483 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45484 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/525](#) and [H10W 72/552](#)>
- D H01L 2224/45486 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/4549 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/454 - H01L 2224/45491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/454 - H01L 2224/45491
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/454 - H01L 2224/45491
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/525](#) and [H10W 72/553](#)>
- D H01L 2224/45499 Shape or distribution of the fillers
<administratively transferred to [H10W 72/525](#)>

- D H01L 2224/4554 Coating
<administratively transferred to [H10W 72/522](#)>
- D H01L 2224/45541 Structure
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/4555 Shape
<administratively transferred to [H10W 72/535](#)>
- D H01L 2224/4556 Disposition, e.g. coating on a part of the core
<administratively transferred to [H10W 72/543](#)>
- D H01L 2224/45565 Single-coating layer
<administratively transferred to [H10W 72/522](#)>
- D H01L 2224/4557 Plural-coating layers
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/45572 Two-layer stack coating
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/45573 Three-layer stack coating
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/45574 Four-layer stack coating
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/45576 being mutually engaged together, e.g. through inserts
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/45578 being disposed next to each other, e.g. side-to-side arrangements
<administratively transferred to [H10W 72/523](#)>
- D H01L 2224/45599 Material
<administratively transferred to [H10W 72/555](#) and [H10W 72/551](#)>
- D H01L 2224/456 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/555](#) and [H10W 72/552](#)>
- D H01L 2224/45601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/555](#) and [H10W 72/552](#)>
- D H01L 2224/45605 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/555](#) and [H10W 72/552](#)>
- D H01L 2224/45609 Indium (In) as principal constituent
<administratively transferred to [H10W 72/555](#) and [H10W 72/552](#)>
- D H01L 2224/45611 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/555](#) and [H10W 72/552](#)>
- D H01L 2224/45613 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/555](#) and [H10W 72/552](#)>

D	H01L 2224/45614	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45616	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45617	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45618	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/4562	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45623	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45624	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45638	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45639	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45644	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45647	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45649	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45655	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45657	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/4566	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >

D	H01L 2224/45663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45664	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45666	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45669	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/4567	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45671	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45672	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45673	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45676	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45678	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45679	. . . . .	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/4568	. . . . .	Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45681	. . . . .	Tantalum (Ta) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45683	. . . . .	Rhenium (Re) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >
D	H01L 2224/45684	. . . . .	Tungsten (W) as principal constituent <administratively transferred to H10W 72/555 and H10W 72/552 >

- D H01L 2224/45686 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45687 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/4569 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/456 – H01L 2224/45691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/456 – H01L 2224/45691
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/456 – H01L 2224/45691
<administratively transferred to [H10W 72/555](#) and [H10W 72/553](#)>
- D H01L 2224/45698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/555](#) and [H10W 72/525](#)>
- D H01L 2224/45699 Material of the matrix
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/551](#) simultaneously>
- D H01L 2224/457 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45705 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45709 Indium (In) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>

D	H01L 2224/45711	. . . . .	Tin (Sn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45713	. . . . .	Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45714	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45716	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45717	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45718	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4572	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45723	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45724	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45738	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45739	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45744	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45747	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45749	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45755	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>

D	H01L 2224/45757	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4576	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45763	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45764	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45766	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45769	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4577	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45771	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45772	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45773	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45776	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45778	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45779	. . . . .	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4578	. . . . .	Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45781	. . . . .	Tantalum (Ta) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>

- D H01L 2224/45783 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45784 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45786 with a principal constituent of the material being a non-metallic,
non-metalloid inorganic material
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45787 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/4579 with a principal constituent of the material being a polymer, e.g.
polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45791 The principal constituent being an elastomer, e.g. silicones,
isoprene, neoprene
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45793 with a principal constituent of the material being a solid not
provided for in groups H01L 2224/457 - H01L 2224/45791, e.g.
allotropes of carbon, fullerene, graphite, carbon-nanotubes,
diamond
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45794 with a principal constituent of the material being a liquid not
provided for in groups H01L 2224/457 - H01L 2224/45791
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45795 with a principal constituent of the material being a gas not
provided for in groups H01L 2224/457 - H01L 2224/45791
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45798 Fillers
<administratively transferred to [H10W 72/555](#) and [H10W 72/525](#)>
- D H01L 2224/45799 Base material
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/551](#) simultaneously>
- D H01L 2224/458 with a principal constituent of the material being a metal or a
metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic
(As), antimony (Sb), tellurium (Te) and polonium (Po), and
alloys thereof
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/552](#) simultaneously>

D	H01L 2224/45801	. . . . .	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45805	. . . . .	Gallium (Ga) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45809	. . . . .	Indium (In) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45811	. . . . .	Tin (Sn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45813	. . . . .	Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45814	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45816	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45817	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45818	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4582	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45823	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45824	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45838	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45839	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45844	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>

D	H01L 2224/45847	. . . . .	• Copper (Cu) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45849	. . . . .	• Manganese (Mn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45855	. . . . .	• Nickel (Ni) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45857	. . . . .	• Cobalt (Co) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4586	. . . . .	• Iron (Fe) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45863	. . . . .	• the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45864	. . . . .	• Palladium (Pd) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45866	. . . . .	• Titanium (Ti) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45869	. . . . .	• Platinum (Pt) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4587	. . . . .	• Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45871	. . . . .	• Chromium (Cr) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45872	. . . . .	• Vanadium (V) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45873	. . . . .	• Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45876	. . . . .	• Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45878	. . . . .	• Iridium (Ir) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>

- D H01L 2224/45879 Niobium (Nb) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/4588 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45881 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45883 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45884 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45886 with a principal constituent of the material being a non
metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45887 Ceramics, e.g. crystalline carbides, nitrides or oxides
- D H01L 2224/45888 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/553](#) simultaneously>
- D H01L 2224/4589 with a principal constituent of the material being a polymer,
e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45891 The principal constituent being an elastomer, e.g. silicones,
isoprene, neoprene
<administratively transferred to [H10W 72/555](#),
[H10W 72/525](#), and [H10W 72/553](#) simultaneously>
- D H01L 2224/45893 with a principal constituent of the material being a solid not
provided for in groups H01L 2224/458 - H01L 2224/45891,
e.g. allotropes of carbon, fullerene, graphite, carbon-
nanotubes, diamond
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45894 with a principal constituent of the material being a liquid not
provided for in groups H01L 2224/458 - H01L 2224/45891
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>
- D H01L 2224/45895 with a principal constituent of the material being a gas not
provided for in groups H01L 2224/458 - H01L 2224/45891
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#),
and [H10W 72/553](#) simultaneously>

- D H01L 2224/45898 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/555](#) and [H10W 72/525](#)>
- D H01L 2224/45899 Coating material
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/551](#) simultaneously>
- D H01L 2224/459 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45901 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45905 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45909 Indium (In) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45911 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45913 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45914 Thallium (Tl) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45916 Lead (Pb) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45917 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45918 Zinc (Zn) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/4592 Antimony (Sb) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>
- D H01L 2224/45923 Magnesium (Mg) as principal constituent
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/552](#) simultaneously>

D	H01L 2224/45924	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/5524 simultaneously>
D	H01L 2224/45938	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45939	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45944	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/5522 simultaneously>
D	H01L 2224/45947	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/5525 simultaneously>
D	H01L 2224/45949	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45955	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45957	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4596	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45963	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45964	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45966	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45969	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4597	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45971	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>

D	H01L 2224/45972	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45973	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45976	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45978	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45979	. . . . .	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/4598	. . . . .	Molybdenum (Mo) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45981	. . . . .	Tantalum (Ta) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45983	. . . . .	Rhenium (Re) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45984	. . . . .	Tungsten (W) as principal constituent <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/552 simultaneously>
D	H01L 2224/45986	. . . . .	with a principal constituent of the material being a non metallic, non-metalloid inorganic material <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/553 simultaneously>
D	H01L 2224/45987	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/553 simultaneously>
D	H01L 2224/45988	. . . . .	Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/553 simultaneously>
D	H01L 2224/4599	. . . . .	with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/553 simultaneously>
D	H01L 2224/45991	. . . . .	The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/555 , H10W 72/525 , and H10W 72/553 simultaneously>

- D H01L 2224/45993 with a principal constituent of the material being a solid not provided for in groups H01L 2224/459 – H01L 2224/45991, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/553](#) simultaneously>
- D H01L 2224/45994 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/459 – H01L 2224/45991
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/553](#) simultaneously>
- D H01L 2224/45995 with a principal constituent of the material being a gas not provided for in groups H01L 2224/459 – H01L 2224/45991
<administratively transferred to [H10W 72/555](#), [H10W 72/525](#), and [H10W 72/553](#) simultaneously>
- D H01L 2224/45998 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/555](#) and [H10W 72/525](#)>
- D H01L 2224/45999 Shape or distribution of the fillers
<administratively transferred to [H10W 72/555](#) and [H10W 72/525](#)>
- D H01L 2224/46 of a plurality of wire connectors
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/47 . . . Structure, shape, material or disposition of the wire connectors after the connecting process
<administratively transferred to [H10W 72/07551](#) and [H10W 72/50](#)>
- D H01L 2224/48 of an individual wire connector
<administratively transferred to [H10W 72/07551](#) and [H10W 72/50](#)>
- D H01L 2224/4801 Structure
<administratively transferred to [H10W 72/07552](#) and [H10W 72/521](#)>
- D H01L 2224/48011 Length
<administratively transferred to [H10W 72/07552](#) and [H10W 72/521](#)>
- D H01L 2224/4805 Shape
<administratively transferred to [H10W 72/07553](#) and [H10W 72/531](#)>
- D H01L 2224/4807 of bonding interfaces, e.g. interlocking features
<administratively transferred to [H10W 72/07553](#) and [H10W 72/531](#)>
- D H01L 2224/4809 Loop shape
<administratively transferred to [H10W 72/07553](#) and [H10W 72/531](#)>
- D H01L 2224/48091 Arched
- D H01L 2224/48092 Helix
<administratively transferred to [H10W 72/5368](#)>
- D H01L 2224/48095 Kinked
<administratively transferred to [H10W 72/5366](#)>
- D H01L 2224/48096 the kinked part being in proximity to the bonding area on the semiconductor or solid-state body
<administratively transferred to [H10W 72/5366](#)>

- D H01L 2224/48097 the kinked part being in proximity to the bonding area outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/5366](#)>
- D H01L 2224/481 Disposition
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/48101 Connecting bonding areas at the same height, e.g. horizontal bond
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/48105 Connecting bonding areas at different heights
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/48106 the connector being orthogonal to a side surface of the semiconductor or solid-state body, e.g. parallel layout
<administratively transferred to [H10W 72/5445](#)>
- D H01L 2224/48108 the connector not being orthogonal to a side surface of the semiconductor or solid-state body, e.g. fanned-out connectors, radial layout
<administratively transferred to [H10W 72/5449](#)>
- D H01L 2224/4811 Connecting to a bonding area of the semiconductor or solid-state body located at the far end of the body with respect to the bonding area outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/48111 the wire connector extending above another semiconductor or solid-state body
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/4813 Connecting within a semiconductor or solid-state body, i.e. fly wire, bridge wire
<administratively transferred to [H10W 72/5453](#)>
- D H01L 2224/48132 with an intermediate bond, e.g. continuous wire daisy chain
<administratively transferred to [H10W 72/5453](#)>
- D H01L 2224/48135 Connecting between different semiconductor or solid-state bodies, i.e. chip-to-chip
<administratively transferred to [H10W 90/751](#)>
- D H01L 2224/48137 the bodies being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/753](#)>
- D H01L 2224/48138 the wire connector connecting to a bonding area disposed in a recess of the surface
<administratively transferred to [H10W 90/753](#)>
- D H01L 2224/48139 with an intermediate bond, e.g. continuous wire daisy chain
<administratively transferred to [H10W 90/753](#)>
- D H01L 2224/4814 the wire connector connecting to a bonding area protruding from the surface
<administratively transferred to [H10W 90/753](#)>
- D H01L 2224/48141 the bodies being arranged on opposite sides of a substrate, e.g. mirror arrangements
<administratively transferred to [H10W 90/751](#)>

- D H01L 2224/48145 the bodies being stacked
<administratively transferred to [H10W 90/752](#)>
- D H01L 2224/48147 with an intermediate bond, e.g. continuous wire daisy chain
<administratively transferred to [H10W 90/752](#)>
- D H01L 2224/48148 the wire connector connecting to a bonding area disposed in a recess of the surface
<administratively transferred to [H10W 90/752](#)>
- D H01L 2224/48149 the wire connector connecting to a bonding area protruding from the surface
<administratively transferred to [H10W 90/752](#)>
- D H01L 2224/48151 Connecting between a semiconductor or solid-state body and an item not being a semiconductor or solid-state body, e.g. chip-to-substrate, chip-to-passive
<administratively transferred to [H10W 90/751](#)>
- D H01L 2224/48153 the body and the item being arranged next to each other, e.g. on a common substrate
<administratively transferred to [H10W 90/751](#)>
- D H01L 2224/48155 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48157 connecting the wire to a bond pad of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48158 the bond pad being disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48159 the bond pad protruding from the surface of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/4816 connecting the wire to a pin of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48163 connecting the wire to a potential ring of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48165 connecting the wire to a via metallisation of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48175 the item being metallic
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48177 connecting the wire to a bond pad of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48178 the bond pad being disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48179 the bond pad protruding from the surface of the item
<administratively transferred to [H10W 90/755](#)>
- D H01L 2224/48183 connecting the wire to a potential ring of the item
<administratively transferred to [H10W 90/755](#)>

- D H01L 2224/48195 the item being a discrete passive component
<administratively transferred to [H10W 90/759](#)>
- D H01L 2224/48221 the body and the item being stacked
<administratively transferred to [H10W 90/751](#)>
- D H01L 2224/48225 the item being non-metallic, e.g. insulating substrate with or without metallisation
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48227 connecting the wire to a bond pad of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48228 the bond pad being disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48229 the bond pad protruding from the surface of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/4823 connecting the wire to a pin of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48233 connecting the wire to a potential ring of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48235 connecting the wire to a via metallisation of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48237 connecting the wire to a die pad of the item
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/4824 Connecting between the body and an opposite side of the item with respect to the body
<administratively transferred to [H10W 90/754](#)>
- D H01L 2224/48245 the item being metallic
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/48247 connecting the wire to a bond pad of the item
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/48248 the bond pad being disposed in a recess of the surface of the item
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/48249 the bond pad protruding from the surface of the item
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/48253 connecting the wire to a potential ring of the item
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/48257 connecting the wire to a die pad of the item
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/4826 Connecting between the body and an opposite side of the item with respect to the body
<administratively transferred to [H10W 90/756](#)>
- D H01L 2224/48265 the item being a discrete passive component
<administratively transferred to [H10W 90/758](#)>

- D H01L 2224/484 Connecting portions
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/4845 Details of ball bonds
<administratively transferred to [H10W 72/536](#)>
- D H01L 2224/48451 Shape
<administratively transferred to [H10W 72/536](#)>
- D H01L 2224/48453 of the interface with the bonding area
<administratively transferred to [H10W 72/536](#)>
- D H01L 2224/48455 Details of wedge bonds
<administratively transferred to [H10W 72/5363](#)>
- D H01L 2224/48456 Shape
<administratively transferred to [H10W 72/5363](#)>
- D H01L 2224/48458 of the interface with the bonding area
<administratively transferred to [H10W 72/5363](#)>
- D H01L 2224/4846 with multiple bonds on the same bonding area
<administratively transferred to [H10W 72/5438](#)>
- D H01L 2224/48463 the connecting portion on the bonding area of the semiconductor or solid-state body being a ball bond
<administratively transferred to [H10W 72/536](#)>
- D H01L 2224/48464 the other connecting portion not on the bonding area also being a ball bond, i.e. ball-to-ball
<administratively transferred to [H10W 72/536](#)>
- D H01L 2224/48465 the other connecting portion not on the bonding area being a wedge bond, i.e. ball-to-wedge, regular stitch
<administratively transferred to [H10W 72/536](#) and [H10W 72/5363](#)>
- D H01L 2224/4847 the connecting portion on the bonding area of the semiconductor or solid-state body being a wedge bond
<administratively transferred to [H10W 72/5363](#)>
- D H01L 2224/48471 the other connecting portion not on the bonding area being a ball bond, i.e. wedge-to-ball, reverse stitch
<administratively transferred to [H10W 72/536](#) and [H10W 72/5363](#)>
- D H01L 2224/48472 the other connecting portion not on the bonding area also being a wedge bond, i.e. wedge-to-wedge
<administratively transferred to [H10W 72/5363](#)>
- D H01L 2224/48475 connected to auxiliary connecting means on the bonding areas, e.g. pre-ball, wedge-on-ball, ball-on-ball
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48476 between the wire connector and the bonding area
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48477 being a pre-ball (i.e. a ball formed by capillary bonding)
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48478 the connecting portion being a wedge bond, i.e. wedge on pre-ball
<administratively transferred to [H10W 72/5434](#)>

- D H01L 2224/48479 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/4848 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48481 the connecting portion being a ball bond, i.e. ball on pre-ball
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48482 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48483 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48484 being a plurality of pre-balls disposed side-to-side
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48485 the connecting portion being a wedge bond, i.e. wedge on pre-ball
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48486 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48487 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48488 the connecting portion being a ball bond, i.e. ball on pre-ball
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48489 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/4849 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48491 being an additional member attached to the bonding area through an adhesive or solder, e.g. buffer pad
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48496 not being interposed between the wire connector and the bonding area
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/48499 Material of the auxiliary connecting means
<administratively transferred to [H10W 72/5434](#)>
- D H01L 2224/485 Material
<administratively transferred to [H10W 72/07555](#) and [H10W 72/551](#)>
- D H01L 2224/48505 at the bonding interface
<administratively transferred to [H10W 72/07555](#) and [H10W 72/551](#)>
- D H01L 2224/48506 comprising an eutectic alloy
<administratively transferred to [H10W 72/07555](#) and [H10W 72/5527](#)>
- D H01L 2224/48507 comprising an intermetallic compound
<administratively transferred to [H10W 72/07555](#) and [H10W 72/5528](#)>

- D H01L 2224/4851 Morphology of the connecting portion, e.g. grain-size distribution
<administratively transferred to [H10W 72/07555](#) and [H10W 72/551](#)>
- D H01L 2224/48511 Heat affected zone [HAZ]
<administratively transferred to [H10W 72/07555](#) and [H10W 72/551](#)>
- D H01L 2224/4852 Bonding interface between the connecting portion and the bonding area
<administratively transferred to [H10W 72/07555](#) and [H10W 72/551](#)>
- D H01L 2224/48599 Principal constituent of the connecting portion of the wire connector being Gold (Au)
<administratively transferred to [H10W 72/59](#) and [H10W 72/5522](#)>
- D H01L 2224/486 with a principal constituent of the bonding area being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48605 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48609 Indium (In) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48611 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48613 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48614 Thallium (Tl) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48616 Lead (Pb) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48617 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950 °C
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48618 Zinc (Zn) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/4862	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48623	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48624	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48638	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48639	Silver (Ag) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48644	Gold (Au) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48647	Copper (Cu) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48649	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48655	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48657	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/4866	Iron (Fe) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48663	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48664	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48666	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>
D	H01L 2224/48669	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5522 , and H10W 72/952 simultaneously>

- D H01L 2224/4867 Zirconium (Zr) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48671 Chromium (Cr) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48672 Vanadium (V) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48673 Rhodium (Rh) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48678 Iridium (Ir) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48679 Niobium (Nb) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/4868 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48681 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48683 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48684 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48686 with a principal constituent of the bonding area being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48687 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/4869 with a principal constituent of the bonding area being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>

- D H01L 2224/48693 with a principal constituent of the bonding area being a solid not provided for in groups H01L 2224/486 - H01L 2224/4869; e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48694 with a principal constituent of the bonding area being a liquid not provided for in groups H01L 2224/486 - H01L 2224/4869
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48698 with a principal constituent of the bonding area being a combination of two or more material regions, i.e. being a hybrid material, e.g. segmented structures, island patterns
<administratively transferred to [H10W 72/59](#), [H10W 72/5522](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48699 Principal constituent of the connecting portion of the wire connector being Aluminium (Al)
<administratively transferred to [H10W 72/59](#) and [H10W 72/5524](#)>
- D H01L 2224/487 with a principal constituent of the bonding area being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48705 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48709 Indium (In) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48711 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48713 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48714 Thallium (Tl) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48716 Lead (Pb) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/48717	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950 °C <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48718	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/4872	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48723	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48724	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48738	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48739	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48744	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48747	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48749	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48755	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48757	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/4876	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48763	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>
D	H01L 2224/48764	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5524 , and H10W 72/952 simultaneously>

- D H01L 2224/48766 Titanium (Ti) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48769 Platinum (Pt) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/4877 Zirconium (Zr) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48771 Chromium (Cr) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48772 Vanadium (V) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48773 Rhodium (Rh) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48778 Iridium (Ir) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48779 Niobium (Nb) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/4878 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48781 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48783 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48784 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48786 with a principal constituent of the bonding area being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48787 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>

- D H01L 2224/4879 with a principal constituent of the bonding area being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48793 with a principal constituent of the bonding area being a solid not provided for in groups H01L 2224/487 - H01L 2224/4879; e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48794 with a principal constituent of the bonding area being a liquid not provided for in groups H01L 2224/487 - H01L 2224/4879
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48798 with a principal constituent of the bonding area being a combination of two or more material regions, i.e. being a hybrid material, e.g. segmented structures, island patterns
<administratively transferred to [H10W 72/59](#), [H10W 72/5524](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48799 Principal constituent of the connecting portion of the wire connector being Copper (Cu)
<administratively transferred to [H10W 72/59](#) and [H10W 72/5525](#)>
- D H01L 2224/488 with a principal constituent of the bonding area being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48801 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48805 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48809 Indium (In) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48811 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48813 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/48814	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48816	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48817	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950 °C <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48818	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/4882	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48823	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48824	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48838	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48839	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48844	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48847	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48849	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48855	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>
D	H01L 2224/48857	. . . . .	Cobalt (Co) as principal constituent
D	H01L 2224/4886	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/59 , H10W 72/5525 , and H10W 72/952 simultaneously>

- D H01L 2224/48863 the principal constituent melting at a temperature of greater than 1550°C
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48864 Palladium (Pd) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48866 Titanium (Ti) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48869 Platinum (Pt) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/4887 Zirconium (Zr) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48871 Chromium (Cr) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48872 Vanadium (V) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48873 Rhodium (Rh) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48878 Iridium (Ir) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48879 Niobium (Nb) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/4888 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48881 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48883 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48884 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/48886 with a principal constituent of the bonding area being a non metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>

- D H01L 2224/48887 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48888 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/4889 with a principal constituent of the bonding area being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48891 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48893 with a principal constituent of the bonding area being a solid not provided for in groups H01L 2224/488 – H01L 2224/4889, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48894 with a principal constituent of the bonding area being a liquid not provided for in groups H01L 2224/488 – H01L 2224/4889
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/48898 with a principal constituent of the bonding area being a combination of two or more material regions, i.e. being a hybrid material, e.g. segmented structures, island patterns
<administratively transferred to [H10W 72/59](#), [H10W 72/5525](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/4899 Auxiliary members for wire connectors, e.g. flow-barriers, reinforcing structures, spacers, alignment aids
<administratively transferred to [H10W 72/581](#)>
- D H01L 2224/48991 being formed on the semiconductor or solid-state body to be connected
<administratively transferred to [H10W 72/581](#)>
- D H01L 2224/48992 Reinforcing structures
<administratively transferred to [H10W 72/07553](#)>
- D H01L 2224/48993 Alignment aids
<administratively transferred to [H10W 72/585](#)>
- D H01L 2224/48996 being formed on an item to be connected not being a semiconductor or solid-state body
<administratively transferred to [H10W 72/581](#)>
- D H01L 2224/48997 Reinforcing structures
<administratively transferred to [H10W 72/583](#)>
- D H01L 2224/48998 Alignment aids
<administratively transferred to [H10W 72/585](#)>
- D H01L 2224/49 of a plurality of wire connectors
<administratively transferred to [H10W 72/50](#)>

- D H01L 2224/4901 Structure
<administratively transferred to [H10W 72/07552](#) and [H10W 72/528](#)>
- D H01L 2224/4903 Connectors having different sizes, e.g. different diameters
<administratively transferred to [H10W 72/07552](#) and [H10W 72/527](#)>
- D H01L 2224/4905 Shape
<administratively transferred to [H10W 72/07552](#) and [H10W 72/537](#)>
- D H01L 2224/49051 Connectors having different shapes
<administratively transferred to [H10W 72/07553](#) and [H10W 72/537](#)>
- D H01L 2224/49052 Different loop heights
<administratively transferred to [H10W 72/07553](#) and [H10W 72/537](#)>
- D H01L 2224/4909 Loop-shape arrangement
<administratively transferred to [H10W 72/07553](#) and [H10W 72/537](#)>
- D H01L 2224/49095 parallel in plane
<administratively transferred to [H10W 72/07553](#) and [H10W 72/537](#)>
- D H01L 2224/49096 horizontal
<administratively transferred to [H10W 72/07553](#) and [H10W 72/537](#)>
- D H01L 2224/49097 vertical
<administratively transferred to [H10W 72/07553](#) and [H10W 72/537](#)>
- D H01L 2224/491 Disposition
<administratively transferred to [H10W 72/07554](#) and [H10W 72/547](#)>
- D H01L 2224/49105 Connecting at different heights
<administratively transferred to [H10W 72/07554](#) and [H10W 72/547](#)>
- D H01L 2224/49107 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/07554](#) and [H10W 72/547](#)>
- D H01L 2224/49109 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/07554](#) and [H10W 72/547](#)>
- D H01L 2224/4911 the connectors being bonded to at least one common bonding area, e.g. daisy chain
<administratively transferred to [H10W 72/5473](#)>
- D H01L 2224/49111 the connectors connecting two common bonding areas, e.g. Litz or braid wires
<administratively transferred to [H10W 72/5475](#)>
- D H01L 2224/49112 the connectors connecting a common bonding area on the semiconductor or solid-state body to different bonding areas outside the body, e.g. diverging wires
<administratively transferred to [H10W 72/5473](#)>
- D H01L 2224/49113 the connectors connecting different bonding areas on the semiconductor or solid-state body to a common bonding area outside the body, e.g. converging wires
<administratively transferred to [H10W 72/5473](#)>
- D H01L 2224/4912 Layout
<administratively transferred to [H10W 72/07554](#)>

- D H01L 2224/4917 Crossed-wires
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/49171 Fan-out arrangements
<administratively transferred to [H10W 72/5449](#)>
- D H01L 2224/49173 Radial fan-out arrangements
<administratively transferred to [H10W 72/5449](#)>
- D H01L 2224/49174 Stacked arrangements
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/49175 Parallel arrangements
<administratively transferred to [H10W 72/5445](#)>
- D H01L 2224/49176 Wire-connectors having the same loop-shape and height
<administratively transferred to [H10W 72/5445](#)>
- D H01L 2224/49177 Combinations of different arrangements
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/49179 Corner adaptations, i.e. disposition of the wire-connectors at the corners of the semiconductor or solid-state body
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/4918 being disposed on at least two different sides of the body, e.g. dual array
<administratively transferred to [H10W 72/07554](#)>
- D H01L 2224/494 Connecting portions
<administratively transferred to [H10W 72/50](#)>
- D H01L 2224/4941 the connecting portions being stacked
<administratively transferred to [H10W 72/547](#) and [H10W 72/5434](#)>
- D H01L 2224/4942 Ball bonds
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), and [H10W 72/536](#) simultaneously>
- D H01L 2224/49421 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), and [H10W 72/536](#) simultaneously>
- D H01L 2224/49422 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), and [H10W 72/536](#) simultaneously>
- D H01L 2224/49425 Wedge bonds
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), and [H10W 72/5363](#) simultaneously>
- D H01L 2224/49426 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), and [H10W 72/5363](#) simultaneously>
- D H01L 2224/49427 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), and [H10W 72/5363](#) simultaneously>
- D H01L 2224/49429 Wedge and ball bonds
<administratively transferred to [H10W 72/547](#), [H10W 72/5434](#), [H10W 72/536](#), and [H10W 72/5363](#) simultaneously>

- D H01L 2224/4943 the connecting portions being staggered
<administratively transferred to [H10W 72/547](#) and [H10W 72/07554](#)>
- D H01L 2224/49431 on the semiconductor or solid-state body
<administratively transferred to [H10W 72/547](#) and [H10W 72/07554](#)>
- D H01L 2224/49433 outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/547](#) and [H10W 72/07554](#)>
- D H01L 2224/4945 Wire connectors having connecting portions of different types on the semiconductor or solid-state body, e.g. regular and reverse stitches
<administratively transferred to [H10W 72/537](#) and [H10W 72/07553](#)>
- D H01L 2224/495 Material
<administratively transferred to [H10W 72/07555](#) and [H10W 72/551](#)>
- D H01L 2224/49505 Connectors having different materials
<administratively transferred to [H10W 72/07555](#) and [H10W 72/557](#)>
- D H01L 2224/50 Tape-automated bonding [TAB] connectors, i.e. film carriers; Manufacturing methods related thereto
<administratively transferred to [H10W 72/701](#)>
- D H01L 2224/63 Connectors not provided for in any of the groups H01L 2224/10-
H01L 2224/50 and subgroups; Manufacturing methods related thereto
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/64 Manufacturing methods
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/65 Structure, shape, material or disposition of the connectors prior to the connecting process
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/66 of an individual connector
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/67 of a plurality of connectors
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/68 Structure, shape, material or disposition of the connectors after the connecting process
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/69 of an individual connector
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/70 of a plurality of connectors
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/71 Means for bonding not being attached to, or not being formed on, the surface to be connected
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/72 Detachable connecting means consisting of mechanical auxiliary parts connecting the device, e.g. pressure contacts using springs or clips
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/73 Means for bonding being of different types provided for in two or more of groups H01L 2224/10, H01L 2224/18, H01L 2224/26, H01L 2224/34, H01L 2224/42, H01L 2224/50, H01L 2224/63, H01L 2224/71
<administratively transferred to [H10W 72/851](#)>

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|---|-----------------|--|
| D | H01L 2224/731 | <ul style="list-style-type: none"> • • Location prior to the connecting process <administratively transferred to H10W 72/851> |
| D | H01L 2224/73101 | <ul style="list-style-type: none"> • • • on the same surface <administratively transferred to H10W 72/853> |
| D | H01L 2224/73103 | <ul style="list-style-type: none"> • • • • Bump and layer connectors <administratively transferred to H10W 72/856> |
| D | H01L 2224/73104 | <ul style="list-style-type: none"> • • • • • the bump connector being embedded into the layer connector <administratively transferred to H10W 74/15> |
| D | H01L 2224/73151 | <ul style="list-style-type: none"> • • • on different surfaces <administratively transferred to H10W 72/874> |
| D | H01L 2224/73153 | <ul style="list-style-type: none"> • • • • Bump and layer connectors <administratively transferred to H10W 72/856> |
| D | H01L 2224/732 | <ul style="list-style-type: none"> • • Location after the connecting process <administratively transferred to H10W 72/851> |
| D | H01L 2224/73201 | <ul style="list-style-type: none"> • • • on the same surface <administratively transferred to H10W 72/853> |
| D | H01L 2224/73203 | <ul style="list-style-type: none"> • • • • Bump and layer connectors <administratively transferred to H10W 72/856> |
| D | H01L 2224/73204 | <ul style="list-style-type: none"> • • • • • the bump connector being embedded into the layer connector <administratively transferred to H10W 74/15> |
| D | H01L 2224/73205 | <ul style="list-style-type: none"> • • • • Bump and strap connectors <administratively transferred to H10W 72/862> |
| D | H01L 2224/73207 | <ul style="list-style-type: none"> • • • • Bump and wire connectors <administratively transferred to H10W 72/859> |
| D | H01L 2224/73209 | <ul style="list-style-type: none"> • • • • Bump and HDI connectors <administratively transferred to H10W 72/853> |
| D | H01L 2224/73211 | <ul style="list-style-type: none"> • • • • Bump and TAB connectors <administratively transferred to H10W 72/853> |
| D | H01L 2224/73213 | <ul style="list-style-type: none"> • • • • Layer and strap connectors <administratively transferred to H10W 72/868> |
| D | H01L 2224/73215 | <ul style="list-style-type: none"> • • • • Layer and wire connectors <administratively transferred to H10W 72/865> |
| D | H01L 2224/73217 | <ul style="list-style-type: none"> • • • • Layer and HDI connectors <administratively transferred to H10W 72/853> |
| D | H01L 2224/73219 | <ul style="list-style-type: none"> • • • • Layer and TAB connectors <administratively transferred to H10W 72/853> |
| D | H01L 2224/73221 | <ul style="list-style-type: none"> • • • • Strap and wire connectors <administratively transferred to H10W 72/871> |
| D | H01L 2224/73223 | <ul style="list-style-type: none"> • • • • Strap and HDI connectors <administratively transferred to H10W 72/853> |
| D | H01L 2224/73225 | <ul style="list-style-type: none"> • • • • Strap and TAB connectors <administratively transferred to H10W 72/853> |

- D H01L 2224/73227 Wire and HDI connectors
<administratively transferred to [H10W 72/853](#)>
- D H01L 2224/73229 Wire and TAB connectors
<administratively transferred to [H10W 72/853](#)>
- D H01L 2224/73231 HDI and TAB connectors
<administratively transferred to [H10W 72/853](#)>
- D H01L 2224/73251 on different surfaces
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73253 Bump and layer connectors
<administratively transferred to [H10W 72/877](#)>
- D H01L 2224/73255 Bump and strap connectors
<administratively transferred to [H10W 72/881](#)>
- D H01L 2224/73257 Bump and wire connectors
<administratively transferred to [H10W 72/879](#)>
- D H01L 2224/73259 Bump and HDI connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73261 Bump and TAB connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73263 Layer and strap connectors
<administratively transferred to [H10W 72/886](#)>
- D H01L 2224/73265 Layer and wire connectors
<administratively transferred to [H10W 72/884](#)>
- D H01L 2224/73267 Layer and HDI connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73269 Layer and TAB connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73271 Strap and wire connectors
<administratively transferred to [H10W 72/889](#)>
- D H01L 2224/73273 Strap and HDI connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73275 Strap and TAB connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73277 Wire and HDI connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73279 Wire and TAB connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/73281 HDI and TAB connectors
<administratively transferred to [H10W 72/874](#)>
- D H01L 2224/74 Apparatus for manufacturing arrangements for connecting or disconnecting semiconductor or solid-state bodies and for methods related thereto
<administratively transferred to [H10W 72/071](#)>
- D H01L 2224/741 Apparatus for manufacturing means for bonding, e.g. connectors
<administratively transferred to [H10W 72/011](#)>

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| D | H01L 2224/742 | <ul style="list-style-type: none"> • • • Apparatus for manufacturing bump connectors <administratively transferred to H10W 72/0112> |
| D | H01L 2224/743 | <ul style="list-style-type: none"> • • • Apparatus for manufacturing layer connectors <administratively transferred to H10W 72/0113> |
| D | H01L 2224/744 | <ul style="list-style-type: none"> • • • Apparatus for manufacturing strap connectors <administratively transferred to H10W 72/0115> |
| D | H01L 2224/745 | <ul style="list-style-type: none"> • • • Apparatus for manufacturing wire connectors <administratively transferred to H10W 72/0116> |
| D | H01L 2224/749 | <ul style="list-style-type: none"> • • • Tools for reworking, e.g. for shaping <administratively transferred to H10W 72/011> |
| D | H01L 2224/75 | <ul style="list-style-type: none"> • • Apparatus for connecting with bump connectors or layer connectors <administratively transferred to H10W 72/0711> |
| D | H01L 2224/75001 | <ul style="list-style-type: none"> • • • Calibration means <administratively transferred to H10W 72/07113> |
| D | H01L 2224/7501 | <ul style="list-style-type: none"> • • • Means for cleaning, e.g. brushes, for hydro blasting, for ultrasonic cleaning, for dry ice blasting, using gas-flow, by etching, by applying flux or plasma <administratively transferred to H10W 72/07118> |
| D | H01L 2224/751 | <ul style="list-style-type: none"> • • • Means for controlling the bonding environment, e.g. valves, vacuum pumps <administratively transferred to H10W 72/07125> |
| D | H01L 2224/75101 | <ul style="list-style-type: none"> • • • • Chamber <administratively transferred to H10W 72/07125> |
| D | H01L 2224/75102 | <ul style="list-style-type: none"> • • • • Vacuum chamber <administratively transferred to H10W 72/07125> |
| D | H01L 2224/7511 | <ul style="list-style-type: none"> • • • • High pressure chamber <administratively transferred to H10W 72/07125> |
| D | H01L 2224/7515 | <ul style="list-style-type: none"> • • • Means for applying permanent coating, e.g. in-situ coating <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75151 | <ul style="list-style-type: none"> • • • • Means for direct writing <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75152 | <ul style="list-style-type: none"> • • • • Syringe <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75153 | <ul style="list-style-type: none"> • • • • • integrated into the bonding head <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75155 | <ul style="list-style-type: none"> • • • • Jetting means, e.g. ink jet <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75158 | <ul style="list-style-type: none"> • • • • including a laser <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75161 | <ul style="list-style-type: none"> • • • • Means for screen printing, e.g. roller, squeegee, screen stencil <administratively transferred to H10W 72/07131> |
| D | H01L 2224/7517 | <ul style="list-style-type: none"> • • • • Means for applying a preform, e.g. laminator <administratively transferred to H10W 72/07131> |
| D | H01L 2224/75171 | <ul style="list-style-type: none"> • • • • including a vacuum bag <administratively transferred to H10W 72/07131> |

- D H01L 2224/7518 Means for blanket deposition
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75181 for spin-coating, i.e. spin coater
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75182 for curtain-coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75183 for immersion-coating, i.e. bath
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75184 for spray-coating, i.e. nozzle
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75185 Means for physical vapour deposition [PVD], e.g. evaporation, sputtering
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75186 Means for sputtering, e.g. target
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75187 Means for evaporation
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75188 Means for chemical vapour deposition [CVD], e.g. for laser-CVD
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/75189 Means for plating, e.g. for electroplating, electroless plating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/752 . . . Protection means against electrical discharge
<administratively transferred to [H10W 72/07139](#)>
- D H01L 2224/7525 . . . Means for applying energy, e.g. heating means
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75251 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75252 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75253 adapted for localised heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7526 Polychromatic heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75261 Laser
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75262 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75263 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75264 by induction heating, i.e. coils
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75265 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/75266 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75267 Flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75268 Discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75269 Shape of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7527 Material of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75271 Circuitry of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75272 Oven
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7528 Resistance welding electrodes, i.e. for ohmic heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75281 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75282 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75283 by infrared heating, e.g. infrared heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/753 by means of pressure
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75301 Bonding head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75302 Shape
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75303 of the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75304 being curved
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75305 comprising protrusions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7531 of other parts
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75312 Material
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75313 Removable bonding head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75314 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/75315 Elastomer inlay
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75316 ~~with retaining mechanisms~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75317 Removable auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75318 ~~Shape of the auxiliary member~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7532 Material of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75343 ~~by ultrasonic vibrations~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75344 Eccentric cams
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75345 ~~in the lower part of the bonding apparatus, e.g. in the apparatus chuck~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75346 ~~in the upper part of the bonding apparatus, e.g. in the bonding head~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75347 Piezoelectric transducers
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75348 ~~in the lower part of the bonding apparatus, e.g. in the apparatus chuck~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75349 ~~in the upper part of the bonding apparatus, e.g. in the bonding head~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7535 Stable and mobile yokes
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75351 ~~in the lower part of the bonding apparatus, e.g. in the apparatus chuck~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75352 ~~in the upper part of the bonding apparatus, e.g. in the bonding head~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75353 Ultrasonic horns
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75354 ~~in the lower part of the bonding apparatus, e.g. in the apparatus chuck~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/75355 ~~Design, e.g. of the wave guide~~
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/755 Cooling means
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/75501 ~~in the lower part of the bonding apparatus, e.g. in the apparatus chuck~~
<administratively transferred to [H10W 72/07152](#)>

- D H01L 2224/75502 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/7555 . . . Mechanical means, e.g. for planarising, pressing, stamping
<administratively transferred to [H10W 72/07163](#)>
- D H01L 2224/756 . . . Means for supplying the connector to be connected in the bonding apparatus
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/75601 Storing means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/75611 Feeding means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/75621 Holding means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/7565 . . . Means for transporting the components to be connected
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75651 Belt conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75652 Chain conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75653 Vibrating conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75654 Pneumatic conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75655 in a fluid
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/757 . . . Means for aligning
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75701 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75702 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75703 Mechanical holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75704 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75705 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75723 Electrostatic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75724 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75725 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07178](#)>

- D H01L 2224/75733 Magnetic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75734 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75735 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75743 Suction holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75744 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75745 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75753 Means for optical alignment, e.g. sensors
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75754 Guiding structures
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75755 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/75756 in the upper part of the bonding apparatus, e.g. in the bonding head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/758 . . . Means for moving parts
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75801 Lower part of the bonding apparatus, e.g. XY table
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75802 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75803 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75804 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75821 Upper part of the bonding apparatus, i.e. bonding head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75822 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75823 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75824 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75841 of the bonding head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/75842 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>

- D H01L 2224/75843 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/759 . . . Means for monitoring the connection process
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/75901 using a computer, e.g. fully- or semi-automatic bonding
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7592 Load or pressure adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/75925 Vibration adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7595 . . . Means for forming additional members
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7598 . . . specially adapted for batch processes
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/75981 . . . Apparatus chuck
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75982 Shape
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75983 of the mounting surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75984 of other portions
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75985 Material
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75986 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75987 Shape of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/75988 Material of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76 . . . Apparatus for connecting with build-up interconnects
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76001 . . . Calibration means
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/7601 . . . Means for cleaning, e.g. brushes, for hydro blasting, for ultrasonic cleaning, for dry ice blasting, using gas-flow, by etching, by applying flux or plasma
<administratively transferred to [H10W 72/07118](#)>
- D H01L 2224/761 . . . Means for controlling the bonding environment, e.g. valves, vacuum pumps
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/76101 Chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/76102 Vacuum chamber
<administratively transferred to [H10W 72/07125](#)>

- D H01L 2224/7611 High-pressure chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7615 . . . Means for depositing
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76151 Means for direct writing
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76152 Syringe
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76155 Jetting means, e.g. ink jet
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76158 including a laser
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76161 Means for screen printing, e.g. roller, squeegee, screen stencil
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7617 Means for applying a preform, e.g. laminator
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76171 including a vacuum-bag
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7618 Means for blanket deposition
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76181 for spin coating, i.e. spin coater
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76182 for curtain coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76183 for immersion coating, i.e. bath
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76184 for spray coating, i.e. nozzle
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76185 Means for physical vapour deposition [PVD]
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76186 Means for sputtering, e.g. target
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76187 Means for evaporation
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76188 Means for chemical vapour deposition [CVD], e.g. for laser CVD
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/76189 Means for plating, e.g. for electroplating, electroless plating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/762 . . . Protection means against electrical discharge
<administratively transferred to [H10W 72/07139](#)>
- D H01L 2224/7625 . . . Means for applying energy, e.g. heating means
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/76251 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76252 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76253 adapted for localised heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7626 Polychromatic heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76261 Laser
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76262 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76263 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76264 by induction heating, i.e. coils
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76265 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76266 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76267 Flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76268 Discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76269 Shape of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7627 Material of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76271 Circuitry of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76272 Oven
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7628 Resistance welding electrodes, i.e. for ohmic heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76281 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76282 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76283 by infrared heating, e.g. infrared heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/763 by means of pressure
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/76301 Pressing-head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76302 Shape
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76303 of the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76304 being curved
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76305 comprising protrusions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7631 of other parts
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76312 Material
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76313 Removable pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76314 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76315 Elastomer inlay
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76316 with retaining mechanisms
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76317 Removable auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76318 Shape of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7632 Material of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76343 by ultrasonic vibrations
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76344 Eccentric cams
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76345 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76346 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76347 Piezoelectric transducers
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76348 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/76349 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7635 Stable and mobile yokes
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76351 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76352 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76353 Ultrasonic horns
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76354 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/76355 Design, e.g. of the wave guide
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/765 . . . Cooling means
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/76501 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/76502 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/7655 . . . Mechanical means, e.g. for planarising, pressing, stamping
<administratively transferred to [H10W 72/07163](#)>
- D H01L 2224/76552 for drilling
<administratively transferred to [H10W 72/07163](#)>
- D H01L 2224/76554 for abrasive blasting, e.g. sand blasting, wet blasting, hydro-blasting, dry ice blasting
<administratively transferred to [H10W 72/07163](#)>
- D H01L 2224/766 . . . Means for supplying the material of the interconnect
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/76601 Storing means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/76611 Feeding means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/76621 Holding means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/7665 . . . Means for transporting the components to be connected
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76651 Belt conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76652 Chain conveyor
<administratively transferred to [H10W 72/07173](#)>

- D H01L 2224/76653 Vibrating conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76654 Pneumatic conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76655 in a fluid
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/767 . . . Means for aligning
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76701 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76702 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76703 Mechanical holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76704 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76705 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76723 Electrostatic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76724 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76725 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76733 Magnetic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76734 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76735 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76743 Suction holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76744 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76745 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76753 Means for optical alignment, e.g. sensors
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76754 Guiding structures
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/76755 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>

- D H01L 2224/76756 in the upper part of the bonding apparatus
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/768 . . . Means for moving parts
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76801 Lower part of the bonding apparatus, e.g. XY table
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76802 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76803 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76804 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76821 Upper part of the bonding apparatus, i.e. bonding head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76822 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76823 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76824 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76841 of the bonding head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76842 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/76843 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/769 . . . Means for monitoring the connection process
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/76901 using a computer, e.g. fully- or semi-automatic bonding
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7692 Load or pressure adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/76925 Vibration adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7695 . . . Means for forming additional members
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7698 . . . specially adapted for batch processes
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/76981 . . . Apparatus chuck
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76982 Shape
<administratively transferred to [H10W 72/07188](#)>

- D H01L 2224/76983 of the mounting surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76984 of other portions
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76985 Material
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76986 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76987 Shape of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/76988 Material of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77 . . Apparatus for connecting with strap connectors
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/77001 . . . Calibration means
<administratively transferred to [H10W 72/07113](#)>
- D H01L 2224/7701 . . . Means for cleaning, e.g. brushes, for hydro blasting, for ultrasonic cleaning, for dry ice blasting, using gas-flow, by etching, by applying flux or plasma
<administratively transferred to [H10W 72/07118](#)>
- D H01L 2224/771 . . . Means for controlling the bonding environment, e.g. valves, vacuum pumps
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/77101 Chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/77102 Vacuum chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7711 High pressure chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7715 . . . Means for applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77151 Means for direct writing
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77152 Syringe
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77153 integrated into the capillary or wedge
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77155 Jetting means, e.g. ink jet
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77158 including a laser
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77161 Means for screen printing, e.g. roller, squeegee, screen stencil
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7717 Means for applying a preform, e.g. laminator
<administratively transferred to [H10W 72/07131](#)>

- D H01L 2224/77171 including a vacuum-bag
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7718 Means for blanket deposition
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77181 for spin-coating, i.e. spin-coater
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77182 for curtain-coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77183 for immersion-coating, i.e. bath
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77184 for spray-coating, i.e. nozzle
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77185 Means for physical vapour deposition [PVD], e.g. evaporation, sputtering
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77186 Means for sputtering, e.g. target
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77187 Means for evaporation
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77188 Means for chemical vapour deposition [CVD], e.g. for laser CVD
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/77189 Means for plating, e.g. for electroplating, electroless plating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/772 . . . Protection means against electrical discharge
<administratively transferred to [H10W 72/07139](#)>
- D H01L 2224/7725 . . . Means for applying energy, e.g. heating means
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77251 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77252 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77253 adapted for localised heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7726 Polychromatic heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77261 Laser
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77262 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77263 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77264 by induction heating, i.e. coils
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/77265 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77266 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77267 Flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77268 Discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77269 Shape of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7727 Material of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77271 Circuitry of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77272 Oven
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7728 Resistance welding electrodes, i.e. for ohmic heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77281 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77282 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77283 by infrared heating, e.g. infrared heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/773 by means of pressure
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77313 Wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77314 Shape
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77315 of the pressing surface, e.g. tip or head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77316 comprising protrusions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77317 of other portions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77318 inside the capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77319 outside the capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7732 Removable wedge
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/77321 Material
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77325 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77326 Removable auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77327 Shape of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77328 Material of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77343 by ultrasonic vibrations
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77344 Eccentric cams
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77345 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77346 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77347 Piezoelectric transducers
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77348 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77349 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7735 Stable and mobile yokes
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77351 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77352 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77353 Ultrasonic horns
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77354 in the lower part of the bonding apparatus, e.g. in the mounting chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/77355 Design, e.g. of the wave guide
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/775 Cooling means
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/77501 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07152](#)>

- D H01L 2224/77502 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/7755 . . . Mechanical means, e.g. for severing, pressing, stamping
<administratively transferred to [H10W 72/07163](#)>
- D H01L 2224/776 . . . Means for supplying the connector to be connected in the bonding apparatus
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/77601 Storing means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/77611 Feeding means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/77621 Holding means, e.g. wire clampers
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/77631 Means for wire tension adjustments
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/7765 . . . Means for transporting the components to be connected
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77651 Belt conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77652 Chain conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77653 Vibrating conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77654 Pneumatic conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77655 in a fluid
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/777 . . . Means for aligning
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77701 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77702 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77703 Mechanical holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77704 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77705 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77723 Electrostatic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77724 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>

- D H01L 2224/77725 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77733 Magnetic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77734 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77735 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77743 Suction holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77744 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77745 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77753 Means for optical alignment, e.g. sensors
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77754 Guiding structures
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77755 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/77756 in the upper part of the bonding apparatus, e.g. in the wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/778 . . . Means for moving parts
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77801 Lower part of the bonding apparatus, e.g. XY table
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77802 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77803 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77804 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77821 Upper part of the bonding apparatus, i.e. bonding head, e.g. capillary or wedge
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77822 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77823 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77824 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77841 of the pressing portion, e.g. tip or head
<administratively transferred to [H10W 72/07173](#)>

- D H01L 2224/77842 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/77843 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/779 . . . Means for monitoring the connection process
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/77901 using a computer, e.g. fully- or semi-automatic bonding
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7792 Load or pressure adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/77925 Vibration adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7795 . . . Means for forming additional members
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7798 . . . specially adapted for batch processes
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/77981 . . . Apparatus chuck
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77982 Shape
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77983 of the mounting surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77984 of other portions
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77985 Material
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77986 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77987 Shape of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/77988 Material of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78 . . . Apparatus for connecting with wire connectors
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/78001 . . . Calibration means
<administratively transferred to [H10W 72/07113](#)>
- D H01L 2224/7801 . . . Means for cleaning, e.g. brushes, for hydro blasting, for ultrasonic cleaning, for dry ice blasting, using gas-flow, by etching, by applying flux or plasma
<administratively transferred to [H10W 72/07118](#)>
- D H01L 2224/781 . . . Means for controlling the bonding environment, e.g. valves, vacuum pumps
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/78101 Chamber
<administratively transferred to [H10W 72/07125](#)>

- D H01L 2224/78102 Vacuum chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7811 High pressure chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7815 . . Means for applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/782 . . . Protection means against electrical discharge
<administratively transferred to [H10W 72/07139](#)>
- D H01L 2224/7825 . . . Means for applying energy, e.g. heating means
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78251 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78252 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78253 adapted for localised heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7826 Polychromatic heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78261 Laser
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78262 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78263 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78264 by induction heating, i.e. coils
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78265 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78266 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78267 Flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78268 Discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78269 Shape of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7827 Material of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78271 Circuitry of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/78272 Oven
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7828 Resistance welding electrodes, i.e. for ohmic heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78281 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78282 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78283 by infrared heating, e.g. infrared heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/783 by means of pressure
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78301 Capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78302 Shape
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78303 of the pressing surface, e.g. tip or head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78304 comprising protrusions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78305 of other portions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78306 inside the capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78307 outside the capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78308 Removable capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78309 Material
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7831 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78311 Removable auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78312 Shape of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78313 Wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78314 Shape
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78315 of the pressing surface, e.g. tip or head
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/78316 comprising protrusions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78317 of other portions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78318 inside the capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78319 outside the capillary
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7832 Removable wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78321 Material
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78325 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78326 Removable auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78327 Shape of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78328 Material of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78343 by ultrasonic vibrations
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78344 Eccentric cams
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78345 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78346 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78347 Piezoelectric transducers
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78348 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78349 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7835 Stable and mobile yokes
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78351 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/78352 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78353 Ultrasonic horns
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78354 in the lower part of the bonding apparatus, e.g. in the mounting chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/78355 Design, e.g. of the wave guide
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/785 . . . Cooling means
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/78501 . . . in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/78502 . . . in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/7855 . . . Mechanical means, e.g. for severing, pressing, stamping
<administratively transferred to [H10W 72/07163](#)>
- D H01L 2224/786 . . . Means for supplying the connector to be connected in the bonding apparatus
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/78601 . . . Storing means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/78611 . . . Feeding means
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/78621 . . . Holding means, e.g. wire clampers
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/78631 . . . Means for wire tension adjustments
<administratively transferred to [H10W 72/07168](#)>
- D H01L 2224/7865 . . . Means for transporting the components to be connected
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78651 . . . Belt conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78652 . . . Chain conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78653 . . . Vibrating conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78654 . . . Pneumatic conveyor
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78655 . . . in a fluid
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/787 . . . Means for aligning
<administratively transferred to [H10W 72/07178](#)>

- D H01L 2224/78701 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78702 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78703 Mechanical holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78704 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78705 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78723 Electrostatic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78724 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78725 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78733 Magnetic holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78734 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78735 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78743 Suction holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78744 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78745 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78753 Means for optical alignment, e.g. sensors
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78754 Guiding structures
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78755 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/78756 in the upper part of the bonding apparatus, e.g. in the capillary or wedge
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/788 . . . Means for moving parts
<administratively transferred to [H10W 72/07173](#)>

- D H01L 2224/78801 Lower part of the bonding apparatus, e.g. XY table
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78802 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78803 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78804 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78821 Upper part of the bonding apparatus, i.e. bonding head, e.g. capillary or wedge
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78822 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78823 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78824 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78841 of the pressing portion, e.g. tip or head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78842 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/78843 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/789 . . . Means for monitoring the connection process
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/78901 using a computer, e.g. fully- or semi-automatic bonding
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7892 Load or pressure adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/78925 Vibration adjusting means, e.g. sensors
<administratively transferred to [H10W 72/07183](#)>
- D H01L 2224/7895 . . . Means for forming additional members
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7898 . . . specially adapted for batch processes
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/78981 . . . Apparatus chuck
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78982 Shape
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78983 of the mounting surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78984 of other portions
<administratively transferred to [H10W 72/07188](#)>

- D H01L 2224/78985 Material
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78986 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78987 Shape of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/78988 Material of the auxiliary member
<administratively transferred to [H10W 72/07188](#)>
- D H01L 2224/79 . . Apparatus for Tape Automated Bonding [TAB]
<administratively transferred to [H10W 72/0711](#)>
- D H01L 2224/79001 . . . Calibration means
<administratively transferred to [H10W 72/07113](#)>
- D H01L 2224/7901 . . Means for cleaning, e.g. brushes, for hydro blasting, for ultrasonic cleaning, for dry ice blasting, using gas-flow, by etching, by applying flux or plasma
<administratively transferred to [H10W 72/07118](#)>
- D H01L 2224/791 . . Means for controlling the bonding environment, e.g. valves, vacuum pumps
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/79101 . . . Chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/79102 Vacuum chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7911 High pressure chamber
<administratively transferred to [H10W 72/07125](#)>
- D H01L 2224/7915 . . Means for applying permanent coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79151 . . . Means for direct writing
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79152 Syringe
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79153 integrated into the pressing head
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79155 Jetting means, e.g. ink jet
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79158 including a laser
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79161 . . . Means for screen printing, e.g. roller, squeegee, screen stencil
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7917 . . . Means for applying a preform, e.g. laminator
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79171 including a vacuum bag
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/7918 . . . Means for blanket deposition
<administratively transferred to [H10W 72/07131](#)>

- D H01L 2224/79181 for spin-coating, i.e. spin-coater
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79182 for curtain-coating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79183 for immersion-coating, i.e. bath
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79184 for spray-coating, i.e. nozzle
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79185 Means for physical vapour deposition [PVD], e.g. evaporation, sputtering
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79186 Means for sputtering, e.g. target
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79187 Means for evaporation
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79188 Means for chemical vapour deposition [CVD], e.g. for laser CVD
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/79189 Means for plating, e.g. for electroplating, electroless plating
<administratively transferred to [H10W 72/07131](#)>
- D H01L 2224/792 . . . Protection means against electrical discharge
<administratively transferred to [H10W 72/07139](#)>
- D H01L 2224/7925 . . . Means for applying energy, e.g. heating means
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79251 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79252 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79253 adapted for localised heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7926 Polychromatic heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79261 Laser
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79262 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79263 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79264 by induction heating, i.e. coils
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79265 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79266 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/79267 Flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79268 Discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79269 Shape of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7927 Material of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79271 Circuitry of the discharge electrode
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79272 Oven
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7928 Resistance welding electrodes, i.e. for ohmic heating
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79281 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79282 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79283 by infrared heating, e.g. infrared heating lamp
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/793 by means of pressure
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79301 Pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79302 Shape
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79303 of the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79304 being curved
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79305 comprising protrusions
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7931 of other parts
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79312 Material
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79313 Removable pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79314 Auxiliary members on the pressing surface
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79315 Elastomer inlay
<administratively transferred to [H10W 72/07141](#)>

- D H01L 2224/79316 with retaining mechanisms
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79317 Removable auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79318 Shape of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7932 Material of the auxiliary member
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79343 by ultrasonic vibrations
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79344 Eccentric cams
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79345 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79346 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79347 Piezoelectric transducers
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79348 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79349 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/7935 Stable and mobile yokes
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79351 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79352 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79353 Ultrasonic horns
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79354 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/79355 Design, e.g. of the wave guide
<administratively transferred to [H10W 72/07141](#)>
- D H01L 2224/795 Cooling means
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/79501 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07152](#)>
- D H01L 2224/79502 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07152](#)>

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|---|-----------------|--|
| D | H01L 2224/7955 | <ul style="list-style-type: none"> • • • Mechanical means, e.g. for pressing, stamping <administratively transferred to H10W 72/07163> |
| D | H01L 2224/796 | <ul style="list-style-type: none"> • • • Means for supplying the connector to be connected in the bonding apparatus <administratively transferred to H10W 72/07168> |
| D | H01L 2224/79601 | <ul style="list-style-type: none"> • • • • Storing means <administratively transferred to H10W 72/07168> |
| D | H01L 2224/79611 | <ul style="list-style-type: none"> • • • • Feeding means <administratively transferred to H10W 72/07168> |
| D | H01L 2224/79621 | <ul style="list-style-type: none"> • • • • Holding means <administratively transferred to H10W 72/07168> |
| D | H01L 2224/7965 | <ul style="list-style-type: none"> • • • Means for transporting the components to be connected <administratively transferred to H10W 72/07173> |
| D | H01L 2224/79651 | <ul style="list-style-type: none"> • • • • Belt conveyor <administratively transferred to H10W 72/07173> |
| D | H01L 2224/79652 | <ul style="list-style-type: none"> • • • • Chain conveyor <administratively transferred to H10W 72/07173> |
| D | H01L 2224/79653 | <ul style="list-style-type: none"> • • • • Vibrating conveyor <administratively transferred to H10W 72/07173> |
| D | H01L 2224/79654 | <ul style="list-style-type: none"> • • • • Pneumatic conveyor <administratively transferred to H10W 72/07173> |
| D | H01L 2224/79655 | <ul style="list-style-type: none"> • • • • in a fluid <administratively transferred to H10W 72/07173> |
| D | H01L 2224/797 | <ul style="list-style-type: none"> • • • Means for aligning <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79701 | <ul style="list-style-type: none"> • • • • in the lower part of the bonding apparatus, e.g. in the apparatus chuck <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79702 | <ul style="list-style-type: none"> • • • • in the upper part of the bonding apparatus, e.g. in the pressing head <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79703 | <ul style="list-style-type: none"> • • • • Mechanical holding means <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79704 | <ul style="list-style-type: none"> • • • • • in the lower part of the bonding apparatus, e.g. in the apparatus chuck <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79705 | <ul style="list-style-type: none"> • • • • • in the upper part of the bonding apparatus, e.g. in the pressing head <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79723 | <ul style="list-style-type: none"> • • • • Electrostatic holding means <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79724 | <ul style="list-style-type: none"> • • • • • in the lower part of the bonding apparatus, e.g. in the apparatus chuck <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79725 | <ul style="list-style-type: none"> • • • • • in the upper part of the bonding apparatus, e.g. in the pressing head <administratively transferred to H10W 72/07178> |
| D | H01L 2224/79733 | <ul style="list-style-type: none"> • • • • Magnetic holding means <administratively transferred to H10W 72/07178> |

- D H01L 2224/79734 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79735 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79743 Suction holding means
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79744 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79745 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79753 Means for optical alignment, e.g. sensors
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79754 Guiding structures
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79755 in the lower part of the bonding apparatus, e.g. in the apparatus chuck
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/79756 in the upper part of the bonding apparatus, e.g. in the pressing head
<administratively transferred to [H10W 72/07178](#)>
- D H01L 2224/798 . . . Means for moving parts
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79801 Lower part of the bonding apparatus, e.g. XY table
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79802 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79803 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79804 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79821 Upper part of the bonding apparatus, i.e. pressing head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79822 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79823 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79824 Translational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79841 of the pressing head
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79842 Rotational mechanism
<administratively transferred to [H10W 72/07173](#)>
- D H01L 2224/79843 Pivoting mechanism
<administratively transferred to [H10W 72/07173](#)>

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|---|-----------------|---|
| D | H01L 2224/799 | <ul style="list-style-type: none"> Means for monitoring the connection process <p><administratively transferred to H10W 72/07183></p> |
| D | H01L 2224/79901 | <ul style="list-style-type: none"> using a computer, e.g. fully- or semi-automatic bonding <p><administratively transferred to H10W 72/07183></p> |
| D | H01L 2224/7992 | <ul style="list-style-type: none"> Load or pressure adjusting means, e.g. sensors <p><administratively transferred to H10W 72/07183></p> |
| D | H01L 2224/79925 | <ul style="list-style-type: none"> Vibration adjusting means, e.g. sensors <p><administratively transferred to H10W 72/07183></p> |
| D | H01L 2224/7995 | <ul style="list-style-type: none"> Means for forming additional members <p><administratively transferred to H10W 72/07131></p> |
| D | H01L 2224/7998 | <ul style="list-style-type: none"> specially adapted for batch processes <p><administratively transferred to H10W 72/0711></p> |
| D | H01L 2224/79981 | <ul style="list-style-type: none"> Apparatus chuck <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79982 | <ul style="list-style-type: none"> Shape <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79983 | <ul style="list-style-type: none"> of the mounting surface <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79984 | <ul style="list-style-type: none"> of other portions <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79985 | <ul style="list-style-type: none"> Material <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79986 | <ul style="list-style-type: none"> Auxiliary members on the pressing surface <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79987 | <ul style="list-style-type: none"> Shape of the auxiliary member <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/79988 | <ul style="list-style-type: none"> Material of the auxiliary member <p><administratively transferred to H10W 72/07188></p> |
| D | H01L 2224/7999 | <ul style="list-style-type: none"> for disconnecting <p><administratively transferred to H10W 72/0711></p> |
| D | H01L 2224/80 | <ul style="list-style-type: none"> Methods for connecting semiconductor or other solid state bodies using means for bonding being attached to, or being formed on, the surface to be connected <p><administratively transferred to H10W 99/00></p> |
| D | H01L 2224/80001 | <ul style="list-style-type: none"> by connecting a bonding area directly to another bonding area, i.e. connectorless bonding, e.g. bumpless bonding <p><administratively transferred to H10W 80/00></p> |
| D | H01L 2224/80003 | <ul style="list-style-type: none"> involving a temporary auxiliary member not forming part of the bonding apparatus <p><administratively transferred to H10W 80/211></p> |
| D | H01L 2224/80004 | <ul style="list-style-type: none"> being a removable or sacrificial coating <p><administratively transferred to H10W 80/211></p> |
| D | H01L 2224/80006 | <ul style="list-style-type: none"> being a temporary or sacrificial substrate <p><administratively transferred to H10W 80/211></p> |

- D H01L 2224/80007 . . . involving a permanent auxiliary member being left in the finished device, e.g. aids for protecting the bonding area during or after the bonding process
<administratively transferred to [H10W 80/211](#)>
- D H01L 2224/80009 . . . Pre-treatment of the bonding area
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/8001 Cleaning the bonding area, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 80/016](#)>
- D H01L 2224/80011 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 80/016](#)>
- D H01L 2224/80012 Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
<administratively transferred to [H10W 80/016](#)>
- D H01L 2224/80013 Plasma cleaning
<administratively transferred to [H10W 80/016](#)>
- D H01L 2224/80014 Thermal cleaning, e.g. decomposition, sublimation
<administratively transferred to [H10W 80/016](#)>
- D H01L 2224/80019 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8001 - H01L 2224/80014
<administratively transferred to [H10W 80/016](#)>
- D H01L 2224/8002 Applying permanent coating to the bonding area in the bonding apparatus, e.g. in-situ coating
<administratively transferred to [H10W 80/023](#)>
- D H01L 2224/80024 Applying flux to the bonding area in the bonding apparatus
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/8003 Reshaping the bonding area in the bonding apparatus, e.g. flattening the bonding area
<administratively transferred to [H10W 80/031](#)>
- D H01L 2224/80031 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 80/033](#)>
- D H01L 2224/80035 by heating means
<administratively transferred to [H10W 80/035](#)>
- D H01L 2224/80037 using a polychromatic heating lamp
<administratively transferred to [H10W 80/035](#)>
- D H01L 2224/80039 using a laser
<administratively transferred to [H10W 80/035](#)>
- D H01L 2224/80041 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 80/035](#)>
- D H01L 2224/80047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 80/037](#)>
- D H01L 2224/80048 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 80/041](#)>
- D H01L 2224/80051 Forming additional members
<administratively transferred to [H10W 80/011](#)>

- D H01L 2224/80052 . . . Detaching bonding areas, e.g. after testing
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/80053 . . . Bonding environment
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80054 . . . Composition of the atmosphere
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80055 being oxidating
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80065 being reducing
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80075 being inert
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80085 being a liquid, e.g. for fluidic self-assembly
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/8009 Vacuum
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80091 Under pressure
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80092 Atmospheric pressure
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80093 Transient conditions, e.g. gas-flow
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80095 Temperature settings
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80096 Transient conditions
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80097 Heating
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80098 Cooling
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/80099 Ambient temperature
<administratively transferred to [H10W 80/102](#)>
- D H01L 2224/8011 . . . involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/8012 . . . Aligning
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/80121 Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/80122 by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 80/163](#)>

- D H01L 2224/80123 Shape or position of the body
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/80125 Bonding areas on the body
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/80127 Bonding areas outside the body
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/80129 Shape or position of the other item
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/8013 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/80132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 80/163](#)>
- D H01L 2224/80136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 80/168](#)>
- D H01L 2224/80138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 80/168](#)>
- D H01L 2224/80139 Guiding structures on the body
<administratively transferred to [H10W 80/168](#)>
- D H01L 2224/8014 Guiding structures outside the body
<administratively transferred to [H10W 80/168](#)>
- D H01L 2224/80141 Guiding structures both on and outside the body
<administratively transferred to [H10W 80/168](#)>
- D H01L 2224/80143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 80/165](#)>
- D H01L 2224/80148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/80149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/8015 Rotational movements
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/8016 Translational movements
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/80169 being the upper part of the bonding apparatus, i.e. bonding head
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/8017 Rotational movements
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/8018 Translational movements
<administratively transferred to [H10W 80/161](#)>
- D H01L 2224/8019 Arrangement of the bonding areas prior to mounting
<administratively transferred to [H10W 80/011](#)>

- D H01L 2224/80194 Lateral distribution of the bonding areas
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/802 Applying energy for connecting
<administratively transferred to [H10W 80/331](#)>
- D H01L 2224/80201 Compression bonding
<administratively transferred to [H10W 80/333](#)>
- D H01L 2224/80203 Thermocompression bonding, e.g. diffusion bonding, pressure joining, thermocompression welding or solid-state welding
<administratively transferred to [H10W 80/334](#)>
- D H01L 2224/80204 with a graded temperature profile
<administratively transferred to [H10W 80/334](#)>
- D H01L 2224/80205 Ultrasonic bonding
<administratively transferred to [H10W 80/335](#)>
- D H01L 2224/80206 Direction of oscillation
<administratively transferred to [H10W 80/335](#)>
- D H01L 2224/80207 Thermosonic bonding
<administratively transferred to [H10W 80/335](#)>
- D H01L 2224/80209 applying unidirectional static pressure
<administratively transferred to [H10W 80/335](#)>
- D H01L 2224/80211 applying isostatic pressure, e.g. degassing using vacuum or a pressurised liquid
<administratively transferred to [H10W 80/335](#)>
- D H01L 2224/80213 using a reflow oven
<administratively transferred to [H10W 80/337](#)>
- D H01L 2224/80215 with a graded temperature profile
<administratively transferred to [H10W 80/337](#)>
- D H01L 2224/8022 with energy being in the form of electromagnetic radiation
<administratively transferred to [H10W 80/338](#)>
- D H01L 2224/80222 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 80/338](#)>
- D H01L 2224/80224 using a laser
<administratively transferred to [H10W 80/338](#)>
- D H01L 2224/8023 Polychromatic or infrared lamp heating
<administratively transferred to [H10W 80/338](#)>
- D H01L 2224/80232 using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 80/331](#)>
- D H01L 2224/80234 using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 80/339](#)>
- D H01L 2224/80236 using electro-static corona discharge
<administratively transferred to [H10W 80/331](#)>
- D H01L 2224/80237 using an electron beam
<administratively transferred to [H10W 80/338](#)>

- D H01L 2224/80238 using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 80/331](#)>
- D H01L 2224/8034 . . . Bonding interfaces of the bonding area
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/80345 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/80355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/80357 being flush with the surface
<administratively transferred to [H10W 72/941](#)>
- D H01L 2224/80359 Material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/8036 . . . Bonding interfaces of the semiconductor or solid state body
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/80365 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/80375 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 80/023](#)>
- D H01L 2224/80379 Material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/8038 . . . Bonding interfaces outside the semiconductor or solid-state body
<administratively transferred to [H10W 80/011](#)>
- D H01L 2224/80385 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/80395 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 80/023](#)>
- D H01L 2224/80399 Material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/804 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80401 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80405 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80409 Indium [In] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80411 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80413 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/952](#)>

D	H01L 2224/80414	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80416	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80417	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80418	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8042	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80423	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80424	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80438	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80439	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80444	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80447	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80449	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80455	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80457	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8046	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80463	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80464	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80466	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80469	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8047	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/952 >

- D H01L 2224/80471 Chromium [Cr] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80472 Vanadium [V] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80473 Rhodium [Rh] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80476 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80478 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80479 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/8048 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80481 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80483 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80484 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80486 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/8049 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/804 - H01L 2224/80491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/804 - H01L 2224/80491
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/804 - H01L 2224/80491
<administratively transferred to [H10W 72/953](#)>

- D H01L 2224/80498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/80499 Material of the matrix
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/805 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80501 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80505 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80509 Indium [In] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80511 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80513 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80514 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80516 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80517 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80518 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/8052 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80523 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80524 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80538 the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80539 Silver [Ag] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80544 Gold [Au] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80547 Copper [Cu] as principal constituent
<administratively transferred to [H10W 72/952](#)>

D	H01L 2224/80549	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80555	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80557	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8056	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80563	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80564	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80566	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80569	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8057	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80571	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80572	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80573	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80576	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80578	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80579	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8058	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80581	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80583	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80584	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80586	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/953 >

- D H01L 2224/80587 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80588 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/8059 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80591 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80593 with a principal constituent of the material being a solid not provided for in groups H01L 2224/805 – H01L 2224/80591, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80594 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/805 – H01L 2224/80591
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80595 with a principal constituent of the material being a gas not provided for in groups H01L 2224/805 – H01L 2224/80591
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80598 Fillers
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/80599 Base material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/806 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80605 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80609 Indium [In] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80611 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80613 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80614 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/80616 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/952](#)>

D	H01L 2224/80617	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80618	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8062	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80623	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80624	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80638	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80639	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80644	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80647	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80649	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80655	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80657	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8066	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80663	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80664	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80666	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80669	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8067	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80671	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80672	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/952 >

D	H01L 2224/80673	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80676	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80678	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80679	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8068	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80681	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80683	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80684	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80686	. . . . . with a principal constituent of the material being a non-metallic; non-metalloid inorganic material <administratively transferred to H10W 72/953 >
D	H01L 2224/80687	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/953 >
D	H01L 2224/80688	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/953 >
D	H01L 2224/8069	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy <administratively transferred to H10W 72/953 >
D	H01L 2224/80691	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/953 >
D	H01L 2224/80693	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/806 - H01L 2224/80691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/953 >
D	H01L 2224/80694	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/806 - H01L 2224/80691 <administratively transferred to H10W 72/953 >
D	H01L 2224/80695	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/806 - H01L 2224/80691 <administratively transferred to H10W 72/953 >
D	H01L 2224/80698	. . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams <administratively transferred to H10W 72/951 >
D	H01L 2224/80699	. . . . . Coating material <administratively transferred to H10W 72/951 >

D	H01L 2224/807	. . . . . with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/952 >
D	H01L 2224/80701	. . . . . the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80705	. . . . . Gallium [Ga] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80709	. . . . . Indium [In] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80711	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80713	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80714	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80716	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80717	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80718	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8072	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80723	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80724	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80738	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80739	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80744	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80747	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80749	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80755	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/952 >

D	H01L 2224/80757	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8076	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80763	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/80764	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80766	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80769	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8077	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80771	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80772	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80773	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80776	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80778	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80779	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8078	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80781	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80783	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80784	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/80786	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/953 >
D	H01L 2224/80787	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/953 >
D	H01L 2224/80788	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/953 >

- D H01L 2224/8079 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80793 with a principal constituent of the material being a solid not provided for in groups H01L 2224/807 - H01L 2224/80791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80794 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/807 - H01L 2224/80791
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80795 with a principal constituent of the material being a gas not provided for in groups H01L 2224/807 - H01L 2224/80791
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/80798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/80799 Shape or distribution of the fillers
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/808 . . . Bonding techniques
<administratively transferred to [H10W 72/071](#)>
- D H01L 2224/80801 . . . Soldering or alloying
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/80805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8081 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/80815 Reflow soldering
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8082 Diffusion bonding
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/80825 Solid-liquid interdiffusion
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8083 Solid-solid interdiffusion
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8084 . . . Sintering
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/8085 . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 72/07337](#)>
- D H01L 2224/80855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 72/07338](#)>

- D H01L 2224/80856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80859 Localised curing of parts of the bonding area
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80862 Heat curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80865 Microwave curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80868 Infrared [IR] curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80871 Visible light curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80874 Ultraviolet [UV] curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/80877 Moisture curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/8088 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 72/07339](#)>
- D H01L 2224/80885 Combinations of two or more hardening methods provided for in at least two different groups from H01L 2224/80855 - H01L 2224/8088, e.g. for hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 72/07337](#)>
- D H01L 2224/8089 using an inorganic non-metallic glass type adhesive, e.g. solder glass
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/80893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 80/341](#)>
- D H01L 2224/80894 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 80/301](#)>
- D H01L 2224/80895 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface activated bonding
<administratively transferred to [H10W 80/312](#)>
- D H01L 2224/80896 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 80/327](#)>
- D H01L 2224/80897 Mechanical interlocking, e.g. anchoring, hook and loop-type fastening or the like
<administratively transferred to [H10W 72/071](#)>
- D H01L 2224/80898 Press-fitting, i.e. pushing the parts together and fastening by friction, e.g. by compression of one part against the other
<administratively transferred to [H10W 72/071](#)>
- D H01L 2224/80899 using resilient parts in the bonding area
<administratively transferred to [H10W 72/071](#)>

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|---|-----------------|--|
| D | H01L 2224/809 | <ul style="list-style-type: none"> with the bonding area not providing any mechanical bonding <p><administratively transferred to H10W 72/071></p> |
| D | H01L 2224/80901 | <ul style="list-style-type: none"> Pressing a bonding area against another bonding area by means of a further bonding area or connector <p><administratively transferred to H10W 72/071></p> |
| D | H01L 2224/80902 | <ul style="list-style-type: none"> by means of a further bonding area <p><administratively transferred to H10W 72/071></p> |
| D | H01L 2224/80903 | <ul style="list-style-type: none"> by means of a bump or layer connector <p><administratively transferred to H10W 72/071></p> |
| D | H01L 2224/80904 | <ul style="list-style-type: none"> by means of an encapsulation layer or foil <p><administratively transferred to H10W 72/071></p> |
| D | H01L 2224/80905 | <ul style="list-style-type: none"> Combinations of bonding methods provided for in at least two different groups from H01L 2224/808 – H01L 2224/80904 <p><administratively transferred to H10W 80/301></p> |
| D | H01L 2224/80906 | <ul style="list-style-type: none"> Specific sequence of method steps <p><administratively transferred to H10W 80/301></p> |
| D | H01L 2224/80907 | <ul style="list-style-type: none"> Intermediate bonding, i.e. intermediate bonding step for temporarily bonding the semiconductor or solid-state body, followed by at least a further bonding step <p><administratively transferred to H10W 80/301></p> |
| D | H01L 2224/80908 | <ul style="list-style-type: none"> involving monitoring, e.g. feedback loop <p><administratively transferred to H10W 80/301></p> |
| D | H01L 2224/80909 | <ul style="list-style-type: none"> Post-treatment of the bonding area <p><administratively transferred to H10W 72/019></p> |
| D | H01L 2224/8091 | <ul style="list-style-type: none"> Cleaning, e.g. oxide removal step, desmearing <p><administratively transferred to H10W 72/01971></p> |
| D | H01L 2224/80911 | <ul style="list-style-type: none"> Chemical cleaning, e.g. etching, flux <p><administratively transferred to H10W 72/01971></p> |
| D | H01L 2224/80912 | <ul style="list-style-type: none"> Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow <p><administratively transferred to H10W 72/01971></p> |
| D | H01L 2224/80913 | <ul style="list-style-type: none"> Plasma cleaning <p><administratively transferred to H10W 72/01971></p> |
| D | H01L 2224/80914 | <ul style="list-style-type: none"> Thermal cleaning, e.g. using laser ablation or by electrostatic corona discharge <p><administratively transferred to H10W 72/01971></p> |
| D | H01L 2224/80919 | <ul style="list-style-type: none"> Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8091 – H01L 2224/80914 <p><administratively transferred to H10W 72/01971></p> |
| D | H01L 2224/8092 | <ul style="list-style-type: none"> Applying permanent coating, e.g. protective coating <p><administratively transferred to H10W 72/019></p> |
| D | H01L 2224/8093 | <ul style="list-style-type: none"> Reshaping <p><administratively transferred to H10W 72/01951></p> |
| D | H01L 2224/80931 | <ul style="list-style-type: none"> by chemical means, e.g. etching <p><administratively transferred to H10W 72/01953></p> |

- D H01L 2224/80935 by heating means, e.g. reflowing
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80937 using a polychromatic heating lamp
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80939 using a laser
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80941 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80943 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80947 by mechanical means, e.g. pull-and-cut, pressing, stamping
<administratively transferred to [H10W 72/01951](#)>
- D H01L 2224/80948 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/80951 Forming additional members, e.g. for reinforcing
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/80986 Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 72/019](#)>
- D H01L 2224/81 using a bump connector
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81001 involving a temporary auxiliary member not forming part of the bonding apparatus
<administratively transferred to [H10W 72/07204](#)>
- D H01L 2224/81002 being a removable or sacrificial coating
<administratively transferred to [H10W 72/07204](#)>
- D H01L 2224/81005 being a temporary or sacrificial substrate
<administratively transferred to [H10W 72/07207](#)>
- D H01L 2224/81007 involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the bump connector during or after the bonding process
<administratively transferred to [H10W 72/07202](#)>
- D H01L 2224/81009 Pre-treatment of the bump connector or the bonding area
<administratively transferred to [H10W 72/012](#)>
- D H01L 2224/8101 Cleaning the bump connector, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81011 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81012 Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>

- D H01L 2224/81013 Plasma-cleaning
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81014 Thermal-cleaning, e.g. decomposition, sublimation
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81019 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8101 – H01L 2224/81014
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/8102 Applying permanent coating to the bump connector in the bonding apparatus, e.g. in-situ coating
<administratively transferred to [H10W 72/01215](#) and [H10W 72/072](#)>
- D H01L 2224/81022 Cleaning the bonding area, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/07211](#)>
- D H01L 2224/81024 Applying flux to the bonding area
<administratively transferred to [H10W 72/07211](#)>
- D H01L 2224/81026 Applying a precursor material to the bonding area
<administratively transferred to [H10W 72/07211](#)>
- D H01L 2224/8103 Reshaping the bump connector in the bonding apparatus, e.g. flattening the bump connector
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81031 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 72/01253](#) and [H10W 72/072](#)>
- D H01L 2224/81035 by heating means
<administratively transferred to [H10W 72/01257](#) and [H10W 72/072](#)>
- D H01L 2224/81037 using a polychromatic heating lamp
<administratively transferred to [H10W 72/01257](#) and [H10W 72/072](#)>
- D H01L 2224/81039 using a laser
<administratively transferred to [H10W 72/01257](#) and [H10W 72/072](#)>
- D H01L 2224/81041 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/01257](#) and [H10W 72/072](#)>
- D H01L 2224/81047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 72/01257](#) and [H10W 72/072](#)>
- D H01L 2224/81048 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 72/012](#) and [H10W 72/072](#)>
- D H01L 2224/81051 Forming additional members
<administratively transferred to [H10W 72/012](#) and [H10W 72/072](#)>
- D H01L 2224/81052 . . . Detaching bump connectors, e.g. after testing
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81053 . . . Bonding environment
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81054 Composition of the atmosphere
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81055 being oxidating
<administratively transferred to [H10W 72/016](#)>

- D H01L 2224/81065 being-reducing
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81075 being-inert
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81085 being a liquid, e.g. for fluidic self-assembly
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/8109 Vacuum
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81091 Under pressure
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81092 Atmospheric pressure
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81093 Transient conditions, e.g. gas-flow
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81095 Temperature settings
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81096 Transient conditions
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81097 Heating
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81098 Cooling
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/81099 Ambient temperature
<administratively transferred to [H10W 72/016](#)>
- D H01L 2224/811 . . . the bump connector being supplied to the parts to be connected in the bonding apparatus
<administratively transferred to [H10W 72/01212](#) and [H10W 72/072](#)>
- D H01L 2224/81101 . . . as prepeg comprising a bump connector, e.g. provided in an insulating plate member
<administratively transferred to [H10W 72/01212](#) and [H10W 72/072](#)>
- D H01L 2224/8111 . . . involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8112 . . . Aligning
<administratively transferred to [H10W 72/07221](#)>
- D H01L 2224/81121 . . . Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/81122 . . . by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/81123 Shape or position of the body
<administratively transferred to [H10W 72/07223](#)>

- D H01L 2224/81125 Bonding areas on the body
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/81127 Bonding areas outside the body
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/81129 Shape or position of the other item
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/8113 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/81132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 72/07223](#)>
- D H01L 2224/81136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 72/07227](#)>
- D H01L 2224/81138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 72/07227](#)>
- D H01L 2224/81139 Guiding structures on the body
<administratively transferred to [H10W 72/07227](#)>
- D H01L 2224/8114 Guiding structures outside the body
<administratively transferred to [H10W 72/07227](#)>
- D H01L 2224/81141 Guiding structures both on and outside the body
<administratively transferred to [H10W 72/07227](#)>
- D H01L 2224/81143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 72/07221](#)>
- D H01L 2224/81148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8115 Rotational movements
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8116 Translational movements
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81169 being the upper part of the bonding apparatus, i.e. bonding head
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8117 Rotational movements
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8118 Translational movements
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8119 Arrangement of the bump connectors prior to mounting
<administratively transferred to [H10W 72/241](#) and [H10W 72/072](#)>
- D H01L 2224/81191 wherein the bump connectors are disposed only on the semiconductor or solid-state body
<administratively transferred to [H10W 72/241](#) and [H10W 72/072](#)>

- D H01L 2224/81192 . . . wherein the bump connectors are disposed only on another item or body to be connected to the semiconductor or solid-state body
<administratively transferred to [H10W 72/241](#) and [H10W 72/072](#)>
- D H01L 2224/81193 . . . wherein the bump connectors are disposed on both the semiconductor or solid-state body and another item or body to be connected to the semiconductor or solid-state body
<administratively transferred to [H10W 72/241](#) and [H10W 72/072](#)>
- D H01L 2224/81194 . . . Lateral distribution of the bump connectors
<administratively transferred to [H10W 72/248](#) and [H10W 72/072](#)>
- D H01L 2224/812 . . . Applying energy for connecting
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81201 . . . Compression bonding
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2224/81203 . . . Thermocompression bonding, e.g. diffusion bonding, pressure joining, thermocompression welding or solid-state welding
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2224/81204 . . . with a graded temperature profile
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2224/81205 . . . Ultrasonic bonding
<administratively transferred to [H10W 72/07233](#)>
- D H01L 2224/81206 . . . Direction of oscillation
<administratively transferred to [H10W 72/07233](#)>
- D H01L 2224/81207 . . . Thermosonic bonding
<administratively transferred to [H10W 72/07233](#)>
- D H01L 2224/81208 . . . applying unidirectional static pressure
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2224/81209 . . . applying isostatic pressure, e.g. degassing using vacuum or a pressurised liquid
<administratively transferred to [H10W 72/07232](#)>
- D H01L 2224/8121 . . . using a reflow oven
<administratively transferred to [H10W 72/07234](#)>
- D H01L 2224/81211 . . . with a graded temperature profile
<administratively transferred to [H10W 72/07234](#)>
- D H01L 2224/8122 . . . with energy being in the form of electromagnetic radiation
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2224/81222 . . . Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2224/81224 . . . using a laser
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2224/8123 . . . Polychromatic or infrared lamp heating
<administratively transferred to [H10W 72/07235](#)>
- D H01L 2224/81232 . . . using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 72/072](#)>

- D H01L 2224/81234 using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81236 using electro-static corona discharge
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81237 using an electron beam
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81238 using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8134 Bonding interfaces of the bump connector
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81345 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/072](#) and [H10W 72/07253](#)>
- D H01L 2224/81355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/072](#) and [H10W 72/222](#)>
- D H01L 2224/81359 Material
<administratively transferred to [H10W 72/072](#), [H10W 72/251](#), and [H10W 72/2528](#) simultaneously>
- D H01L 2224/8136 Bonding interfaces of the semiconductor or solid state body
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81365 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81375 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81379 Material
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8138 Bonding interfaces outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81385 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81395 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81399 Material
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/814 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81401 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81405 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81409 Indium [In] as principal constituent
<administratively transferred to [H10W 72/072](#)>

D	H01L 2224/81411	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81413	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81414	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81416	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81417	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81418	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8142	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81423	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81424	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81438	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81439	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81444	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81447	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81449	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81455	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81457	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8146	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81463	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81464	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81466	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/072 >

D	H01L 2224/81469	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8147	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81471	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81472	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81473	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81476	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81478	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81479	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8148	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81481	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81483	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81484	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81486	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/072 >
D	H01L 2224/81487	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/072 >
D	H01L 2224/81488	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/072 >
D	H01L 2224/8149	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy <administratively transferred to H10W 72/072 >
D	H01L 2224/81491	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/072 >
D	H01L 2224/81493	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/814 - H01L 2224/81491, e.g. allotropes of carbon, fullerene, graphite, carbon nanotubes, diamond <administratively transferred to H10W 72/072 >
D	H01L 2224/81494	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/814 - H01L 2224/81491 <administratively transferred to H10W 72/072 >

- D H01L 2224/81495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/814 - H01L 2224/81491
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81499 Material of the matrix
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/815 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81501 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81505 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81509 Indium [In] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81511 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81513 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81514 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81516 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81517 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81518 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8152 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81523 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81524 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81538 the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81539 Silver [Ag] as principal constituent
<administratively transferred to [H10W 72/072](#)>

D	H01L 2224/81544	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81547	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81549	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81555	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81557	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8156	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81563	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81564	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81566	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81569	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8157	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81571	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81572	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81573	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81576	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81578	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81579	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8158	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81581	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81583	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81584	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/072 >

- D H01L 2224/81586 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81587 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81588 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8159 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81591 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81593 with a principal constituent of the material being a solid not provided for in groups H01L 2224/815 - H01L 2224/81591, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81594 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/815 - H01L 2224/81591
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81595 with a principal constituent of the material being a gas not provided for in groups H01L 2224/815 - H01L 2224/81591
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81598 Fillers
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81599 Base material
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/816 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81605 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81609 Indium [In] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81611 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81613 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81614 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/072](#)>

D	H01L 2224/81616	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81617	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81618	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8162	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81623	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81624	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81638	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81639	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81644	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81647	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81649	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81655	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81657	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8166	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81663	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81664	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81666	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81669	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8167	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81671	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/072 >

D	H01L 2224/81672	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81673	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81676	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81678	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81679	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8168	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81681	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81683	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81684	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81686	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/072 >
D	H01L 2224/81687	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/072 >
D	H01L 2224/81688	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/072 >
D	H01L 2224/8169	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy <administratively transferred to H10W 72/072 >
D	H01L 2224/81691	. . . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene <administratively transferred to H10W 72/072 >
D	H01L 2224/81693	. . . . . with a principal constituent of the material being a solid not provided for in groups H01L 2224/816 - H01L 2224/81691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond <administratively transferred to H10W 72/072 >
D	H01L 2224/81694	. . . . . with a principal constituent of the material being a liquid not provided for in groups H01L 2224/816 - H01L 2224/81691 <administratively transferred to H10W 72/072 >
D	H01L 2224/81695	. . . . . with a principal constituent of the material being a gas not provided for in groups H01L 2224/816 - H01L 2224/81691 <administratively transferred to H10W 72/072 >
D	H01L 2224/81698	. . . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams <administratively transferred to H10W 72/072 >

D	H01L 2224/81699	. . . . . Coating material <administratively transferred to H10W 72/072 >
D	H01L 2224/817	. . . . . with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof <administratively transferred to H10W 72/072 >
D	H01L 2224/81701	. . . . . the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81705	. . . . . Gallium [Ga] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81709	. . . . . Indium [In] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81711	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81713	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81714	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81716	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81717	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81718	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8172	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81723	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81724	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81738	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81739	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81744	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81747	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81749	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/072 >

D	H01L 2224/81755	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81757	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8176	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81763	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/072 >
D	H01L 2224/81764	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81766	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81769	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8177	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81771	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81772	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81773	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81776	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81778	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81779	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/8178	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81781	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81783	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81784	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/072 >
D	H01L 2224/81786	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/072 >
D	H01L 2224/81787	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/072 >

- D H01L 2224/81788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8179 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81793 with a principal constituent of the material being a solid not provided for in groups H01L 2224/817 - H01L 2224/81791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81794 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/817 - H01L 2224/81791
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81795 with a principal constituent of the material being a gas not provided for in groups H01L 2224/817 - H01L 2224/81791
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/81799 Shape or distribution of the fillers
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/818 . . . Bonding techniques
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81801 . . . Soldering or alloying
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/81805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8181 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/81815 Reflow soldering
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8182 Diffusion bonding
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/81825 Solid-liquid interdiffusion
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8183 Solid-solid interdiffusion
<administratively transferred to [H10W 72/07236](#)>
- D H01L 2224/8184 . . . Sintering
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/8185 . . . using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 72/07237](#)>

- D H01L 2224/81855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81859 Localised curing of parts of the bump connector
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81862 Heat curing
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81865 Microwave curing
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81868 Infrared [IR] curing
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81871 Visible light curing
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81874 Ultraviolet [UV] curing
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81877 Moisture curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/8188 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/81885 Combinations of two or more hardening methods provided for in at least two different groups from H01L 2224/81855 – H01L 2224/8188, e.g. for hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 72/07237](#)>
- D H01L 2224/8189 using an inorganic non-metallic glass type adhesive, e.g. solder glass
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81894 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 80/301](#)>
- D H01L 2224/81895 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface activated bonding
<administratively transferred to [H10W 80/314](#)>
- D H01L 2224/81896 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 80/327](#)>
- D H01L 2224/81897 Mechanical interlocking, e.g. anchoring, hook and loop-type fastening or the like
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81898 Press-fitting, i.e. pushing the parts together and fastening by friction, e.g. by compression of one part against the other
<administratively transferred to [H10W 72/07231](#)>

- D H01L 2224/81899 using resilient parts in the bump connector or in the bonding area
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/819 . . . with the bump connector not providing any mechanical bonding
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/81901 Pressing the bump connector against the bonding areas by means of another connector
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/81902 by means of another bump connector
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/81903 by means of a layer connector
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/81904 by means of an encapsulation layer or foil
<administratively transferred to [H10W 72/261](#)>
- D H01L 2224/81905 . . . Combinations of bonding methods provided for in at least two different groups from H01L 2224/818 – H01L 2224/81904
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81906 Specific sequence of method steps
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81907 Intermediate bonding, i.e. intermediate bonding step for temporarily bonding the semiconductor or solid-state body, followed by at least a further bonding step
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81908 . . . involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/07231](#)>
- D H01L 2224/81909 . . . Post-treatment of the bump connector or bonding area
<administratively transferred to [H10W 72/012](#) and [H10W 72/072](#)>
- D H01L 2224/8191 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81911 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81912 Mechanical cleaning, e.g. abrasion using hydro-blasting, brushes, ultrasonic cleaning, dry-ice blasting, gas-flow
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81913 Plasma cleaning
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81914 Thermal cleaning, e.g. using laser ablation or by electrostatic corona discharge
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/81919 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8191 – H01L 2224/81914
<administratively transferred to [H10W 72/01271](#) and [H10W 72/072](#)>
- D H01L 2224/8192 Applying permanent coating, e.g. protective coating
<administratively transferred to [H10W 72/01215](#) and [H10W 72/072](#)>
- D H01L 2224/8193 Reshaping
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>

- D H01L 2224/81931 by chemical means, e.g. etching
<administratively transferred to [H10W 72/01253](#) and [H10W 72/072](#)>
- D H01L 2224/81935 by heating means, e.g. reflowing
<administratively transferred to [H10W 72/01257](#) and [H10W 72/072](#)>
- D H01L 2224/81937 using a polychromatic heating lamp
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81939 using a laser
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81941 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81943 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81947 by mechanical means, e.g. "pull-and-cut", pressing, stamping
<administratively transferred to [H10W 72/01251](#) and [H10W 72/072](#)>
- D H01L 2224/81948 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/012](#) and [H10W 72/072](#)>
- D H01L 2224/81951 Forming additional members, e.g. for reinforcing
<administratively transferred to [H10W 72/01208](#) and [H10W 72/072](#)>
- D H01L 2224/81986 Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/82 by forming build-up interconnects at chip-level, e.g. for high density interconnects [HDI]
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82001 involving a temporary auxiliary member not forming part of the bonding apparatus
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82002 being a removable or sacrificial coating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82005 being a temporary or sacrificial substrate
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82007 involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting a build-up interconnect during or after the bonding process
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82009 Pre-treatment of the connector or the bonding area
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8201 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8203 Reshaping, e.g. forming vias
<administratively transferred to [H10W 70/093](#)>

- D H01L 2224/82031 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82035 by heating means
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82039 using a laser
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82045 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82048 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82051 Forming additional members
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82053 . . . Bonding environment
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82054 Composition of the atmosphere
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82085 being a liquid, e.g. for fluidic self-assembly
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8209 Vacuum
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82091 Under pressure
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82095 Temperature settings
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82096 Transient conditions
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82097 Heating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82098 Cooling
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82099 Ambient temperature
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/821 . . . Forming a build-up interconnect
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82101 by additive methods, e.g. direct writing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82102 using jetting, e.g. ink-jet
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82103 using laser direct writing
<administratively transferred to [H10W 70/093](#)>

- D H01L 2224/82104 using screen-printing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82105 by using a preform
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82106 by subtractive methods
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82108 by self-assembly processes
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8211 involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8212 Aligning
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82121 Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82122 by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8213 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8215 Rotational movements
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8216 Translational movements
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82169 being the upper part of the bonding apparatus, e.g. nozzle
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8217 Rotational movement
<administratively transferred to [H10W 70/093](#)>

- D H01L 2224/8218 Translational movements
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82181 connecting first on the semiconductor or solid-state body, i.e. on-chip;
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82186 connecting first outside the semiconductor or solid-state body, i.e. off-chip
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82191 connecting first both on and outside the semiconductor or solid-state body
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/822 . . . Applying energy for connecting
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82201 . . . Compression bonding
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82203 . . . Thermocompression bonding
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82205 . . . Ultrasonic bonding
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82207 . . . Thermosonic bonding
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8221 . . . with energy being in the form of electromagnetic radiation
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82212 . . . Induction heating, i.e. eddy currents
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82214 . . . using a laser
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8223 . . . Polychromatic or infrared lamp heating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82232 . . . using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82234 . . . using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82236 . . . using electro-static corona discharge
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82237 . . . using electron beam
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82238 . . . using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8234 . . . Bonding interfaces of the connector
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82345 . . . Shape, e.g. interlocking features
<administratively transferred to [H10W 70/093](#)>

- D H01L 2224/82355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82359 Material
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8236 . . . Bonding interfaces of the semiconductor or solid-state body
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82365 Shape, e.g. interlocking features
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82375 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82379 Material
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8238 . . . Bonding interfaces outside the semiconductor or solid-state body
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82385 Shape, e.g. interlocking features
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82395 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82399 Material
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/828 . . . Bonding techniques
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82801 Soldering or alloying
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8281 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82815 Reflow soldering
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8282 Diffusion bonding
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82825 Solid-liquid interdiffusion
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8283 Solid-solid interdiffusion
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8284 Sintering
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8285 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 70/093](#)>

- D H01L 2224/82856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82859 Localised curing of parts of the connector
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82862 Heat curing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82865 Microwave curing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82868 Infrared [IR] curing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82871 Visible light curing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82874 Ultraviolet [UV] curing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82877 Moisture curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8288 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82885 Combinations of two or more hardening methods provided for in at least two different groups from H01L 2224/82855 - H01L 2224/8288, e.g. for hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8289 using an inorganic non-metallic glass type adhesive, e.g. solder glass
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82895 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82896 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface activated bonding
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82897 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82899 Combinations of bonding methods provided for in at least two different groups from H01L 2224/828 - H01L 2224/82897
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/829 involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82909 Post-treatment of the connector or the bonding area
<administratively transferred to [H10W 70/093](#)>

- D H01L 2224/8291 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/8293 Reshaping
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82931 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82935 by heating means
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82939 using a laser
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82947 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82948 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82951 Forming additional members
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/82986 . . . Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 70/093](#)>
- D H01L 2224/83 . . using a layer connector
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83001 . . . involving a temporary auxiliary member not forming part of the bonding apparatus
<administratively transferred to [H10W 72/07304](#)>
- D H01L 2224/83002 being a removable or sacrificial coating
<administratively transferred to [H10W 72/07304](#)>
- D H01L 2224/83005 being a temporary or sacrificial substrate
<administratively transferred to [H10W 72/07307](#)>
- D H01L 2224/83007 . . . involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the layer connector during or after the bonding process
<administratively transferred to [H10W 72/07302](#)>
- D H01L 2224/83009 . . . Pre-treatment of the layer connector or the bonding area
<administratively transferred to [H10W 72/07311](#)>
- D H01L 2224/8301 Cleaning the layer connector, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>
- D H01L 2224/83011 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>
- D H01L 2224/83012 Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>

- D H01L 2224/83013 Plasma-cleaning
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>
- D H01L 2224/83014 Thermal-cleaning, e.g. decomposition, sublimation
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>
- D H01L 2224/83019 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8301 – H01L 2224/83014
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>
- D H01L 2224/8302 Applying permanent coating to the layer connector in the bonding apparatus, e.g. in-situ coating
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01315](#)>
- D H01L 2224/83022 Cleaning the bonding area, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01371](#)>
- D H01L 2224/83024 Applying flux to the bonding area
<administratively transferred to [H10W 72/07311](#) and [H10W 72/013](#)>
- D H01L 2224/83026 Applying a precursor material to the bonding area
<administratively transferred to [H10W 72/07311](#) and [H10W 72/013](#)>
- D H01L 2224/8303 Reshaping the layer connector in the bonding apparatus, e.g. flattening the layer connector
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01351](#)>
- D H01L 2224/83031 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01353](#)>
- D H01L 2224/83035 by heating means
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01357](#)>
- D H01L 2224/83037 using a polychromatic heating lamp
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01357](#)>
- D H01L 2224/83039 using a laser
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01357](#)>
- D H01L 2224/83041 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01357](#)>
- D H01L 2224/83047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01351](#)>
- D H01L 2224/83048 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 72/07311](#) and [H10W 72/01365](#)>
- D H01L 2224/83051 Forming additional members, e.g. dam structures
<administratively transferred to [H10W 72/07311](#)>
- D H01L 2224/83052 . . . Detaching layer connectors, e.g. after testing
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83053 . . . Bonding environment
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83054 Composition of the atmosphere
<administratively transferred to [H10W 72/07341](#)>

- D H01L 2224/83055 being oxidating
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83065 being reducing
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83075 being inert
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83085 being a liquid, e.g. for fluidic self-assembly
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/8309 Vacuum
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83091 Under pressure
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83092 Atmospheric pressure
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83093 Transient conditions, e.g. gas-flow
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83095 Temperature settings
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83096 Transient conditions
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83097 Heating
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83098 Cooling
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/83099 Ambient temperature
<administratively transferred to [H10W 72/07341](#)>
- D H01L 2224/831 . . . the layer connector being supplied to the parts to be connected in the bonding apparatus
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83101 as prepreg comprising a layer connector, e.g. provided in an insulating plate member
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83102 using surface energy, e.g. capillary forces
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83104 by applying pressure, e.g. by injection
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/8311 . . . involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/8312 . . . Aligning
<administratively transferred to [H10W 72/07321](#)>
- D H01L 2224/83121 Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 72/07323](#)>

- D H01L 2224/83122 by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/83123 Shape or position of the body
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/83125 Bonding areas on the body
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/83127 Bonding areas outside the body
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/83129 Shape or position of the other item
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/8313 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/83132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 72/07323](#)>
- D H01L 2224/83136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 72/07327](#)>
- D H01L 2224/83138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 72/07327](#)>
- D H01L 2224/83139 Guiding structures on the body
<administratively transferred to [H10W 72/07327](#)>
- D H01L 2224/8314 Guiding structures outside the body
<administratively transferred to [H10W 72/07327](#)>
- D H01L 2224/83141 Guiding structures both on and outside the body
<administratively transferred to [H10W 72/07327](#)>
- D H01L 2224/83143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 72/07321](#)>
- D H01L 2224/83148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/8315 Rotational movements
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/8316 Translational movements
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83169 being the upper part of the bonding apparatus, i.e. bonding head
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/8317 Rotational movements
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/8318 Translational movements
<administratively transferred to [H10W 72/073](#)>

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|---|-----------------|--|
| D | H01L 2224/8319 | <ul style="list-style-type: none"> • • • Arrangement of the layer connectors prior to mounting <administratively transferred to H10W 72/073> |
| D | H01L 2224/83191 | <ul style="list-style-type: none"> • • • wherein the layer connectors are disposed only on the semiconductor or solid-state body <administratively transferred to H10W 72/073> |
| D | H01L 2224/83192 | <ul style="list-style-type: none"> • • • wherein the layer connectors are disposed only on another item or body to be connected to the semiconductor or solid-state body <administratively transferred to H10W 72/073> |
| D | H01L 2224/83193 | <ul style="list-style-type: none"> • • • wherein the layer connectors are disposed on both the semiconductor or solid-state body and another item or body to be connected to the semiconductor or solid-state body <administratively transferred to H10W 72/073> |
| D | H01L 2224/83194 | <ul style="list-style-type: none"> • • • Lateral distribution of the layer connectors <administratively transferred to H10W 72/073> |
| D | H01L 2224/832 | <ul style="list-style-type: none"> • • • Applying energy for connecting <administratively transferred to H10W 72/07331> |
| D | H01L 2224/83201 | <ul style="list-style-type: none"> • • • • Compression bonding <administratively transferred to H10W 72/07332> |
| D | H01L 2224/83203 | <ul style="list-style-type: none"> • • • • Thermocompression bonding, e.g. diffusion bonding, pressure joining, thermocompression welding or solid-state welding <administratively transferred to H10W 72/07332> |
| D | H01L 2224/83204 | <ul style="list-style-type: none"> • • • • • with a graded temperature profile <administratively transferred to H10W 72/07332> |
| D | H01L 2224/83205 | <ul style="list-style-type: none"> • • • • • Ultrasonic bonding <administratively transferred to H10W 72/07333> |
| D | H01L 2224/83206 | <ul style="list-style-type: none"> • • • • • Direction of oscillation <administratively transferred to H10W 72/07333> |
| D | H01L 2224/83207 | <ul style="list-style-type: none"> • • • • • Thermosonic bonding <administratively transferred to H10W 72/07333> |
| D | H01L 2224/83208 | <ul style="list-style-type: none"> • • • • • applying unidirectional static pressure <administratively transferred to H10W 72/07331> |
| D | H01L 2224/83209 | <ul style="list-style-type: none"> • • • • • applying isostatic pressure, e.g. degassing using vacuum or a pressurised liquid <administratively transferred to H10W 72/07331> |
| D | H01L 2224/8321 | <ul style="list-style-type: none"> • • • • using a reflow oven <administratively transferred to H10W 72/07334> |
| D | H01L 2224/83211 | <ul style="list-style-type: none"> • • • • • with a graded temperature profile <administratively transferred to H10W 72/07334> |
| D | H01L 2224/8322 | <ul style="list-style-type: none"> • • • • with energy being in the form of electromagnetic radiation <administratively transferred to H10W 72/07335> |
| D | H01L 2224/83222 | <ul style="list-style-type: none"> • • • • • Induction heating, i.e. eddy currents <administratively transferred to H10W 72/07335> |
| D | H01L 2224/83224 | <ul style="list-style-type: none"> • • • • • using a laser <administratively transferred to H10W 72/07335> |

- D H01L 2224/8323 Polychromatic or infrared lamp heating
<administratively transferred to [H10W 72/07335](#)>
- D H01L 2224/83232 using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83234 using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83236 using electro-static corona discharge
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83237 using an electron beam
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83238 using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/8334 . . . Bonding interfaces of the layer connector
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/83345 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/073](#) and [H10W 72/331](#)>
- D H01L 2224/83355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/073](#) and [H10W 72/322](#)>
- D H01L 2224/83359 Material
<administratively transferred to [H10W 72/073](#) and [H10W 72/351](#)>
- D H01L 2224/8336 . . . Bonding interfaces of the semiconductor or solid state body
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/83365 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/83375 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/83379 Material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/8338 . . . Bonding interfaces outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/90](#)>
- D H01L 2224/83385 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/931](#)>
- D H01L 2224/83395 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/923](#)>
- D H01L 2224/83399 Material
<administratively transferred to [H10W 72/951](#)>
- D H01L 2224/834 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83401 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/952](#)>

D	H01L 2224/83405	. . . . . Gallium [Ga] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83409	. . . . . Indium [In] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83411	. . . . . Tin [Sn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83413	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83414	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83416	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83417	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/952 >
D	H01L 2224/83418	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8342	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83423	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83424	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83438	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/952 >
D	H01L 2224/83439	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83444	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83447	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83449	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83455	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83457	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/8346	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/952 >
D	H01L 2224/83463	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/952 >

- D H01L 2224/83464 Palladium [Pd] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83466 Titanium [Ti] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83469 Platinum [Pt] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/8347 Zirconium [Zr] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83471 Chromium [Cr] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83472 Vanadium [V] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83473 Rhodium [Rh] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83476 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83478 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83479 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/8348 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83481 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83483 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83484 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/952](#)>
- D H01L 2224/83486 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/83487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/83488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/8349 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/83491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/953](#)>

- D H01L 2224/83493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/834 - H01L 2224/83491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/83494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/834 - H01L 2224/83491
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/83495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/834 - H01L 2224/83491
<administratively transferred to [H10W 72/953](#)>
- D H01L 2224/83498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/83499 Material of the matrix
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/835 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83501 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83505 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83509 Indium [In] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83511 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83513 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83514 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83516 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83517 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83518 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>

D	H01L 2224/8352	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83523	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83524	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83538	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83539	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83544	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83547	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83549	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83555	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83557	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8356	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83563	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83564	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83566	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83569	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

- D H01L 2224/8357 Zirconium [Zr] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83571 Chromium [Cr] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83572 Vanadium [V] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83573 Rhodium [Rh] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83576 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83578 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83579 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/8358 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83581 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83583 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83584 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83586 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83587 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83588 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/8359 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83591 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>

- D H01L 2224/83593 with a principal constituent of the material being a solid not provided for in groups H01L 2224/835 – H01L 2224/83591, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83594 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/835 – H01L 2224/83591
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83595 with a principal constituent of the material being a gas not provided for in groups H01L 2224/835 – H01L 2224/83591
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83598 Fillers
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/83599 Base material
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/836 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83605 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83609 Indium [In] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83611 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83613 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83614 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83616 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83617 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83618 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>

D	H01L 2224/8362	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83623	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83624	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83638	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83639	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83644	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83647	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83649	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83655	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83657	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8366	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83664	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83666	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83669	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

D	H01L 2224/8367	. . . . . Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83671	. . . . . Chromium [Cr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83672	. . . . . Vanadium [V] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83673	. . . . . Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83676	. . . . . Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83678	. . . . . Iridium [Ir] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83679	. . . . . Niobium [Nb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8368	. . . . . Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83681	. . . . . Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83683	. . . . . Rhenium [Re] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83684	. . . . . Tungsten [W] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83686	. . . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/83687	. . . . . Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/83688	. . . . . Glasses, e.g. amorphous oxides, nitrides or fluorides <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/8369	. . . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy <administratively transferred to H10W 72/925 and H10W 72/953 >

- D H01L 2224/83691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/836 – H01L 2224/83691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/836 – H01L 2224/83691
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/836 – H01L 2224/83691
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/83699 Coating material
<administratively transferred to [H10W 72/925](#) and [H10W 72/951](#)>
- D H01L 2224/837 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83705 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83709 Indium [In] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83711 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83713 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83714 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>
- D H01L 2224/83716 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/925](#) and [H10W 72/952](#)>

D	H01L 2224/83717	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83718	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8372	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83723	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83724	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83738	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83739	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83744	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83747	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83749	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83755	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83757	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8376	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83763	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83764	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >

D	H01L 2224/83766	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83769	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8377	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83771	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83772	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83773	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83776	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83778	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83779	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/8378	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83781	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83783	. . . . .	Rhenium [Re] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83784	. . . . .	Tungsten [W] as principal constituent <administratively transferred to H10W 72/925 and H10W 72/952 >
D	H01L 2224/83786	. . . . .	with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/925 and H10W 72/953 >
D	H01L 2224/83787	. . . . .	Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/925 and H10W 72/953 >

- D H01L 2224/83788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/8379 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83793 with a principal constituent of the material being a solid not provided for in groups H01L 2224/837 - H01L 2224/83791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83794 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/837 - H01L 2224/83791
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83795 with a principal constituent of the material being a gas not provided for in groups H01L 2224/837 - H01L 2224/83791
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/83799 Shape or distribution of the fillers
<administratively transferred to [H10W 72/925](#) and [H10W 72/953](#)>
- D H01L 2224/838 . . . Bonding techniques
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83801 . . . Soldering or alloying
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/83805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/8381 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/83815 Reflow soldering
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/8382 Diffusion bonding
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/83825 Solid-liquid interdiffusion
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/8383 Solid-solid interdiffusion
<administratively transferred to [H10W 72/07336](#)>
- D H01L 2224/8384 . . . Sintering
<administratively transferred to [H10W 72/07331](#)>

- D H01L 2224/8385 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 72/07337](#)>
- D H01L 2224/83851 being an anisotropic conductive adhesive
<administratively transferred to [H10W 72/074](#)>
- D H01L 2224/83855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83859 Localised curing of parts of the layer connector
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83862 Heat-curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83865 Microwave-curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83868 Infrared [IR]-curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83871 Visible light-curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83874 Ultraviolet [UV]-curing
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/83877 Moisture curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 72/07338](#)>
- D H01L 2224/8388 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 72/07339](#)>
- D H01L 2224/83885 Combinations of two or more hardening methods provided for in at least two different groups from H01L 2224/83855 – H01L 2224/8388, e.g. for hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83886 Involving a self-assembly process, e.g. self-agglomeration of a material dispersed in a fluid
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83887 Auxiliary means therefor, e.g. for self-assembly activation
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83888 with special adaptation of the surface of the body to be connected, e.g. surface shape specially adapted for the self-assembly process
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83889 involving the material of the bonding area, e.g. bonding pad
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/8389 using an inorganic non-metallic glass type adhesive, e.g. solder glass
<administratively transferred to [H10W 72/07331](#)>

- D H01L 2224/83893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83894 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83895 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface activated bonding
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83896 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83897 Mechanical interlocking, e.g. anchoring, hook and loop-type fastening or the like
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83898 Press-fitting, i.e. pushing the parts together and fastening by friction, e.g. by compression of one part against the other
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83899 using resilient parts in the layer connector or in the bonding area
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/839 . . . with the layer connector not providing any mechanical bonding
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83901 Pressing the layer connector against the bonding areas by means of another connector
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83902 by means of another layer connector
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83903 by means of a bump connector
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83904 by means of an encapsulation layer or foil
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83905 . . . Combinations of bonding methods provided for in at least two different groups from H01L 2224/838 – H01L 2224/83904
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83906 Specific sequence of method steps
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83907 Intermediate bonding, i.e. intermediate bonding step for temporarily bonding the semiconductor or solid-state body, followed by at least a further bonding step
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83908 . . . involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83909 . . . Post-treatment of the layer connector or bonding area
<administratively transferred to [H10W 72/07331](#) and [H10W 72/013](#)>
- D H01L 2224/8391 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01371](#)>

- D H01L 2224/83911 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01371](#)>
- D H01L 2224/83912 Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01371](#)>
- D H01L 2224/83913 Plasma cleaning
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01371](#)>
- D H01L 2224/83914 Thermal cleaning, e.g. using laser ablation or by electrostatic corona discharge
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01371](#)>
- D H01L 2224/83919 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8391 – H01L 2224/83914
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01371](#)>
- D H01L 2224/8392 Applying permanent coating, e.g. protective coating
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01315](#)>
- D H01L 2224/8393 Reshaping
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01351](#)>
- D H01L 2224/83931 by chemical means, e.g. etching
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01353](#)>
- D H01L 2224/83935 by heating means, e.g. reflowing
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01357](#)>
- D H01L 2224/83937 using a polychromatic heating lamp
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01357](#)>
- D H01L 2224/83939 using a laser
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01357](#)>
- D H01L 2224/83941 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01357](#)>
- D H01L 2224/83943 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01357](#)>
- D H01L 2224/83945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01357](#)>
- D H01L 2224/83947 by mechanical means, e.g. "pull-and-cut", pressing, stamping
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01351](#)>
- D H01L 2224/83948 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/07331](#) and [H10W 72/01365](#)>
- D H01L 2224/83951 Forming additional members, e.g. for reinforcing, fillet sealant
<administratively transferred to [H10W 72/07331](#)>
- D H01L 2224/83986 Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 72/07331](#)>

- D H01L 2224/84
 - • using a strap connector
 - <administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84001
 - • • involving a temporary auxiliary member not forming part of the bonding apparatus
 - <administratively transferred to [H10W 72/07604](#)>
- D H01L 2224/84002
 - • • • being a removable or sacrificial coating
 - <administratively transferred to [H10W 72/07604](#)>
- D H01L 2224/84005
 - • • • being a temporary substrate
 - <administratively transferred to [H10W 72/07607](#)>
- D H01L 2224/84007
 - • • involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the strap connector during or after the bonding process
 - <administratively transferred to [H10W 72/07602](#)>
- D H01L 2224/84009
 - • • Pre-treatment of the connector and/or the bonding area
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/016](#)>
- D H01L 2224/8401
 - • • • Cleaning, e.g. oxide removal step, desmearing
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01671](#)>
- D H01L 2224/84011
 - • • • • Chemical cleaning, e.g. etching, flux
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01671](#)>
- D H01L 2224/84012
 - • • • • Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01671](#)>
- D H01L 2224/84013
 - • • • • Plasma cleaning
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01671](#)>
- D H01L 2224/84014
 - • • • • Thermal cleaning, e.g. decomposition, sublimation
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01671](#)>
- D H01L 2224/84019
 - • • • • Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8401 - H01L 2224/84014
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01671](#)>
- D H01L 2224/8402
 - • • • Applying permanent coating, e.g. in-situ coating
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01615](#)>
- D H01L 2224/8403
 - • • • Reshaping
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84031
 - • • • • by chemical means, e.g. etching, anodisation
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01653](#)>
- D H01L 2224/84035
 - • • • • by heating means, e.g. "free-air-ball"
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84037
 - • • • • using a polychromatic heating lamp
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84039
 - • • • • using a laser
 - <administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>

- D H01L 2224/84041 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84043 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84045 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 72/07611](#) and [H10W 72/01651](#)>
- D H01L 2224/84048 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 72/07611](#) and [H10W 72/016](#)>
- D H01L 2224/84051 Forming additional members
<administratively transferred to [H10W 72/07611](#) and [H10W 72/016](#)>
- D H01L 2224/84053 . . . Bonding environment
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84054 Composition of the atmosphere
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84055 being oxidating
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84065 being reducing
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84075 being inert
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84085 being a liquid (e.g. for fluidic self-assembly)
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/8409 Vacuum
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84091 Under pressure
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84092 Atmospheric pressure
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84093 Transient conditions, e.g. gas-flow
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84095 Temperature settings
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84096 Transient conditions
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84097 Heating
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/84098 Cooling
<administratively transferred to [H10W 72/07641](#)>

- D H01L 2224/84099 Ambient temperature
<administratively transferred to [H10W 72/07641](#)>
- D H01L 2224/841 . . . the connector being supplied to the parts to be connected in the bonding apparatus
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/8411 . . . involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/8412 . . . Aligning
<administratively transferred to [H10W 72/07621](#)>
- D H01L 2224/84121 Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84122 by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84123 Shape or position of the body
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84125 Bonding areas on the body
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84127 Bonding areas outside the body
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84129 Shape or position of the other item
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/8413 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 72/07623](#)>
- D H01L 2224/84136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 72/07627](#)>
- D H01L 2224/84138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 72/07627](#)>
- D H01L 2224/84143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 72/07621](#)>
- D H01L 2224/84148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/8415 Rotational movements
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/8416 Translational movements
<administratively transferred to [H10W 72/076](#)>

- D H01L 2224/84169 being the upper part of the bonding apparatus, i.e. bonding head,
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/8417 Rotational movements
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/8418 Translational movements
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84181 connecting first on the semiconductor or solid-state body, i.e. on-chip, regular stitch
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84186 connecting first outside the semiconductor or solid-state body, i.e. off-chip, reverse stitch
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84191 connecting first both on and outside the semiconductor or solid-state body, i.e. regular and reverse stitches
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84196 involving intermediate connecting steps before cutting the strap connector
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/842 . . . Applying energy for connecting
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84201 Compression bonding
<administratively transferred to [H10W 72/07632](#)>
- D H01L 2224/84203 Thermocompression bonding
<administratively transferred to [H10W 72/07632](#)>
- D H01L 2224/84205 Ultrasonic bonding
<administratively transferred to [H10W 72/07633](#)>
- D H01L 2224/84206 Direction of oscillation
<administratively transferred to [H10W 72/07633](#)>
- D H01L 2224/84207 Thermosonic bonding
<administratively transferred to [H10W 72/07633](#)>
- D H01L 2224/8421 with energy being in the form of electromagnetic radiation
<administratively transferred to [H10W 72/07635](#)>
- D H01L 2224/84212 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07635](#)>
- D H01L 2224/84214 using a laser
<administratively transferred to [H10W 72/07635](#)>
- D H01L 2224/8423 Polychromatic or infrared lamp heating
<administratively transferred to [H10W 72/07635](#)>
- D H01L 2224/84232 using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84234 using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 72/07631](#)>

- D H01L 2224/84236 using electro-static corona discharge
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84237 using an electron beam
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84238 using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/8434 . . . Bonding interfaces of the connector
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84345 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/076](#) and [H10W 72/631](#)>
- D H01L 2224/84355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/076](#) and [H10W 72/621](#)>
- D H01L 2224/84359 Material
<administratively transferred to [H10W 72/076](#) and [H10W 72/651](#)>
- D H01L 2224/8436 . . . Bonding interfaces of the semiconductor or solid-state body
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84365 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/076](#) and [H10W 72/931](#)>
- D H01L 2224/84375 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/076](#) and [H10W 72/923](#)>
- D H01L 2224/84379 Material
<administratively transferred to [H10W 72/076](#) and [H10W 72/951](#)>
- D H01L 2224/8438 . . . Bonding interfaces outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/84385 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/076](#) and [H10W 72/931](#)>
- D H01L 2224/84395 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/076](#) and [H10W 72/923](#)>
- D H01L 2224/84399 Material
<administratively transferred to [H10W 72/076](#) and [H10W 72/951](#)>
- D H01L 2224/844 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84401 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84405 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84409 Indium [In] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84411 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>

D	H01L 2224/84413	. . . . . Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84414	. . . . . Thallium [Tl] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84416	. . . . . Lead [Pb] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84417	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84418	. . . . . Zinc [Zn] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/8442	. . . . . Antimony [Sb] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84423	. . . . . Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84424	. . . . . Aluminium [Al] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84438	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84439	. . . . . Silver [Ag] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84444	. . . . . Gold [Au] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84447	. . . . . Copper [Cu] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84449	. . . . . Manganese [Mn] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84455	. . . . . Nickel [Ni] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84457	. . . . . Cobalt [Co] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/8446	. . . . . Iron [Fe] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84463	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84464	. . . . . Palladium [Pd] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84466	. . . . . Titanium [Ti] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >
D	H01L 2224/84469	. . . . . Platinum [Pt] as principal constituent <administratively transferred to H10W 72/076 and H10W 72/952 >

- D H01L 2224/8447 Zirconium [Zr] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84471 Chromium [Cr] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84472 Vanadium [V] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84473 Rhodium [Rh] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84476 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84478 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84479 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/8448 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84481 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84483 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84484 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/076](#) and [H10W 72/952](#)>
- D H01L 2224/84486 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/84487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/84488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/8449 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/84491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/84493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/844 - H01L 2224/84491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/84494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/844 - H01L 2224/84491
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>
- D H01L 2224/84495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/844 - H01L 2224/84491
<administratively transferred to [H10W 72/076](#) and [H10W 72/953](#)>

- D H01L 2224/84498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/84499 Material of the matrix
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/845 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84501 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84505 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84509 Indium [In] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84511 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84513 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84514 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84516 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84517 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84518 Zinc [Zn] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/8452 Antimony [Sb] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84523 Magnesium [Mg] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/84524	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84538	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84539	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84544	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84547	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84549	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84555	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84557	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8456	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84563	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84564	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84566	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84569	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8457	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84571	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>

- D H01L 2224/84572 Vanadium [V] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84573 Rhodium [Rh] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84576 Ruthenium [Ru] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84578 Iridium [Ir] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84579 Niobium [Nb] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/8458 Molybdenum [Mo] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84581 Tantalum [Ta] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84583 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84584 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84586 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84587 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84588 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/8459 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84591 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>

- D H01L 2224/84593 with a principal constituent of the material being a solid not provided for in groups H01L 2224/845 – H01L 2224/84591, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84594 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/845 – H01L 2224/84591
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84595 with a principal constituent of the material being a gas not provided for in groups H01L 2224/845 – H01L 2224/84591
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84598 Fillers
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/84599 Base material
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/846 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84601 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84605 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84609 Indium [In] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84611 Tin [Sn] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84613 Bismuth [Bi] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84614 Thallium [Tl] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84616 Lead [Pb] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/84617	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84618	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8462	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84623	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84624	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84638	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84639	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84644	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84647	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84649	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84655	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84657	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8466	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84664	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>

D	H01L 2224/84666	<ul style="list-style-type: none"> • Titanium [Ti] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84669	<ul style="list-style-type: none"> • Platinum [Pt] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/8467	<ul style="list-style-type: none"> • Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84671	<ul style="list-style-type: none"> • Chromium [Cr] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84672	<ul style="list-style-type: none"> • Vanadium [V] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84673	<ul style="list-style-type: none"> • Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84676	<ul style="list-style-type: none"> • Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84678	<ul style="list-style-type: none"> • Iridium [Ir] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84679	<ul style="list-style-type: none"> • Niobium [Nb] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/8468	<ul style="list-style-type: none"> • Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84681	<ul style="list-style-type: none"> • Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84683	<ul style="list-style-type: none"> • Rhenium [Re] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84684	<ul style="list-style-type: none"> • Tungsten [W] as principal constituent <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/952 simultaneously>
D	H01L 2224/84686	<ul style="list-style-type: none"> • with a principal constituent of the material being a non-metallic, non-metalloid inorganic material <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/953 simultaneously>
D	H01L 2224/84687	<ul style="list-style-type: none"> • Ceramics, e.g. crystalline carbides, nitrides or oxides <administratively transferred to H10W 72/076, H10W 72/925, and H10W 72/953 simultaneously>

- D H01L 2224/84688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/8469 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/846 - H01L 2224/84691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/846 - H01L 2224/84691
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/846 - H01L 2224/84691
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/84699 Coating material
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/847 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84705 Gallium [Ga] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84709 Indium [In] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>

D	H01L 2224/84711	. . . . .	Tin [Sn] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84713	. . . . .	Bismuth [Bi] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84714	. . . . .	Thallium [Tl] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84716	. . . . .	Lead [Pb] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84717	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84718	. . . . .	Zinc [Zn] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8472	. . . . .	Antimony [Sb] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84723	. . . . .	Magnesium [Mg] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84724	. . . . .	Aluminium [Al] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84738	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84739	. . . . .	Silver [Ag] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84744	. . . . .	Gold [Au] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84747	. . . . .	Copper [Cu] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84749	. . . . .	Manganese [Mn] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84755	. . . . .	Nickel [Ni] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>

D	H01L 2224/84757	. . . . .	Cobalt [Co] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8476	. . . . .	Iron [Fe] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84763	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84764	. . . . .	Palladium [Pd] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84766	. . . . .	Titanium [Ti] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84769	. . . . .	Platinum [Pt] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8477	. . . . .	Zirconium [Zr] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84771	. . . . .	Chromium [Cr] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84772	. . . . .	Vanadium [V] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84773	. . . . .	Rhodium [Rh] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84776	. . . . .	Ruthenium [Ru] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84778	. . . . .	Iridium [Ir] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84779	. . . . .	Niobium [Nb] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/8478	. . . . .	Molybdenum [Mo] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>
D	H01L 2224/84781	. . . . .	Tantalum [Ta] as principal constituent <administratively transferred to H10W 72/076 , H10W 72/925 , and H10W 72/952 simultaneously>

- D H01L 2224/84783 Rhenium [Re] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84784 Tungsten [W] as principal constituent
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/952](#) simultaneously>
- D H01L 2224/84786 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84787 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/8479 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84793 with a principal constituent of the material being a solid not provided for in groups H01L 2224/847 - H01L 2224/84791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84794 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/847 - H01L 2224/84791
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84795 with a principal constituent of the material being a gas not provided for in groups H01L 2224/847 - H01L 2224/84791
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/953](#) simultaneously>
- D H01L 2224/84798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/84799 Shape or distribution of the fillers
<administratively transferred to [H10W 72/076](#), [H10W 72/925](#), and [H10W 72/951](#) simultaneously>
- D H01L 2224/848 . . . Bonding techniques
<administratively transferred to [H10W 72/07631](#)>

- D H01L 2224/84801 Soldering or alloying
<administratively transferred to [H10W 72/07636](#)>
- D H01L 2224/84805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 72/07636](#) and [H10W 72/07655](#)>
- D H01L 2224/8481 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 72/07636](#) and [H10W 72/6528](#)>
- D H01L 2224/84815 Reflow soldering
<administratively transferred to [H10W 72/07636](#)>
- D H01L 2224/8482 Diffusion bonding
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84825 Solid-liquid interdiffusion
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/8483 Solid-solid interdiffusion
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/8484 Sintering
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/8485 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84859 Localised curing of parts of the connector
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84862 Heat-curing
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84865 Microwave curing
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84868 Infrared [IR] curing
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84871 Visible light curing
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84874 Ultraviolet [UV] curing
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/84877 Moisture curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/8488 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 72/07637](#)>

- D H01L 2224/84885 Combinations of two or more hardening methods provided for in at least two different groups from H01L 2224/84855 - H01L 2224/84888, e.g. for hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 72/07637](#)>
- D H01L 2224/8489 using an inorganic non-metallic glass type adhesive, e.g. solder glass
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84895 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84897 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface activated bonding
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84898 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84899 Combinations of bonding methods provided for in at least two different groups from H01L 2224/848 - H01L 2224/84898
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/849 . . . involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/07631](#)>
- D H01L 2224/84909 . . . Post-treatment of the connector or bonding area
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/8491 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/076](#) and [H10W 72/01671](#)>
- D H01L 2224/84911 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/076](#) and [H10W 72/01671](#)>
- D H01L 2224/84912 Mechanical cleaning, e.g. abrasion using hydro-blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
<administratively transferred to [H10W 72/076](#) and [H10W 72/01671](#)>
- D H01L 2224/84913 Plasma cleaning
<administratively transferred to [H10W 72/076](#) and [H10W 72/01671](#)>
- D H01L 2224/84914 Thermal cleaning, e.g. using laser ablation or by electrostatic corona discharge
<administratively transferred to [H10W 72/076](#) and [H10W 72/01671](#)>
- D H01L 2224/84919 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8491 - H01L 2224/84914
<administratively transferred to [H10W 72/076](#) and [H10W 72/01671](#)>
- D H01L 2224/8492 Applying permanent coating, e.g. protective coating
<administratively transferred to [H10W 72/076](#) and [H10W 72/01615](#)>
- D H01L 2224/8493 Reshaping, e.g. for severing the strap, modifying the loop shape
<administratively transferred to [H10W 72/076](#) and [H10W 72/01651](#)>
- D H01L 2224/84931 by chemical means, e.g. etching
<administratively transferred to [H10W 72/076](#) and [H10W 72/01653](#)>

- D H01L 2224/84935 by heating means, e.g. reflowing
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84937 using a polychromatic heating lamp
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84939 using a laser
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84941 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84943 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84947 by mechanical means, e.g. pressing, stamping
<administratively transferred to [H10W 72/076](#) and [H10W 72/01661](#)>
- D H01L 2224/84948 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84951 Forming additional members, e.g. for reinforcing
<administratively transferred to [H10W 72/076](#) and [H10W 72/016](#)>
- D H01L 2224/84986 Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/85 using a wire connector
<administratively transferred to [H10W 72/075](#)>
- D H01L 2224/85001 involving a temporary auxiliary member not forming part of the bonding apparatus, e.g. removable or sacrificial coating, film or substrate
<administratively transferred to [H10W 72/07504](#)>
- D H01L 2224/85002 being a removable or sacrificial coating
<administratively transferred to [H10W 72/07504](#)>
- D H01L 2224/85005 being a temporary or sacrificial substrate
<administratively transferred to [H10W 72/07507](#)>
- D H01L 2224/85007 involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the wire connector during or after the bonding process
<administratively transferred to [H10W 72/07502](#)>
- D H01L 2224/85009 Pre-treatment of the connector or the bonding area
<administratively transferred to [H10W 72/07511](#) and [H10W 72/015](#)>
- D H01L 2224/8501 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/85011 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/85012 Mechanical cleaning, e.g. abrasion using hydro blasting, brushes, ultrasonic cleaning, dry ice blasting, gas-flow
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>

- D H01L 2224/85013 Plasma-cleaning
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/85014 Thermal-cleaning, e.g. decomposition, sublimation
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/85016 using a laser
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/85017 Electron-beam-cleaning
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/85019 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8501 – H01L 2224/85014
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01571](#)>
- D H01L 2224/8502 Applying permanent coating, e.g. in-situ coating
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01515](#)>
- D H01L 2224/8503 Reshaping, e.g. forming the ball or the wedge of the wire connector
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85031 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01553](#)>
- D H01L 2224/85035 by heating means, e.g. "free-air-ball"
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85037 using a polychromatic heating lamp
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85039 using a laser
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85041 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85043 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85045 using a corona discharge, e.g. electronic flame-off [EFO]
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 72/07511](#) and [H10W 72/01551](#)>
- D H01L 2224/85048 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 72/07511](#)>
- D H01L 2224/85051 Forming additional members, e.g. for "wedge-on-ball", "ball-on-wedge", "ball-on-ball" connections
<administratively transferred to [H10W 72/07511](#)>
- D H01L 2224/85053 . . . Bonding environment
<administratively transferred to [H10W 72/07541](#)>

- D H01L 2224/85054 Composition of the atmosphere
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85055 being oxidating
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85065 being reducing
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85075 being inert
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85085 being a liquid, e.g. for fluidic self-assembly
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/8509 Vacuum
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85091 Under pressure
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85092 Atmospheric pressure
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85093 Transient conditions, e.g. gas-flow
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85095 Temperature settings
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85096 Transient conditions
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85097 Heating
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85098 Cooling
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/85099 Ambient temperature
<administratively transferred to [H10W 72/07541](#)>
- D H01L 2224/851 . . . the connector being supplied to the parts to be connected in the bonding apparatus
<administratively transferred to [H10W 72/07502](#)>
- D H01L 2224/8511 . . . involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 72/07502](#)>
- D H01L 2224/8512 . . . Aligning
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85121 . . . Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/85122 by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/85123 Shape or position of the body
<administratively transferred to [H10W 72/07523](#)>

- D H01L 2224/85125 Bonding areas on the body
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/85127 Bonding areas outside the body
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/85129 Shape or position of the other item
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/8513 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/85132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 72/07523](#)>
- D H01L 2224/85136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 72/07527](#)>
- D H01L 2224/85138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 72/07527](#)>
- D H01L 2224/85143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/8515 Rotational movements
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/8516 Translational movements
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85169 being the upper part of the bonding apparatus, i.e. bonding head, e.g. capillary or wedge
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/8517 Rotational movements
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/8518 Translational movements
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85181 connecting first on the semiconductor or solid-state body, i.e. on-chip, regular stitch
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85186 connecting first outside the semiconductor or solid-state body, i.e. off-chip, reverse stitch
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/85191 connecting first both on and outside the semiconductor or solid-state body, i.e. regular and reverse stitches
<administratively transferred to [H10W 72/07521](#)>

- D H01L 2224/85196 involving intermediate connecting steps before cutting the wire connector
<administratively transferred to [H10W 72/07521](#)>
- D H01L 2224/852 . . . Applying energy for connecting
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85201 Compression bonding
<administratively transferred to [H10W 72/07532](#)>
- D H01L 2224/85203 Thermocompression bonding
<administratively transferred to [H10W 72/07532](#)>
- D H01L 2224/85205 Ultrasonic bonding
<administratively transferred to [H10W 72/07533](#)>
- D H01L 2224/85206 Direction of oscillation
<administratively transferred to [H10W 72/07533](#)>
- D H01L 2224/85207 Thermosonic bonding
<administratively transferred to [H10W 72/07533](#)>
- D H01L 2224/8521 with energy being in the form of electromagnetic radiation
<administratively transferred to [H10W 72/07535](#)>
- D H01L 2224/85212 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/07535](#)>
- D H01L 2224/85214 using a laser
<administratively transferred to [H10W 72/07535](#)>
- D H01L 2224/8523 Polychromatic or infrared lamp heating
<administratively transferred to [H10W 72/07535](#)>
- D H01L 2224/85232 using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85234 using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85236 using electro-static corona discharge
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85237 using electron beam
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85238 using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/8534 . . . Bonding interfaces of the connector
<administratively transferred to [H10W 72/075](#)>
- D H01L 2224/85345 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/075](#) and [H10W 72/531](#)>
- D H01L 2224/85355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/075](#) and [H10W 72/332](#)>
- D H01L 2224/85359 Material
<administratively transferred to [H10W 72/075](#) and [H10W 72/551](#)>

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|---|-----------------|---|
| D | H01L 2224/8536 | <ul style="list-style-type: none"> • • • Bonding interfaces of the semiconductor or solid-state body <administratively transferred to H10W 72/075 and H10W 72/90> |
| D | H01L 2224/85365 | <ul style="list-style-type: none"> • • • • Shape, e.g. interlocking features <administratively transferred to H10W 72/075 and H10W 72/931> |
| D | H01L 2224/85375 | <ul style="list-style-type: none"> • • • • having an external coating, e.g. protective bond-through coating <administratively transferred to H10W 72/075 and H10W 72/923> |
| D | H01L 2224/85379 | <ul style="list-style-type: none"> • • • • Material <administratively transferred to H10W 72/075 and H10W 72/951> |
| D | H01L 2224/8538 | <ul style="list-style-type: none"> • • • Bonding interfaces outside the semiconductor or solid-state body <administratively transferred to H10W 72/075 and H10W 72/90> |
| D | H01L 2224/85385 | <ul style="list-style-type: none"> • • • • Shape, e.g. interlocking features <administratively transferred to H10W 72/075 and H10W 72/931> |
| D | H01L 2224/85395 | <ul style="list-style-type: none"> • • • • having an external coating, e.g. protective bond-through coating <administratively transferred to H10W 72/075 and H10W 72/923> |
| D | H01L 2224/85399 | <ul style="list-style-type: none"> • • • • Material <administratively transferred to H10W 72/075 and H10W 72/951> |
| D | H01L 2224/854 | <ul style="list-style-type: none"> • • • • • with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85401 | <ul style="list-style-type: none"> • • • • • • the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85405 | <ul style="list-style-type: none"> • • • • • • Gallium (Ga) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85409 | <ul style="list-style-type: none"> • • • • • • Indium (In) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85411 | <ul style="list-style-type: none"> • • • • • • Tin (Sn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85413 | <ul style="list-style-type: none"> • • • • • • Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85414 | <ul style="list-style-type: none"> • • • • • • Thallium (Tl) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85416 | <ul style="list-style-type: none"> • • • • • • Lead (Pb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85417 | <ul style="list-style-type: none"> • • • • • • the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85418 | <ul style="list-style-type: none"> • • • • • • Zinc (Zn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/8542 | <ul style="list-style-type: none"> • • • • • • Antimony (Sb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |
| D | H01L 2224/85423 | <ul style="list-style-type: none"> • • • • • • Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952> |

D	H01L 2224/85424	. . . . . Aluminium (Al) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85438	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85439	. . . . . Silver (Ag) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85444	. . . . . Gold (Au) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85447	. . . . . Copper (Cu) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85449	. . . . . Manganese (Mn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85455	. . . . . Nickel (Ni) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85457	. . . . . Cobalt (Co) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8546	. . . . . Iron (Fe) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85463	. . . . . the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85464	. . . . . Palladium (Pd) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85466	. . . . . Titanium (Ti) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85469	. . . . . Platinum (Pt) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8547	. . . . . Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85471	. . . . . Chromium (Cr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85472	. . . . . Vanadium (V) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85473	. . . . . Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85476	. . . . . Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85478	. . . . . Iridium (Ir) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85479	. . . . . Niobium (Nb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >

- D H01L 2224/8548 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85481 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85483 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85484 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85486 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85487 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85488 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/8549 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85491 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85493 with a principal constituent of the material being a solid not provided for in groups H01L 2224/854 - H01L 2224/85491, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85494 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/854 - H01L 2224/85491
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85495 with a principal constituent of the material being a gas not provided for in groups H01L 2224/854 - H01L 2224/85491
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85498 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/85499 Material of the matrix
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/855 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85501 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>

D	H01L 2224/85505	. . . . . Gallium (Ga) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85509	. . . . . Indium (In) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85511	. . . . . Tin (Sn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85513	. . . . . Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85514	. . . . . Thallium (Tl) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85516	. . . . . Lead (Pb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85517	. . . . . the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85518	. . . . . Zinc (Zn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8552	. . . . . Antimony (Sb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85523	. . . . . Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85524	. . . . . Aluminium (Al) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85538	. . . . . the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85539	. . . . . Silver (Ag) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85544	. . . . . Gold (Au) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85547	. . . . . Copper (Cu) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >

D	H01L 2224/85549	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85555	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85557	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8556	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85563	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85564	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85566	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85569	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8557	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85571	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85572	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85573	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85576	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85578	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85579	. . . . .	Niobium (Nb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >

- D H01L 2224/8558 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85581 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85583 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85584 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85586 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85587 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85588 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/8559 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85591 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85593 with a principal constituent of the material being a solid not provided for in groups H01L 2224/855 – H01L 2224/85591, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85594 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/855 – H01L 2224/85591
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85595 with a principal constituent of the material being a gas not provided for in groups H01L 2224/855 – H01L 2224/85591
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85598 Fillers
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/85599 Base material
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/856 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>

D	H01L 2224/85601	. . . . .	the principal constituent melting at a temperature of less than 400°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85605	. . . . .	Gallium (Ga) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85609	. . . . .	Indium (In) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85611	. . . . .	Tin (Sn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85613	. . . . .	Bismuth (Bi) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85614	. . . . .	Thallium (Tl) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85616	. . . . .	Lead (Pb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85617	. . . . .	the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85618	. . . . .	Zinc (Zn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8562	. . . . .	Antimony (Sb) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85623	. . . . .	Magnesium (Mg) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85624	. . . . .	Aluminium (Al) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85638	. . . . .	the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85639	. . . . .	Silver (Ag) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85644	. . . . .	Gold (Au) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >

D	H01L 2224/85647	. . . . .	Copper (Cu) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85649	. . . . .	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85655	. . . . .	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85657	. . . . .	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8566	. . . . .	Iron (Fe) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85663	. . . . .	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85664	. . . . .	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85666	. . . . .	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85669	. . . . .	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8567	. . . . .	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85671	. . . . .	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85672	. . . . .	Vanadium (V) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85673	. . . . .	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85676	. . . . .	Ruthenium (Ru) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85678	. . . . .	Iridium (Ir) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >

- D H01L 2224/85679 Niobium (Nb) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/8568 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85681 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85683 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85684 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85686 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85687 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85688 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/8569 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85691 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85693 with a principal constituent of the material being a solid not provided for in groups H01L 2224/856 - H01L 2224/85691, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85694 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/856 - H01L 2224/85691
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85695 with a principal constituent of the material being a gas not provided for in groups H01L 2224/856 - H01L 2224/85691
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85698 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/85699 Coating material
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>

- D H01L 2224/857 with a principal constituent of the material being a metal or a metalloid, e.g. boron (B), silicon (Si), germanium (Ge), arsenic (As), antimony (Sb), tellurium (Te) and polonium (Po), and alloys thereof
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85701 the principal constituent melting at a temperature of less than 400°C
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85705 Gallium (Ga) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85709 Indium (In) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85711 Tin (Sn) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85713 Bismuth (Bi) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85714 Thallium (Tl) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85716 Lead (Pb) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85717 the principal constituent melting at a temperature of greater than or equal to 400°C and less than 950°C
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85718 Zinc (Zn) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/8572 Antimony (Sb) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85723 Magnesium (Mg) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85724 Aluminium (Al) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85738 the principal constituent melting at a temperature of greater than or equal to 950°C and less than 1550°C
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>

D	H01L 2224/85739	• • • • •	Silver (Ag) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85744	• • • • •	Gold (Au) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85747	• • • • •	Copper (Cu) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85749	• • • • •	Manganese (Mn) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85755	• • • • •	Nickel (Ni) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85757	• • • • •	Cobalt (Co) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8576	• • • • •	Iron (Fe) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85763	• • • • •	the principal constituent melting at a temperature of greater than 1550°C <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85764	• • • • •	Palladium (Pd) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85766	• • • • •	Titanium (Ti) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85769	• • • • •	Platinum (Pt) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/8577	• • • • •	Zirconium (Zr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85771	• • • • •	Chromium (Cr) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85772	• • • • •	Vanadium (V) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >
D	H01L 2224/85773	• • • • •	Rhodium (Rh) as principal constituent <administratively transferred to H10W 72/075 and H10W 72/952 >

- D H01L 2224/85776 Ruthenium (Ru) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85778 Iridium (Ir) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85779 Niobium (Nb) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/8578 Molybdenum (Mo) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85781 Tantalum (Ta) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85783 Rhenium (Re) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85784 Tungsten (W) as principal constituent
<administratively transferred to [H10W 72/075](#) and [H10W 72/952](#)>
- D H01L 2224/85786 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85787 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/8579 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85793 with a principal constituent of the material being a solid not provided for in groups H01L 2224/857 - H01L 2224/85791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85794 with a principal constituent of the material being a liquid not provided for in groups H01L 2224/857 - H01L 2224/85791
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>
- D H01L 2224/85795 with a principal constituent of the material being a gas not provided for in groups H01L 2224/857 - H01L 2224/85791
<administratively transferred to [H10W 72/075](#) and [H10W 72/953](#)>

- D H01L 2224/85798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/85799 Shape or distribution of the fillers
<administratively transferred to [H10W 72/075](#) and [H10W 72/951](#)>
- D H01L 2224/858 . . . Bonding techniques
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85801 Soldering or alloying
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/85805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/8581 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/85815 Reflow soldering
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/8582 Diffusion bonding
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/85825 Solid-liquid interdiffusion
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/8583 Solid-solid interdiffusion, e.g. "direct bonding"
<administratively transferred to [H10W 72/07536](#)>
- D H01L 2224/8584 Sintering
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/8585 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85859 Localised curing of parts of the connector
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85862 Heat-curing
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85865 Microwave curing
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85868 Infrared [IR]-curing
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85871 Visible light curing
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85874 Ultraviolet [UV]-curing
<administratively transferred to [H10W 72/07537](#)>

- D H01L 2224/85877 Moisture-curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/8588 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/85885 Combinations of two or more hardening methods provided for in at least two different groups from H01L 2224/85855 – H01L 2224/8588, e.g. for hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 72/07537](#)>
- D H01L 2224/8589 using an inorganic non-metallic glass type adhesive, e.g. solder glass
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85895 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 80/301](#)>
- D H01L 2224/85897 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface activated bonding
<administratively transferred to [H10W 80/314](#)>
- D H01L 2224/85898 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 80/327](#)>
- D H01L 2224/85899 Combinations of bonding methods provided for in at least two different groups from H01L 2224/858 – H01L 2224/85898
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/859 involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/07531](#)>
- D H01L 2224/85909 Post-treatment of the connector or wire bonding area
<administratively transferred to [H10W 72/075](#) and [H10W 72/015](#)>
- D H01L 2224/8591 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/85911 Chemical cleaning, e.g. etching, flux
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/85912 Mechanical cleaning, e.g. abrasion using hydro-blasting, brushes, ultrasonic cleaning, dry ice-blasting, gas-flow
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/85913 Plasma cleaning
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/85914 Thermal cleaning, e.g. using laser ablation or by electrostatic corona discharge
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/85916 using a laser
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/85917 Electron beam cleaning
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>

- D H01L 2224/85919 Combinations of two or more cleaning methods provided for in at least two different groups from H01L 2224/8591 – H01L 2224/85914
<administratively transferred to [H10W 72/075](#) and [H10W 72/01571](#)>
- D H01L 2224/8592 Applying permanent coating, e.g. protective coating
<administratively transferred to [H10W 72/075](#) and [H10W 72/01515](#)>
- D H01L 2224/8593 Reshaping, e.g. for severing the wire, modifying the wedge or ball or the loop shape
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85931 by chemical means, e.g. etching
<administratively transferred to [H10W 72/075](#) and [H10W 72/01553](#)>
- D H01L 2224/85935 by heating means, e.g. reflowing
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85937 using a polychromatic heating lamp
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85939 using a laser
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85941 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85943 using a flame torch, e.g. hydrogen torch
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85947 by mechanical means, e.g. "pull-and-cut", pressing, stamping
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85948 Thermal treatments, e.g. annealing, controlled cooling
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85951 Forming additional members, e.g. for reinforcing
<administratively transferred to [H10W 72/075](#) and [H10W 72/01551](#)>
- D H01L 2224/85986 . . . Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 72/075](#)>
- D H01L 2224/86 . . using tape automated bonding [TAB]
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86001 . . . involving a temporary auxiliary member not forming part of the bonding apparatus
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86002 being a removable or sacrificial coating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86005 being a temporary or sacrificial substrate
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86007 . . . involving a permanent auxiliary member being left in the finished device, e.g. aids for holding or protecting the TAB connector during or after the bonding process
<administratively transferred to [H10W 72/077](#)>

- D H01L 2224/86009 . . . Pre-treatment of the connector or the bonding area
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8601 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8603 Reshaping
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86031 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86035 by heating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86039 using a laser
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86045 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86047 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86048 Thermal treatment, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86051 Forming additional members
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86053 . . . Bonding environment
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86054 Composition of the atmosphere
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86085 being a liquid, e.g. fluidic self-assembly
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8609 Vacuum
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86091 Under pressure
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86095 Temperature settings
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86096 Transient conditions
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86097 Heating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86098 Cooling
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86099 Ambient temperature
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/861 . . . the connector being supplied to the parts to be connected in the bonding apparatus
<administratively transferred to [H10W 72/077](#)>

- D H01L 2224/8611 . . . involving protection against electrical discharge, e.g. removing electrostatic charge
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8612 . . . Aligning
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86121 Active alignment, i.e. by apparatus steering, e.g. optical alignment using marks or sensors
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86122 by detecting inherent features of, or outside, the semiconductor or solid-state body
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8613 using marks formed on the semiconductor or solid-state body
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86132 using marks formed outside the semiconductor or solid-state body, i.e. "off-chip"
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86136 involving guiding structures, e.g. spacers or supporting members
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86138 the guiding structures being at least partially left in the finished device
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86149 being the lower part of the bonding apparatus, i.e. holding means for the bodies to be connected, e.g. XY table
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8615 Rotational movements
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8616 Translational movements
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86169 being the upper part of the bonding apparatus, e.g. nozzle
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8617 Rotational movement
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8618 Translational movements
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86181 connecting first on the semiconductor or solid-state body, i.e. on-chip,
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86186 connecting first outside the semiconductor or solid-state body, i.e. off-chip
<administratively transferred to [H10W 72/077](#)>

- D H01L 2224/86191 connecting first both on and outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/862 . . . Applying energy for connecting
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86201 Compression bonding
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86203 Thermo-compression bonding
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86205 Ultrasonic bonding
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86207 Thermosonic bonding
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8621 with energy being in the form of electromagnetic radiation
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86212 Induction heating, i.e. eddy currents
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86214 using a laser
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8623 Polychromatic or infrared lamp heating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86232 using an autocatalytic reaction, e.g. exothermic brazing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86234 using means for applying energy being within the device, e.g. integrated heater
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86236 using electro-static corona discharge
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86237 using electron beam
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86238 using electric resistance welding, i.e. ohmic heating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8634 . . . Bonding interfaces of the connector
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86345 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86355 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86359 Material
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8636 . . . Bonding interfaces of the semiconductor or solid-state body
<administratively transferred to [H10W 72/077](#)>

- D H01L 2224/86365 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86375 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86379 Material
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8638 Bonding interfaces outside the semiconductor or solid-state body
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86385 Shape, e.g. interlocking features
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86395 having an external coating, e.g. protective bond-through coating
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86399 Material
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/868 Bonding techniques
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86801 Soldering or alloying
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86805 involving forming a eutectic alloy at the bonding interface
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8681 involving forming an intermetallic compound at the bonding interface
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86815 Reflow soldering
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8682 Diffusion bonding
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86825 Solid-liquid interdiffusion
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8683 Solid-solid interdiffusion
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8684 Sintering
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8685 using a polymer adhesive, e.g. an adhesive based on silicone, epoxy, polyimide, polyester
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86855 Hardening the adhesive by curing, i.e. thermosetting
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86856 Pre-cured adhesive, i.e. B-stage adhesive
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86859 Localised curing of parts of the connector
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86862 Heat curing
<administratively transferred to [H10W 72/077](#)>

- D H01L 2224/86865 Microwave-curing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86868 Infrared [IR]-curing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86871 Visible-light-curing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86874 Ultraviolet [UV]-curing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86877 Moisture-curing, i.e. curing by exposing to humidity, e.g. for silicones and polyurethanes
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8688 Hardening the adhesive by cooling, e.g. for thermoplastics or hot-melt adhesives
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86885 Combinations of two or more hardening methods provided for in at least two different groups selected from H01L 2224/86855 – H01L 2224/86888, e.g. hybrid thermoplastic-thermosetting adhesives
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8689 using an inorganic non-metallic glass-type adhesive, e.g. solder glass
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86893 Anodic bonding, i.e. bonding by applying a voltage across the interface in order to induce ions migration leading to an irreversible chemical bond
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86895 Direct bonding, i.e. joining surfaces by means of intermolecular attracting interactions at their interfaces, e.g. covalent bonds, van der Waals forces
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86896 between electrically conductive surfaces, e.g. copper-copper direct bonding, surface-activated bonding
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86897 between electrically insulating surfaces, e.g. oxide or nitride layers
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86899 Combinations of bonding methods provided for in at least two different groups from H01L 2224/868 – H01L 2224/86897
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/869 involving monitoring, e.g. feedback loop
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86909 Post-treatment of the connector or the bonding area
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8691 Cleaning, e.g. oxide removal step, desmearing
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/8693 Reshaping
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86931 by chemical means, e.g. etching, anodisation
<administratively transferred to [H10W 72/077](#)>

- D H01L 2224/86935 by heating means
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86939 using a laser
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86945 using a corona discharge, e.g. electronic flame off [EFO]
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86947 by mechanical means, e.g. severing, pressing, stamping
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86948 Thermal treatments, e.g. annealing, controlled pre-heating or pre-cooling
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86951 Forming additional members
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/86986 . . . Specific sequence of steps, e.g. repetition of manufacturing steps, time sequence
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/89 . . . using at least one connector not provided for in any of the groups H01L 2224/81 - H01L 2224/86
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/90 . . Methods for connecting semiconductor or solid state bodies using means for bonding not being attached to, or not being formed on, the body surface to be connected, e.g. pressure contacts using springs or clips
<administratively transferred to [H10W 72/00](#)>
- D H01L 2224/91 . . Methods for connecting semiconductor or solid state bodies including different methods provided for in two or more of groups H01L 2224/80 - H01L 2224/90
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/92 . . . Specific sequence of method steps
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/9201 . . . Forming connectors during the connecting process, e.g. in-situ formation of bumps
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/9202 . . . Forming additional connectors after the connecting process
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/9205 . . . Intermediate bonding steps, i.e. partial connection of the semiconductor or solid-state body during the connecting process
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/921 . . . Connecting a surface with connectors of different types
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/9211 Parallel connecting processes
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/9212 Sequential connecting processes
<administratively transferred to [H10W 99/00](#)>
- D H01L 2224/92122 the first connecting process involving a bump connector
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/92124 the second connecting process involving a build-up interconnect
<administratively transferred to [H10W 72/072](#) and [H10W 70/099](#)>

- D H01L 2224/92125 the second connecting process involving a layer connector
<administratively transferred to [H10W 72/072](#) and [H10W 72/073](#)>
- D H01L 2224/92127 the second connecting process involving a wire connector
<administratively transferred to [H10W 72/072](#) and [H10W 72/075](#)>
- D H01L 2224/92132 the first connecting process involving a build-up interconnect
<administratively transferred to [H10W 70/099](#)>
- D H01L 2224/92133 the second connecting process involving a bump connector
<administratively transferred to [H10W 70/099](#) and [H10W 72/072](#)>
- D H01L 2224/92135 the second connecting process involving a layer connector
<administratively transferred to [H10W 70/099](#) and [H10W 72/073](#)>
- D H01L 2224/92136 the second connecting process involving a strap connector
<administratively transferred to [H10W 70/099](#) and [H10W 72/076](#)>
- D H01L 2224/92137 the second connecting process involving a wire connector
<administratively transferred to [H10W 70/099](#) and [H10W 72/075](#)>
- D H01L 2224/92138 the second connecting process involving a TAB connector
<administratively transferred to [H10W 70/099](#) and [H10W 72/077](#)>
- D H01L 2224/92142 the first connecting process involving a layer connector
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/92143 the second connecting process involving a bump connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/072](#)>
- D H01L 2224/92144 the second connecting process involving a build-up interconnect
<administratively transferred to [H10W 72/073](#) and [H10W 70/093](#)>
- D H01L 2224/92147 the second connecting process involving a wire connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/075](#)>
- D H01L 2224/92148 the second connecting process involving a TAB connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/077](#)>
- D H01L 2224/92152 the first connecting process involving a strap connector
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/92153 the second connecting process involving a bump connector
<administratively transferred to [H10W 72/076](#) and [H10W 72/072](#)>
- D H01L 2224/92155 the second connecting process involving a layer connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/076](#)>
- D H01L 2224/92157 the second connecting process involving a wire connector
<administratively transferred to [H10W 72/076](#) and [H10W 72/075](#)>
- D H01L 2224/92158 the second connecting process involving a TAB connector
<administratively transferred to [H10W 72/076](#) and [H10W 72/077](#)>
- D H01L 2224/92162 the first connecting process involving a wire connector
<administratively transferred to [H10W 72/075](#)>
- D H01L 2224/92163 the second connecting process involving a bump connector
<administratively transferred to [H10W 72/075](#) and [H10W 72/072](#)>
- D H01L 2224/92164 the second connecting process involving a build-up interconnect
<administratively transferred to [H10W 72/075](#) and [H10W 70/093](#)>

- D H01L 2224/92165 the second connecting process involving a layer connector
<administratively transferred to [H10W 72/075](#) and [H10W 72/073](#)>
- D H01L 2224/92166 the second connecting process involving a strap connector
<administratively transferred to [H10W 72/075](#) and [H10W 72/076](#)>
- D H01L 2224/92168 the second connecting process involving a TAB connector
<administratively transferred to [H10W 72/075](#) and [H10W 72/077](#)>
- D H01L 2224/92172 the first connecting process involving a TAB connector
<administratively transferred to [H10W 72/077](#)>
- D H01L 2224/92173 the second connecting process involving a bump connector
<administratively transferred to [H10W 72/077](#) and [H10W 72/072](#)>
- D H01L 2224/92174 the second connecting process involving a build-up interconnect
<administratively transferred to [H10W 72/077](#) and [H10W 70/093](#)>
- D H01L 2224/92175 the second connecting process involving a layer connector
<administratively transferred to [H10W 72/077](#) and [H10W 72/073](#)>
- D H01L 2224/92176 the second connecting process involving a strap connector
<administratively transferred to [H10W 72/077](#) and [H10W 72/076](#)>
- D H01L 2224/92177 the second connecting process involving a wire connector
<administratively transferred to [H10W 72/077](#) and [H10W 72/075](#)>
- D H01L 2224/922 . . . Connecting different surfaces of the semiconductor or solid-state body with
connectors of different types
- D H01L 2224/9221 Parallel connecting processes
- D H01L 2224/9222 Sequential connecting processes
- D H01L 2224/92222 the first connecting process involving a bump connector
<administratively transferred to [H10W 72/072](#)>
- D H01L 2224/92224 the second connecting process involving a build-up interconnect
<administratively transferred to [H10W 72/072](#) and [H10W 70/099](#)>
- D H01L 2224/92225 the second connecting process involving a layer connector
<administratively transferred to [H10W 72/072](#) and [H10W 72/073](#)>
- D H01L 2224/92226 the second connecting process involving a strap connector
<administratively transferred to [H10W 72/072](#) and [H10W 72/076](#)>
- D H01L 2224/92227 the second connecting process involving a wire connector
<administratively transferred to [H10W 72/072](#) and [H10W 72/075](#)>
- D H01L 2224/92228 the second connecting process involving a TAB connector
<administratively transferred to [H10W 72/072](#) and [H10W 72/077](#)>
- D H01L 2224/92242 the first connecting process involving a layer connector
<administratively transferred to [H10W 72/073](#)>
- D H01L 2224/92244 the second connecting process involving a build-up interconnect
<administratively transferred to [H10W 72/073](#) and [H10W 70/099](#)>
- D H01L 2224/92246 the second connecting process involving a strap connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/076](#)>
- D H01L 2224/92247 the second connecting process involving a wire connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/075](#)>

- D H01L 2224/92248 the second connecting process involving a TAB connector
<administratively transferred to [H10W 72/073](#) and [H10W 72/077](#)>
- D H01L 2224/92252 the first connecting process involving a strap connector
<administratively transferred to [H10W 72/076](#)>
- D H01L 2224/92253 the second connecting process involving a bump connector
<administratively transferred to [H10W 72/076](#) and [H10W 72/072](#)>
- D H01L 2224/92255 the second connecting process involving a layer connector
<administratively transferred to [H10W 72/076](#) and [H10W 72/073](#)>
- D H01L 2224/93 . Batch processes
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/94 . . at wafer-level, i.e. with connecting carried out on a wafer comprising a plurality of undiced individual devices
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95 . . at chip-level, i.e. with connecting carried out on a plurality of singulated devices, i.e. on diced chips
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95001 . . . involving a temporary auxiliary member not forming part of the bonding apparatus, e.g. removable or sacrificial coating, film or substrate
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95053 . . . Bonding environment
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95085 being a liquid, e.g. for fluidic self-assembly
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95091 Under pressure
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95092 Atmospheric pressure, e.g. dry self-assembly
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95093 Transient conditions, e.g. assisted by a gas flow or a liquid flow
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/951 . . . Supplying the plurality of semiconductor or solid-state bodies
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95101 in a liquid medium
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95102 being a colloidal droplet
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/9511 using a rack or rail
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95115 using a roll-to-roll transfer technique
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/9512 . . . Aligning the plurality of semiconductor or solid-state bodies
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95121 Active alignment, i.e. by apparatus steering
<administratively transferred to [H10W 72/0198](#)>

- D H01L 2224/95122 by applying vibration
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95123 by applying a pressurised fluid flow, e.g. liquid or gas flow
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95133 by applying an electromagnetic field
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95134 Electrowetting, i.e. by changing the surface energy of a droplet
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95136 involving guiding structures, e.g. shape matching, spacers or supporting members
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95143 Passive alignment, i.e. self alignment, e.g. using surface energy, chemical reactions, thermal equilibrium
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95144 Magnetic alignment, i.e. using permanent magnetic parts in the semiconductor or solid-state body
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95145 Electrostatic alignment, i.e. polarity alignment with Coulomb charges
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95146 by surface tension
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95147 by molecular lock-key, e.g. by DNA
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/95148 involving movement of a part of the bonding apparatus
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/96 . . . the devices being encapsulated in a common layer, e.g. neo-wafer or pseudo-wafer, said common layer being separable into individual assemblies after connecting
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/97 . . . the devices being connected to a common substrate, e.g. interposer, said common substrate being separable into individual assemblies after connecting
<administratively transferred to [H10W 72/0198](#)>
- D H01L 2224/98 . Methods for disconnecting semiconductor or solid-state bodies
<administratively transferred to [H10W 72/071](#)>
- D H01L 2225/00 Details relating to assemblies covered by the group H01L 25/00 but not provided for in its subgroups**
<administratively transferred to [H10W 90/00](#)>
- D H01L 2225/03 . All the devices being of a type provided for in the same main group of the same subclass of class H10, e.g. assemblies of rectifier diodes
<administratively transferred to [H10W 90/00](#)>
- D H01L 2225/04 . . the devices not having separate containers
<administratively transferred to [H10W 90/00](#)>

- | | | |
|---|-----------------|---|
| D | H01L 2225/065 | <ul style="list-style-type: none"> • • • All the devices being of a type provided for in the same main group of the same subclass of class H10 <p><administratively transferred to H10W 90/00></p> |
| D | H01L 2225/06503 | <ul style="list-style-type: none"> • • • • Stacked arrangements of devices <p><administratively transferred to H10W 90/20></p> |
| D | H01L 2225/06506 | <ul style="list-style-type: none"> • • • • • Wire or wire-like electrical connections between devices <p><administratively transferred to H10W 90/752></p> |
| D | H01L 2225/0651 | <ul style="list-style-type: none"> • • • • • Wire or wire-like electrical connections from device to substrate <p><administratively transferred to H10W 90/754></p> |
| D | H01L 2225/06513 | <ul style="list-style-type: none"> • • • • • Bump or bump-like direct electrical connections between devices, e.g. flip-chip connection, solder bumps <p><administratively transferred to H10W 90/722></p> |
| D | H01L 2225/06517 | <ul style="list-style-type: none"> • • • • • Bump or bump-like direct electrical connections from device to substrate <p><administratively transferred to H10W 90/724></p> |
| D | H01L 2225/0652 | <ul style="list-style-type: none"> • • • • • Bump or bump-like direct electrical connections from substrate to substrate <p><administratively transferred to H10W 90/721></p> |
| D | H01L 2225/06524 | <ul style="list-style-type: none"> • • • • • Electrical connections formed on device or on substrate, e.g. a deposited or grown layer <p><administratively transferred to H10W 90/20></p> |
| D | H01L 2225/06527 | <ul style="list-style-type: none"> • • • • • Special adaptation of electrical connections, e.g. rewiring, engineering changes, pressure contacts, layout <p><administratively transferred to H10W 72/01></p> |
| D | H01L 2225/06531 | <ul style="list-style-type: none"> • • • • • • Non-galvanic coupling, e.g. capacitive coupling <p><administratively transferred to H10W 90/293></p> |
| D | H01L 2225/06534 | <ul style="list-style-type: none"> • • • • • • • Optical coupling <p><administratively transferred to H10W 90/295></p> |
| D | H01L 2225/06537 | <ul style="list-style-type: none"> • • • • • • • Electromagnetic shielding <p><administratively transferred to H10W 42/271></p> |
| D | H01L 2225/06541 | <ul style="list-style-type: none"> • • • • • Conductive via connections through the device, e.g. vertical interconnects, through-silicon via [TSV] <p><administratively transferred to H10W 90/297></p> |
| D | H01L 2225/06544 | <ul style="list-style-type: none"> • • • • • • Design considerations for via connections, e.g. geometry or layout <p><administratively transferred to H10W 90/297></p> |
| D | H01L 2225/06548 | <ul style="list-style-type: none"> • • • • • Conductive via connections through the substrate, container, or encapsulation <p><administratively transferred to H10W 72/823></p> |
| D | H01L 2225/06551 | <ul style="list-style-type: none"> • • • • • Conductive connections on the side of the device <p><administratively transferred to H10W 72/834></p> |
| D | H01L 2225/06555 | <ul style="list-style-type: none"> • • • • • Geometry of the stack, e.g. form of the devices, geometry to facilitate stacking <p><administratively transferred to H10W 90/20></p> |
| D | H01L 2225/06558 | <ul style="list-style-type: none"> • • • • • the devices having passive surfaces facing each other, i.e. in a back-to-back arrangement <p><administratively transferred to H10W 90/271></p> |

- D H01L 2225/06562 at least one device in the stack being rotated or offset
<administratively transferred to [H10W 90/24](#)>
- D H01L 2225/06565 the devices having the same size and there being no auxiliary carrier between the devices
<administratively transferred to [H10W 90/26](#)>
- D H01L 2225/06568 the devices decreasing in size, e.g. pyramidal stack
<administratively transferred to [H10W 90/28](#)>
- D H01L 2225/06572 Auxiliary carrier between devices, the carrier having an electrical connection structure
<administratively transferred to [H10W 90/22](#)>
- D H01L 2225/06575 Auxiliary carrier between devices, the carrier having no electrical connection structure
<administratively transferred to [H10W 90/231](#)>
- D H01L 2225/06579 TAB carriers; beam leads
<administratively transferred to [H10W 72/60](#)>
- D H01L 2225/06582 Housing for the assembly, e.g. chip scale package [CSP]
<administratively transferred to [H10W 90/291](#)>
- D H01L 2225/06586 Housing with external bump or bump-like connectors
<administratively transferred to [H10W 90/291](#)>
- D H01L 2225/06589 Thermal management, e.g. cooling
<administratively transferred to [H10W 90/288](#)>
- D H01L 2225/06593 Mounting aids permanently on device; arrangements for alignment
<administratively transferred to [H10W 46/00](#)>
- D H01L 2225/06596 Structural arrangements for testing
<administratively transferred to [H10W 90/284](#)>
- D H01L 2225/10 . . . the devices having separate containers
<administratively transferred to [H10W 90/20](#)>
- D H01L 2225/1005 . . . the devices being integrated devices of class H10
<administratively transferred to [H10W 90/20](#)>
- D H01L 2225/1011 . . . the containers being in a stacked arrangement
<administratively transferred to [H10W 90/20](#)>
- D H01L 2225/1017 . . . the lowermost container comprising a device support
<administratively transferred to [H10W 90/20](#)>
- D H01L 2225/1023 . . . the support being an insulating substrate
<administratively transferred to [H10W 70/60](#)>
- D H01L 2225/1029 . . . the support being a lead frame
<administratively transferred to [H10W 70/40](#)>
- D H01L 2225/1035 . . . the device being entirely enclosed by the support, e.g. high-density interconnect [HDI]
<administratively transferred to [H10W 70/60](#)>
- D H01L 2225/1041 . . . Special adaptations for top connections of the lowermost container, e.g. redistribution layer, integral interposer
<administratively transferred to [H10W 70/60](#)>

- D H01L 2225/1047 Details of electrical connections between containers
<administratively transferred to [H10W 90/701](#)>
- D H01L 2225/1052 Wire or wire-like electrical connections
<administratively transferred to [H10W 90/752](#)>
- D H01L 2225/1058 Bump or bump-like electrical connections, e.g. balls, pillars, posts
<administratively transferred to [H10W 90/722](#)>
- D H01L 2225/1064 Electrical connections provided on a side surface of one or more of the containers
<administratively transferred to [H10W 72/801](#)>
- D H01L 2225/107 Indirect electrical connections, e.g. via an interposer, a flexible substrate, using TAB
<administratively transferred to [H10W 70/60](#)>
- D H01L 2225/1076 Shape of the containers
<administratively transferred to [H10W 90/291](#)>
- D H01L 2225/1082 for improving alignment between containers, e.g. interlocking features
<administratively transferred to [H10W 90/291](#)>
- D H01L 2225/1088 Arrangements to limit the height of the assembly
<administratively transferred to [H10W 90/291](#)>
- D H01L 2225/1094 Thermal management, e.g. cooling
<administratively transferred to [H10W 90/288](#)>
- D H01L 2924/00 Indexing scheme for arrangements or methods for connecting or disconnecting semiconductor or solid-state bodies as covered by H01L 24/00**
- D H01L 2924/0001 . Technical content checked by a classifier
NOTE
Codes H01L 2924/0001 - H01L 2924/0002 are used to describe the status of reclassification; they do not relate to technical features as such
- D H01L 2924/00011 . . Not relevant to the scope of the group, the symbol of which is combined with the symbol of this group
- D H01L 2924/00012 . . Relevant to the scope of the group, the symbol of which is combined with the symbol of this group
- D H01L 2924/00013 . . Fully indexed content
- D H01L 2924/00014 . . the subject-matter covered by the group, the symbol of which is combined with the symbol of this group, being disclosed without further technical details
- D H01L 2924/00015 . . the subject-matter covered by the group, the symbol of which is combined with the symbol of this group, being disclosed as prior art
- D H01L 2924/0002 . . Not covered by any one of groups H01L 24/00, H01L 24/00 and H01L 2224/00
- D H01L 2924/01 . Chemical elements
- D H01L 2924/01001 . . Hydrogen [H]
- D H01L 2924/01002 . . Helium [He]
- D H01L 2924/01003 . . Lithium [Li]
- D H01L 2924/01004 . . Beryllium [Be]
- D H01L 2924/01005 . . Boron [B]
- D H01L 2924/01006 . . Carbon [C]

D	H01L 2924/01007	• • Nitrogen [N]
D	H01L 2924/01008	• • Oxygen [O]
D	H01L 2924/01009	• • Fluorine [F]
D	H01L 2924/0101	• • Neon [Ne]
D	H01L 2924/01011	• • Sodium [Na]
D	H01L 2924/01012	• • Magnesium [Mg]
D	H01L 2924/01013	• • Aluminum [Al]
D	H01L 2924/01014	• • Silicon [Si]
D	H01L 2924/01015	• • Phosphorus [P]
D	H01L 2924/01016	• • Sulfur [S]
D	H01L 2924/01017	• • Chlorine [Cl]
D	H01L 2924/01018	• • Argon [Ar]
D	H01L 2924/01019	• • Potassium [K]
D	H01L 2924/0102	• • Calcium [Ca]
D	H01L 2924/01021	• • Scandium [Sc]
D	H01L 2924/01022	• • Titanium [Ti]
D	H01L 2924/01023	• • Vanadium [V]
D	H01L 2924/01024	• • Chromium [Cr]
D	H01L 2924/01025	• • Manganese [Mn]
D	H01L 2924/01026	• • Iron [Fe]
D	H01L 2924/01027	• • Cobalt [Co]
D	H01L 2924/01028	• • Nickel [Ni]
D	H01L 2924/01029	• • Copper [Cu]
D	H01L 2924/0103	• • Zinc [Zn]
D	H01L 2924/01031	• • Gallium [Ga]
D	H01L 2924/01032	• • Germanium [Ge]
D	H01L 2924/01033	• • Arsenic [As]
D	H01L 2924/01034	• • Selenium [Se]
D	H01L 2924/01035	• • Bromine [Br]
D	H01L 2924/01036	• • Krypton [Kr]
D	H01L 2924/01037	• • Rubidium [Rb]
D	H01L 2924/01038	• • Strontium [Sr]
D	H01L 2924/01039	• • Yttrium [Y]
D	H01L 2924/0104	• • Zirconium [Zr]
D	H01L 2924/01041	• • Niobium [Nb]
D	H01L 2924/01042	• • Molybdenum [Mo]
D	H01L 2924/01043	• • Technetium [Tc]
D	H01L 2924/01044	• • Ruthenium [Ru]
D	H01L 2924/01045	• • Rhodium [Rh]
D	H01L 2924/01046	• • Palladium [Pd]
D	H01L 2924/01047	• • Silver [Ag]
D	H01L 2924/01048	• • Cadmium [Cd]
D	H01L 2924/01049	• • Indium [In]
D	H01L 2924/0105	• • Tin [Sn]

D	H01L 2924/01051	• • Antimony [Sb]
D	H01L 2924/01052	• • Tellurium [Te]
D	H01L 2924/01053	• • Iodine [I]
D	H01L 2924/01054	• • Xenon [Xe]
D	H01L 2924/01055	• • Cesium [Cs]
D	H01L 2924/01056	• • Barium [Ba]
D	H01L 2924/01057	• • Lanthanum [La]
D	H01L 2924/01058	• • Cerium [Ce]
D	H01L 2924/01059	• • Praseodymium [Pr]
D	H01L 2924/0106	• • Neodymium [Nd]
D	H01L 2924/01061	• • Promethium [Pm]
D	H01L 2924/01062	• • Samarium [Sm]
D	H01L 2924/01063	• • Europium [Eu]
D	H01L 2924/01064	• • Gadolinium [Gd]
D	H01L 2924/01065	• • Terbium [Tb]
D	H01L 2924/01066	• • Dysprosium [Dy]
D	H01L 2924/01067	• • Holmium [Ho]
D	H01L 2924/01068	• • Erbium [Er]
D	H01L 2924/01069	• • Thulium [Tm]
D	H01L 2924/0107	• • Ytterbium [Yb]
D	H01L 2924/01071	• • Lutetium [Lu]
D	H01L 2924/01072	• • Hafnium [Hf]
D	H01L 2924/01073	• • Tantalum [Ta]
D	H01L 2924/01074	• • Tungsten [W]
D	H01L 2924/01075	• • Rhenium [Re]
D	H01L 2924/01076	• • Osmium [Os]
D	H01L 2924/01077	• • Iridium [Ir]
D	H01L 2924/01078	• • Platinum [Pt]
D	H01L 2924/01079	• • Gold [Au]
D	H01L 2924/0108	• • Mercury [Hg]
D	H01L 2924/01081	• • Thallium [Tl]
D	H01L 2924/01082	• • Lead [Pb]
D	H01L 2924/01083	• • Bismuth [Bi]
D	H01L 2924/01084	• • Polonium [Po]
D	H01L 2924/01085	• • Astatine [At]
D	H01L 2924/01086	• • Radon [Rn]
D	H01L 2924/01087	• • Francium [Fr]
D	H01L 2924/01088	• • Radium [Ra]
D	H01L 2924/01089	• • Actinium [Ac]
D	H01L 2924/0109	• • Thorium [Th]
D	H01L 2924/01091	• • Protactinium [Pa]
D	H01L 2924/01092	• • Uranium [U]
D	H01L 2924/01093	• • Neptunium [Np]
D	H01L 2924/01094	• • Plutonium [Pu]

- D H01L 2924/011 · Groups of the periodic table
- D H01L 2924/01101 · · Alkali metals
- D H01L 2924/01102 · · Alkali earth metals
- D H01L 2924/01103 · · Transition metals
- D H01L 2924/01104 · · Refractory metals
- D H01L 2924/01105 · · Rare earth metals
- D H01L 2924/01106 · · · Lanthanides, i.e. Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu
- D H01L 2924/01107 · · · Actinides, i.e. Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr
- D H01L 2924/01108 · · Noble metals
- D H01L 2924/01109 · · Metalloids or Semi-metals
- D H01L 2924/0111 · · Chalcogens
- D H01L 2924/01111 · · Halogens
- D H01L 2924/01112 · · Noble gases
- D H01L 2924/012 · Semiconductor purity grades
- D H01L 2924/01201 · · 1N purity grades, i.e. 90%
- D H01L 2924/01202 · · 2N purity grades, i.e. 99%
- D H01L 2924/01203 · · 3N purity grades, i.e. 99.9%
- D H01L 2924/01204 · · 4N purity grades, i.e. 99.99%
- D H01L 2924/01205 · · 5N purity grades, i.e. 99.999%
- D H01L 2924/01206 · · 6N purity grades, i.e. 99.9999%
- D H01L 2924/01207 · · 7N purity grades, i.e. 99.99999%
- D H01L 2924/01208 · · 8N purity grades, i.e. 99.999999%
- D H01L 2924/013 · Alloys
- D H01L 2924/0132 · · Binary Alloys
- D H01L 2924/01321 · · · Isomorphous Alloys
- D H01L 2924/01322 · · · Eutectic Alloys, i.e. obtained by a liquid transforming into two solid phases
- D H01L 2924/01323 · · · Hypoeutectic alloys i.e. with compositions lying to the left of the eutectic point
- D H01L 2924/01324 · · · Hypereutectic alloys i.e. with compositions lying to the right of the eutectic point
- D H01L 2924/01325 · · · Peritectic Alloys, i.e. obtained by a liquid and a solid transforming into a new and different solid phase
- D H01L 2924/01326 · · · Monotectics, i.e. obtained by a liquid transforming into a solid and a new and different liquid phase
- D H01L 2924/01327 · · · Intermediate phases, i.e. intermetallics compounds
- D H01L 2924/0133 · · Ternary Alloys
- D H01L 2924/0134 · · Quaternary Alloys
- D H01L 2924/0135 · · Quinary Alloys
- D H01L 2924/014 · · Solder alloys
- D H01L 2924/01402 · · Invar, i.e. single-phase alloy of around 36% nickel and 64% iron
- D H01L 2924/01403 · · Kovar, i.e. FeNiCo alloys
- D H01L 2924/01404 · · Alloy 42, i.e. FeNi42
- D H01L 2924/01405 · · Inveco, i.e. Fe-33Ni-4.5Co
- D H01L 2924/042 · Borides composed of metals from groups of the periodic table
- D H01L 2924/0421 · · 1st Group

- D H01L 2924/0422 . . 2nd-Group
- D H01L 2924/0423 . . 3rd-Group
- D H01L 2924/0424 . . 4th-Group
- D H01L 2924/0425 . . 5th-Group
- D H01L 2924/0426 . . 6th-Group
- D H01L 2924/0427 . . 7th-Group
- D H01L 2924/0428 . . 8th-Group
- D H01L 2924/0429 . . 9th-Group
- D H01L 2924/044 . . 10th-Group
- D H01L 2924/0441 . . 11th-Group
- D H01L 2924/0442 . . 12th-Group
- D H01L 2924/0443 . . 13th-Group
- D H01L 2924/0444 . . 14th-Group
- D H01L 2924/0445 . . Lanthanides
- D H01L 2924/0446 . . Actinides
- D H01L 2924/0449 . . being a combination of two or more materials provided in the groups
H01L 2924/0421 - H01L 2924/0446
- D H01L 2924/04491 . . having a monocrystalline microstructure
- D H01L 2924/04492 . . having a polycrystalline microstructure
- D H01L 2924/04494 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/045 . Carbides composed of metals from groups of the periodic table
- D H01L 2924/0451 . . 1st-Group
- D H01L 2924/0452 . . 2nd-Group
- D H01L 2924/0453 . . 3rd-Group
- D H01L 2924/0454 . . 4th-Group
- D H01L 2924/04541 . . . TiC
- D H01L 2924/0455 . . 5th-Group
- D H01L 2924/0456 . . 6th-Group
- D H01L 2924/04563 . . . WC
- D H01L 2924/0457 . . 7th-Group
- D H01L 2924/0458 . . 8th-Group
- D H01L 2924/0459 . . 9th-Group
- D H01L 2924/046 . . 10th-Group
- D H01L 2924/0461 . . 11th-Group
- D H01L 2924/0462 . . 12th-Group
- D H01L 2924/0463 . . 13th-Group
- D H01L 2924/0464 . . 14th-Group
- D H01L 2924/04642 . . . SiC
- D H01L 2924/0465 . . Lanthanides
- D H01L 2924/0466 . . Actinides
- D H01L 2924/0469 . . being a combination of two or more materials provided in the groups
H01L 2924/0451 - H01L 2924/0466
- D H01L 2924/04691 . . having a monocrystalline microstructure
- D H01L 2924/04692 . . having a polycrystalline microstructure
- D H01L 2924/04694 . . having an amorphous microstructure, i.e. glass

- D H01L 2924/047 · Silicides composed of metals from groups of the periodic table
- D H01L 2924/0471 · · 1st Group
- D H01L 2924/0472 · · 2nd Group
- D H01L 2924/0473 · · 3rd Group
- D H01L 2924/0474 · · 4th Group
- D H01L 2924/0475 · · 5th Group
- D H01L 2924/0476 · · 6th Group
- D H01L 2924/0477 · · 7th Group
- D H01L 2924/0478 · · 8th Group
- D H01L 2924/0479 · · 9th Group
- D H01L 2924/048 · · 10th Group
- D H01L 2924/0481 · · 11th Group
- D H01L 2924/0482 · · 12th Group
- D H01L 2924/0483 · · 13th Group
- D H01L 2924/0484 · · 14th Group
- D H01L 2924/0485 · · Lanthanides
- D H01L 2924/0486 · · Actinides
- D H01L 2924/0489 · · being a combination of two or more materials provided in the groups
H01L 2924/0471 – H01L 2924/0486
- D H01L 2924/04891 · · having a monocrystalline microstructure
- D H01L 2924/04892 · · having a polycrystalline microstructure
- D H01L 2924/04894 · · having an amorphous microstructure, i.e. glass
- D H01L 2924/049 · Nitrides composed of metals from groups of the periodic table
- D H01L 2924/0491 · · 1st Group
- D H01L 2924/0492 · · 2nd Group
- D H01L 2924/0493 · · 3rd Group
- D H01L 2924/0494 · · 4th Group
- D H01L 2924/04941 · · · TiN
- D H01L 2924/0495 · · 5th Group
- D H01L 2924/04953 · · · TaN
- D H01L 2924/0496 · · 6th Group
- D H01L 2924/0497 · · 7th Group
- D H01L 2924/0498 · · 8th Group
- D H01L 2924/0499 · · 9th Group
- D H01L 2924/05 · · 10th Group
- D H01L 2924/0501 · · 11th Group
- D H01L 2924/0502 · · 12th Group
- D H01L 2924/0503 · · 13th Group
- D H01L 2924/05032 · · · AlN
- D H01L 2924/0504 · · 14th Group
- D H01L 2924/05042 · · · Si₃N₄
- D H01L 2924/0505 · · Lanthanides
- D H01L 2924/0506 · · Actinides
- D H01L 2924/0509 · · being a combination of two or more materials provided in the groups
H01L 2924/0491 – H01L 2924/0506

- D H01L 2924/05091 . . having a monocrystalline microstructure
- D H01L 2924/05092 . . having a polycrystalline microstructure
- D H01L 2924/05094 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/051 . Phosphides composed of metals from groups of the periodic table
- D H01L 2924/0511 . . 1st Group
- D H01L 2924/0512 . . 2nd Group
- D H01L 2924/0513 . . 3rd Group
- D H01L 2924/0514 . . 4th Group
- D H01L 2924/0515 . . 5th Group
- D H01L 2924/0516 . . 6th Group
- D H01L 2924/0517 . . 7th Group
- D H01L 2924/0518 . . 8th Group
- D H01L 2924/0519 . . 9th Group
- D H01L 2924/052 . . 10th Group
- D H01L 2924/0521 . . 11th Group
- D H01L 2924/0522 . . 12th Group
- D H01L 2924/0523 . . 13th Group
- D H01L 2924/0524 . . 14th Group
- D H01L 2924/0525 . . Lanthanides
- D H01L 2924/0526 . . Actinides
- D H01L 2924/0529 . . being a combination of two or more materials provided in the groups
H01L 2924/0511 – H01L 2924/0526
- D H01L 2924/05291 . . having a monocrystalline microstructure
- D H01L 2924/05292 . . having a polycrystalline microstructure
- D H01L 2924/05294 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/053 . Oxides composed of metals from groups of the periodic table
- D H01L 2924/0531 . . 1st Group
- D H01L 2924/0532 . . 2nd Group
- D H01L 2924/0533 . . 3rd Group
- D H01L 2924/0534 . . 4th Group
- D H01L 2924/05341 . . . TiO_2
- D H01L 2924/05342 . . . ZrO_2
- D H01L 2924/0535 . . 5th Group
- D H01L 2924/0536 . . 6th Group
- D H01L 2924/0537 . . 7th Group
- D H01L 2924/0538 . . 8th Group
- D H01L 2924/05381 . . . FeO_x
- D H01L 2924/0539 . . 9th Group
- D H01L 2924/054 . . 10th Group
- D H01L 2924/0541 . . 11th Group
- D H01L 2924/0542 . . 12th Group
- D H01L 2924/0543 . . 13th Group
- D H01L 2924/05432 . . . Al_2O_3
- D H01L 2924/0544 . . 14th Group

- D H01L 2924/05442 . . . SiO₂
- D H01L 2924/0545 . . Lanthanides
- D H01L 2924/0546 . . Actinides
- D H01L 2924/0549 . . being a combination of two or more materials provided in the groups H01L 2924/0531 – H01L 2924/0546
- D H01L 2924/05491 . . having a monocrystalline microstructure
- D H01L 2924/05492 . . having a polycrystalline microstructure
- D H01L 2924/05494 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/055 . Chalcogenides other than oxygen i.e. sulfides, selenides and tellurides composed of metals from groups of the periodic table
- D H01L 2924/0551 . . 1st-Group
- D H01L 2924/0552 . . 2nd-Group
- D H01L 2924/0553 . . 3rd-Group
- D H01L 2924/0554 . . 4th-Group
- D H01L 2924/0555 . . 5th-Group
- D H01L 2924/0556 . . 6th-Group
- D H01L 2924/0557 . . 7th-Group
- D H01L 2924/0558 . . 8th-Group
- D H01L 2924/0559 . . 9th-Group
- D H01L 2924/056 . . 10th-Group
- D H01L 2924/0561 . . 11th-Group
- D H01L 2924/0562 . . 12th-Group
- D H01L 2924/0563 . . 13th-Group
- D H01L 2924/0564 . . 14th-Group
- D H01L 2924/0565 . . Lanthanides
- D H01L 2924/0566 . . Actinides
- D H01L 2924/0569 . . being a combination of two or more materials provided in the groups H01L 2924/0551 – H01L 2924/0566
- D H01L 2924/05691 . . having a monocrystalline microstructure
- D H01L 2924/05692 . . having a polycrystalline microstructure
- D H01L 2924/05694 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/057 . Halides composed of metals from groups of the periodic table
- D H01L 2924/0571 . . 1st-Group
- D H01L 2924/0572 . . 2nd-Group
- D H01L 2924/0573 . . 3rd-Group
- D H01L 2924/0574 . . 4th-Group
- D H01L 2924/0575 . . 5th-Group
- D H01L 2924/0576 . . 6th-Group
- D H01L 2924/0577 . . 7th-Group
- D H01L 2924/0578 . . 8th-Group
- D H01L 2924/0579 . . 9th-Group
- D H01L 2924/058 . . 10th-Group
- D H01L 2924/0581 . . 11th-Group
- D H01L 2924/0582 . . 12th-Group
- D H01L 2924/0583 . . 13th-Group

- D H01L 2924/0584 . . 14th Group
- D H01L 2924/0585 . . Lanthanides
- D H01L 2924/0586 . . Actinides
- D H01L 2924/0589 . . being a combination of two or more materials provided in the groups H01L 2924/0571 – H01L 2924/0586
- D H01L 2924/05891 . . having a monocrystalline microstructure
- D H01L 2924/05892 . . having a polycrystalline microstructure
- D H01L 2924/05894 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/059 . . Being combinations of any of the materials from the groups H01L 2924/042 – H01L 2924/0584, e.g. oxynitrides
- D H01L 2924/05991 . . having a monocrystalline microstructure
- D H01L 2924/05992 . . having a polycrystalline microstructure
- D H01L 2924/05994 . . having an amorphous microstructure, i.e. glass
- D H01L 2924/06 . . Polymers
- D H01L 2924/061 . . Polyolefin polymer
- D H01L 2924/0615 . . Styrenic polymer
- D H01L 2924/062 . . Halogenated polymer
- D H01L 2924/0625 . . Polyvinyl alcohol
- D H01L 2924/063 . . Polyvinyl acetate
- D H01L 2924/0635 . . Acrylic polymer
- D H01L 2924/064 . . Graft polymer
- D H01L 2924/0645 . . Block copolymer
- D H01L 2924/065 . . ABS
- D H01L 2924/0655 . . Polyacetal
- D H01L 2924/066 . . Phenolic resin
- D H01L 2924/0665 . . Epoxy resin
- D H01L 2924/067 . . Polyphenylene
- D H01L 2924/0675 . . Polyester
- D H01L 2924/068 . . Polycarbonate
- D H01L 2924/0685 . . Polyether
- D H01L 2924/069 . . Polyurethane
- D H01L 2924/0695 . . Polyamide
- D H01L 2924/07 . . Polyamine or polyimide
- D H01L 2924/07001 . . . Polyamine
- D H01L 2924/07025 . . . Polyimide
- D H01L 2924/0705 . . Sulfur-containing polymer
- D H01L 2924/0715 . . Polysiloxane
- D H01L 2924/078 . . Adhesive characteristics other than chemical
- D H01L 2924/07802 . . . not being an ohmic electrical conductor
- D H01L 2924/0781 . . . being an ohmic electrical conductor
- D H01L 2924/07811 Extrinsic, i.e. with electrical conductive fillers
- D H01L 2924/07812 Intrinsic, e.g. polyaniline [PANI]
- D H01L 2924/0782 . . . being pressure sensitive
- D H01L 2924/095 . . with a principal constituent of the material being a combination of two or more materials provided in the groups H01L 2924/013 – H01L 2924/0715

- D H01L 2924/0951 . . Glass-epoxy laminates
- D H01L 2924/09511 . . . FR-4
- D H01L 2924/09512 . . . FR-5
- D H01L 2924/09522 . . . G10
- D H01L 2924/09523 . . . G11
- D H01L 2924/096 . . Cermets, i.e. composite material composed of ceramic and metallic materials
- D H01L 2924/097 . . Glass-ceramics, e.g. devitrified glass
- D H01L 2924/09701 . . . Low-temperature co-fired ceramic [LTCC]
- D H01L 2924/10 . . Details of semiconductor or other solid state devices to be connected
- D H01L 2924/1011 . . Structure
- D H01L 2924/1015 . . Shape
- D H01L 2924/10155 . . . being other than a cuboid
- D H01L 2924/10156 at the periphery
- D H01L 2924/10157 at the active surface
- D H01L 2924/10158 at the passive surface
- D H01L 2924/1016 . . . being a cuboid
- D H01L 2924/10161 with a rectangular active surface
- D H01L 2924/10162 with a square active surface
- D H01L 2924/1017 . . . being a sphere
- D H01L 2924/102 . . Material of the semiconductor or solid state bodies
- D H01L 2924/1025 . . . Semiconducting materials
- D H01L 2924/10251 Elemental semiconductors, i.e. Group IV
- D H01L 2924/10252 Germanium [Ge]
- D H01L 2924/10253 Silicon [Si]
- D H01L 2924/10254 Diamond [C]
- D H01L 2924/1026 Compound semiconductors
- D H01L 2924/1027 IV
- D H01L 2924/10271 Silicon-germanium [SiGe]
- D H01L 2924/10272 Silicon Carbide [SiC]
- D H01L 2924/1032 III-V
- D H01L 2924/10321 Aluminium antimonide [AlSb]
- D H01L 2924/10322 Aluminium arsenide [AlAs]
- D H01L 2924/10323 Aluminium nitride [AlN]
- D H01L 2924/10324 Aluminium phosphide [AlP]
- D H01L 2924/10325 Boron nitride [BN], e.g. cubic, hexagonal, nanotube
- D H01L 2924/10326 Boron phosphide [BP]
- D H01L 2924/10327 Boron arsenide [BAs, B₄₂As₂]
- D H01L 2924/10328 Gallium antimonide [GaSb]
- D H01L 2924/10329 Gallium arsenide [GaAs]
- D H01L 2924/1033 Gallium nitride [GaN]
- D H01L 2924/10331 Gallium phosphide [GaP]
- D H01L 2924/10332 Indium antimonide [InSb]
- D H01L 2924/10333 Indium arsenide [InAs]
- D H01L 2924/10334 Indium nitride [InN]

D	H01L 2924/10335	. . . . . Indium phosphide [InP]
D	H01L 2924/10336	. . . . . Aluminium gallium arsenide [AlGaAs]
D	H01L 2924/10337	. . . . . Indium gallium arsenide [InGaAs]
D	H01L 2924/10338	. . . . . Indium gallium phosphide [InGaP]
D	H01L 2924/10339	. . . . . Aluminium indium arsenide [AlInAs]
D	H01L 2924/1034	. . . . . Aluminium indium antimonide [AlInSb]
D	H01L 2924/10341	. . . . . Gallium arsenide nitride [GaAsN]
D	H01L 2924/10342	. . . . . Gallium arsenide phosphide [GaAsP]
D	H01L 2924/10343	. . . . . Gallium arsenide antimonide [GaAsSb]
D	H01L 2924/10344	. . . . . Aluminium gallium nitride [AlGaN]
D	H01L 2924/10345	. . . . . Aluminium gallium phosphide [AlGaP]
D	H01L 2924/10346	. . . . . Indium gallium nitride [InGaN]
D	H01L 2924/10347	. . . . . Indium arsenide antimonide [InAsSb]
D	H01L 2924/10348	. . . . . Indium gallium antimonide [InGaSb]
D	H01L 2924/10349	. . . . . Aluminium gallium indium phosphide [AlGaInP]
D	H01L 2924/1035	. . . . . Aluminium gallium arsenide phosphide [AlGaInP]
D	H01L 2924/10351	. . . . . Indium gallium arsenide phosphide [InGaAsP]
D	H01L 2924/10352	. . . . . Indium gallium arsenide antimonide [InGaAsSb]
D	H01L 2924/10353	. . . . . Indium arsenide antimonide phosphide [InAsSbP]
D	H01L 2924/10354	. . . . . Aluminium indium arsenide phosphide [AlInAsP]
D	H01L 2924/10355	. . . . . Aluminium gallium arsenide nitride [AlGaAsN]
D	H01L 2924/10356	. . . . . Indium gallium arsenide nitride [InGaAsN]
D	H01L 2924/10357	. . . . . Indium aluminium arsenide nitride [InAlAsN]
D	H01L 2924/10358	. . . . . Gallium arsenide antimonide nitride [GaAsSbN]
D	H01L 2924/10359	. . . . . Gallium indium nitride arsenide antimonide [GaInNAsSb]
D	H01L 2924/1036	. . . . . Gallium indium arsenide antimonide phosphide [GaInAsSbP]
D	H01L 2924/1037	. . . . . II-VI
D	H01L 2924/10371	. . . . . Cadmium selenide [CdSe]
D	H01L 2924/10372	. . . . . Cadmium sulfide [CdS]
D	H01L 2924/10373	. . . . . Cadmium telluride [CdTe]
D	H01L 2924/10375	. . . . . Zinc selenide [ZnSe]
D	H01L 2924/10376	. . . . . Zinc sulfide [ZnS]
D	H01L 2924/10377	. . . . . Zinc telluride [ZnTe]
D	H01L 2924/10378	. . . . . Cadmium zinc telluride, i.e. CZT [CdZnTe]
D	H01L 2924/10379	. . . . . Mercury cadmium telluride [HgZnTe]
D	H01L 2924/1038	. . . . . Mercury zinc telluride [HgZnSe]
D	H01L 2924/10381	. . . . . Mercury zinc selenide [HgZnSe]
D	H01L 2924/1042	. . . . . I-VII
D	H01L 2924/10421	. . . . . Cuprous chloride [CuCl]
D	H01L 2924/1047	. . . . . I-VI
D	H01L 2924/10471	. . . . . Copper sulfide [CuS]
D	H01L 2924/1052	. . . . . IV-VI
D	H01L 2924/10521	. . . . . Lead selenide [PbSe]
D	H01L 2924/10522	. . . . . Lead(II)sulfide [PbS]

D	H01L 2924/10523	. . . . . Lead telluride [PbTe]
D	H01L 2924/10524	. . . . . Tin sulfide [SnS, SnS ₂]
D	H01L 2924/10525	. . . . . Tin telluride [SnTe]
D	H01L 2924/10526	. . . . . Lead tin telluride [PbSnTe]
D	H01L 2924/10527	. . . . . Thallium tin telluride [Tl ₂ SnTe ₅]
D	H01L 2924/10528	. . . . . Thallium germanium telluride [Tl ₂ GeTe ₅]
D	H01L 2924/1057	. . . . . V-VI
D	H01L 2924/10571	. . . . . Bismuth telluride [Bi ₂ Te ₃]
D	H01L 2924/1062	. . . . . II-V
D	H01L 2924/10621	. . . . . Cadmium phosphide [Cd ₃ P ₂]
D	H01L 2924/10622	. . . . . Cadmium arsenide [Cd ₃ As ₂]
D	H01L 2924/10623	. . . . . Cadmium antimonide [Cd ₃ Sb ₂]
D	H01L 2924/10624	. . . . . Zinc phosphide [Zn ₃ P ₂]
D	H01L 2924/10625	. . . . . Zinc arsenide [Zn ₃ As ₂]
D	H01L 2924/10626	. . . . . Zinc antimonide [Zn ₃ Sb ₂]
D	H01L 2924/1067	. . . . . Oxide
D	H01L 2924/10671	. . . . . Titanium dioxide, anatase, rutile, brookite [TiO ₂]
D	H01L 2924/10672	. . . . . Copper(I)oxide [Cu ₂ O]
D	H01L 2924/10673	. . . . . Copper(II)oxide [CuO]
D	H01L 2924/10674	. . . . . Uranium dioxide [UO ₂]
D	H01L 2924/10675	. . . . . Uranium trioxide [UO ₃]
D	H01L 2924/10676	. . . . . Bismuth trioxide [Bi ₂ O ₃]
D	H01L 2924/10677	. . . . . Tin dioxide [SnO ₂]
D	H01L 2924/10678	. . . . . Barium titanate [BaTiO ₃]
D	H01L 2924/10679	. . . . . Strontium titanate [SrTiO ₃]
D	H01L 2924/1068	. . . . . Lithium niobate [LiNbO ₃]
D	H01L 2924/10681	. . . . . Lanthanum copper oxide [La ₂ CuO ₄]
D	H01L 2924/1072	. . . . . Layered
D	H01L 2924/10721	. . . . . Lead(II)iodide [PbI ₂]
D	H01L 2924/10722	. . . . . Molybdenum disulfide [MoS ₂]
D	H01L 2924/10723	. . . . . Gallium selenide [GaSe]
D	H01L 2924/10724	. . . . . Tin sulfide [SnS]
D	H01L 2924/10725	. . . . . Bismuth sulfide [Bi ₂ S ₃]
D	H01L 2924/1077	. . . . . Magnetic diluted [DMS]
D	H01L 2924/10771	. . . . . Gallium manganese arsenide [GaMnAs]
D	H01L 2924/10772	. . . . . Indium manganese arsenide [InMnAs]
D	H01L 2924/10773	. . . . . Cadmium manganese telluride [CdMnTe]
D	H01L 2924/10774	. . . . . Lead manganese telluride [PbMnTe]
D	H01L 2924/10775	. . . . . Lanthanum calcium manganate [La _{0.7} Ca _{0.3} MnO ₃]
D	H01L 2924/10776	. . . . . Iron(II)oxide [FeO]
D	H01L 2924/10777	. . . . . Nickel(II)oxide [NiO]
D	H01L 2924/10778	. . . . . Europium(II)oxide [EuO]
D	H01L 2924/10779	. . . . . Europium(II)sulfide [EuS]
D	H01L 2924/1078	. . . . . Chromium(III)bromide [CrBr ₃]

D	H01L 2924/1082	. . . . . Other
D	H01L 2924/10821	. . . . . Copper-indium-gallium-selenide, CIGS [Cu{In,Ga}Se ₂]
D	H01L 2924/10822	. . . . . Copper-zinc-tin-sulfide, CZTS [Cu ₂ ZnSnS ₄]
D	H01L 2924/10823	. . . . . Copper-indium-selenide, CIS [CuInSe ₂]
D	H01L 2924/10824	. . . . . Silver-gallium-sulfide [AgGaS ₂]
D	H01L 2924/10825	. . . . . Zinc-silicon-phosphide [ZnSiP ₂]
D	H01L 2924/10826	. . . . . Arsenic-selenide [As ₂ S ₃]
D	H01L 2924/10827	. . . . . Platinum-silicide [PtSi]
D	H01L 2924/10828	. . . . . Bismuth(III)iodide [BiI ₃]
D	H01L 2924/10829	. . . . . Mercury(II)iodide [HgI ₂]
D	H01L 2924/1083	. . . . . Thallium(I)bromide [TlBr]
D	H01L 2924/10831	. . . . . Selenium [Se]
D	H01L 2924/10832	. . . . . Silver-sulfide [Ag ₂ S]
D	H01L 2924/10833	. . . . . Iron-disulfide [FeS ₂]
D	H01L 2924/11	. . Device-type
D	H01L 2924/12	. . . Passive devices, e.g. 2-terminal devices
D	H01L 2924/1203	. . . . Rectifying Diode
D	H01L 2924/12031	. . . . . PIN-diode
D	H01L 2924/12032	. . . . . Schottky diode
D	H01L 2924/12033	. . . . . Gunn diode
D	H01L 2924/12034	. . . . . Varactor
D	H01L 2924/12035	. . . . . Zener diode
D	H01L 2924/12036	. . . . . PN-diode
D	H01L 2924/12037	. . . . . Cat's-whisker diode
D	H01L 2924/12038	. . . . . Point contact
D	H01L 2924/1204	. . . . Optical Diode
D	H01L 2924/12041	. . . . . LED
D	H01L 2924/12042	. . . . . LASER
D	H01L 2924/12043	. . . . . Photo-diode
D	H01L 2924/12044	. . . . . OLED
D	H01L 2924/1205	. . . . Capacitor
D	H01L 2924/1206	. . . . Inductor
D	H01L 2924/1207	. . . . Resistor
D	H01L 2924/13	. . . Discrete devices, e.g. 3-terminal devices
D	H01L 2924/1301	. . . . Thyristor
D	H01L 2924/13011	. . . . . Anode-Gate-Thyristor [AGT]
D	H01L 2924/13013	. . . . . Bidirectional-Control-Thyristor [BCT]
D	H01L 2924/13014	. . . . . Breakover-Diode [BOD]
D	H01L 2924/13015	. . . . . DIAC--Bidirectional-trigger device
D	H01L 2924/13016	. . . . . Dynistor--Unidirectional-switching device
D	H01L 2924/13017	. . . . . Shockley diode--Unidirectional-trigger and switching device
D	H01L 2924/13018	. . . . . SIDAC--Bidirectional-switching device
D	H01L 2924/13019	. . . . . Trisil, SIDACtor--Bidirectional-protection devices
D	H01L 2924/1302	. . . . . GTO--Gate-Turn-Off thyristor

D	H01L 2924/13021	. . . . . DB-GTO – Distributed Buffer Gate Turn-Off thyristor
D	H01L 2924/13022	. . . . . MA-GTO – Modified Anode Gate Turn-Off thyristor
D	H01L 2924/13023	. . . . . IGBT – Integrated Gate Commutated Thyristor
D	H01L 2924/13024	. . . . . LASCR – Light Activated SCR, or LTT – Light triggered thyristor
D	H01L 2924/13025	. . . . . Light Activated Semiconducting Switch [LASS]
D	H01L 2924/13026	. . . . . MCT – MOSFET Controlled Thyristor – It contains two additional FET structures for on/off control
D	H01L 2924/13027	. . . . . BRT – Base Resistance Controlled Thyristor
D	H01L 2924/13028	. . . . . RCT – Reverse Conducting Thyristor
D	H01L 2924/13029	. . . . . PUT or PUJT – Programmable Unijunction Transistor – A thyristor with gate on n-type layer near to the anode used as a functional replacement for unijunction transistor
D	H01L 2924/1303	. . . . . SCS – Silicon Controlled Switch or Thyristor Tetrode – A thyristor with both cathode and anode gates
D	H01L 2924/13032	. . . . . SITh – Static Induction Thyristor, or FCTh – Field Controlled Thyristor – containing a gate structure that can shut down anode current flow
D	H01L 2924/13033	. . . . . TRIAC – Triode for Alternating Current – A bidirectional switching device containing two thyristor structures with common gate contact
D	H01L 2924/13034	. . . . . Silicon Controlled Rectifier [SCR]
D	H01L 2924/13035	. . . . . Asymmetrical SCR [ASCR]
D	H01L 2924/1304	. . . . . Transistor
D	H01L 2924/1305	. . . . . Bipolar Junction Transistor [BJT]
D	H01L 2924/13051	. . . . . Heterojunction bipolar transistor [HBT]
D	H01L 2924/13052	. . . . . Schottky transistor
D	H01L 2924/13053	. . . . . Avalanche transistor
D	H01L 2924/13054	. . . . . Darlington transistor
D	H01L 2924/13055	. . . . . Insulated gate bipolar transistor [IGBT]
D	H01L 2924/13056	. . . . . Photo transistor
D	H01L 2924/1306	. . . . . Field-effect transistor [FET]
D	H01L 2924/13061	. . . . . Carbon nanotube field-effect transistor [CNFET]
D	H01L 2924/13062	. . . . . Junction field-effect transistor [JFET]
D	H01L 2924/13063	. . . . . Metal-Semiconductor Field-Effect Transistor [MESFET]
D	H01L 2924/13064	. . . . . High Electron Mobility Transistor [HEMT, HFET [heterostructure FET], MODFET]
D	H01L 2924/13066	. . . . . Inverted-T field effect transistor [ITFET]
D	H01L 2924/13067	. . . . . FinFET, source/drain region shapes fins on the silicon surface
D	H01L 2924/13068	. . . . . Fast-reverse epitaxial diode field-effect transistor [FREDFET]
D	H01L 2924/13069	. . . . . Thin film transistor [TFT]
D	H01L 2924/1307	. . . . . Organic Field-Effect Transistor [OFET]
D	H01L 2924/13071	. . . . . Ballistic transistor
D	H01L 2924/13072	. . . . . Sensor FET
D	H01L 2924/13073	. . . . . Ion-sensitive field-effect transistor [ISFET]
D	H01L 2924/13074	. . . . . Electrolyte-oxide-semiconductor field effect transistor [EOSFET], e.g. Neurochip
D	H01L 2924/13075	. . . . . Deoxyribonucleic acid field-effect transistor [DNAFET]
D	H01L 2924/13076	. . . . . DEPFET

D	H01L 2924/13078	. . . . . Unijunction transistors
D	H01L 2924/13079	. . . . . Single-electron transistors [SET]
D	H01L 2924/1308	. . . . . Nanofluidic transistor
D	H01L 2924/13081	. . . . . Multigate devices
D	H01L 2924/13082	. . . . . Tetrode transistor
D	H01L 2924/13083	. . . . . Pentode transistor
D	H01L 2924/13084	. . . . . Trigate transistor
D	H01L 2924/13085	. . . . . Dual-gate FETs
D	H01L 2924/13086	. . . . . Junctionless Nanowire Transistor [JNT]
D	H01L 2924/13087	. . . . . Vertical-Slit Field-Effect Transistor [VeSFET]
D	H01L 2924/13088	. . . . . Graphene Nanoribbon Field-Effect Transistor [GNRFET]
D	H01L 2924/13089	. . . . . Nanoparticle Organic Memory Field-Effect Transistor [NOMFET]
D	H01L 2924/1309	. . . . . Modulation-Doped Field Effect Transistor [MODFET]
D	H01L 2924/13091	. . . . . Metal-Oxide-Semiconductor Field-Effect Transistor [MOSFET]
D	H01L 2924/13092	. . . . . Dual-Gate Metal-Oxide-Semiconductor Field-Effect Transistor [DGMOSFET]
D	H01L 2924/14	. . . Integrated circuits
D	H01L 2924/141	. . . . Analog devices
D	H01L 2924/142	. . . . HF devices
D	H01L 2924/1421	. . . . . RF devices
D	H01L 2924/14211	. . . . . Voltage-controlled oscillator [VCO]
D	H01L 2924/14215	. . . . . Low-noise amplifier [LNA]
D	H01L 2924/1422	. . . . . Mixer
D	H01L 2924/14221	. . . . . Electronic mixer
D	H01L 2924/14222	. . . . . Frequency mixer
D	H01L 2924/1423	. . . . Monolithic Microwave Integrated Circuit [MMIC]
D	H01L 2924/1424	. . . . Operational amplifier
D	H01L 2924/1425	. . . . Converter
D	H01L 2924/14251	. . . . . Frequency converter
D	H01L 2924/14252	. . . . . Voltage converter
D	H01L 2924/14253	. . . . . Digital-to-analog converter [DAC]
D	H01L 2924/1426	. . . . Driver
D	H01L 2924/1427	. . . . Voltage regulator [VR]
D	H01L 2924/143	. . . Digital devices
D	H01L 2924/1431	. . . . Logic devices
D	H01L 2924/1432	. . . . Central processing unit [CPU]
D	H01L 2924/1433	. . . . Application-specific integrated circuit [ASIC]
D	H01L 2924/14335	. . . . Digital signal processor [DSP]
D	H01L 2924/1434	. . . . Memory
D	H01L 2924/1435	. . . . . Random-access memory [RAM]
D	H01L 2924/1436	. . . . . Dynamic random-access memory [DRAM]
D	H01L 2924/14361	. . . . . Synchronous dynamic random access memory [SDRAM]
D	H01L 2924/14362	. . . . . RAS-Only Refresh [ROR]
D	H01L 2924/14363	. . . . . CAS before RAS refresh [CBR]

D	H01L 2924/14364	. . . . . Multibank DRAM [MDRAM]
D	H01L 2924/14365	. . . . . Video DRAM [VRAM]
D	H01L 2924/14366	. . . . . Window DRAM [WRAM]
D	H01L 2924/14367	. . . . . Fast page mode DRAM [FPM DRAM]
D	H01L 2924/14368	. . . . . Extended data out DRAM [EDO DRAM]
D	H01L 2924/14369	. . . . . Burst EDO DRAM [BEDO DRAM]
D	H01L 2924/1437	. . . . . Static random-access memory [SRAM]
D	H01L 2924/1438	. . . . . Flash memory
D	H01L 2924/1441	. . . . . Ferroelectric RAM [FeRAM or FRAM]
D	H01L 2924/1442	. . . . . Synchronous graphics RAM [SGRAM]
D	H01L 2924/1443	. . . . . Non-volatile random-access memory [NVRAM]
D	H01L 2924/1444	. . . . . PBRAM
D	H01L 2924/145	. . . . . Read-only memory [ROM]
D	H01L 2924/1451	. . . . . EPROM
D	H01L 2924/14511	. . . . . EEPROM
D	H01L 2924/1453	. . . . . PROM
D	H01L 2924/146	. . Mixed devices
D	H01L 2924/1461	. . . MEMS
D	H01L 2924/15	. Details of package parts other than the semiconductor or other solid state devices to be connected
D	H01L 2924/151	. . Die mounting substrate <administratively transferred to H10W 70/60 >
D	H01L 2924/1511	. . . Structure <administratively transferred to H10W 70/60 >
D	H01L 2924/1515	. . . Shape <administratively transferred to H10W 70/60 >
D	H01L 2924/15151	. . . . the die mounting substrate comprising an aperture, e.g. for underfilling, outgassing, window type wire connections <administratively transferred to H10W 70/681 >
D	H01L 2924/15153	. . . . the die mounting substrate comprising a recess for hosting the device <administratively transferred to H10W 70/682 >
D	H01L 2924/15155	. . . . the shape of the recess being other than a cuboid <administratively transferred to H10W 70/682 >
D	H01L 2924/15156	. . . . . Side view <administratively transferred to H10W 70/682 >
D	H01L 2924/15157	. . . . . Top view <administratively transferred to H10W 70/682 >
D	H01L 2924/15158	. . . . the die mounting substrate being other than a cuboid
D	H01L 2924/15159	. . . . . Side view
D	H01L 2924/15162	. . . . . Top view
D	H01L 2924/15165	. . . Monolayer substrate
D	H01L 2924/1517	. . . Multilayer substrate <administratively transferred to H10W 70/685 >

- D H01L 2924/15172 Fan-out arrangement of the internal vias
<administratively transferred to [H10W 70/655](#)>
- D H01L 2924/15173 in a single layer of the multilayer substrate
<administratively transferred to [H10W 70/655](#)>
- D H01L 2924/15174 in different layers of the multilayer substrate
<administratively transferred to [H10W 70/655](#)>
- D H01L 2924/15182 Fan-in arrangement of the internal vias
<administratively transferred to [H10W 70/656](#)>
- D H01L 2924/15183 in a single layer of the multilayer substrate
<administratively transferred to [H10W 70/656](#)>
- D H01L 2924/15184 in different layers of the multilayer substrate
<administratively transferred to [H10W 70/656](#)>
- D H01L 2924/15192 Resurf arrangement of the internal vias
<administratively transferred to [H10W 70/63](#)>
- D H01L 2924/152 . . . Disposition
- D H01L 2924/153 . . . Connection portion
- D H01L 2924/1531 the connection portion being formed only on the surface of the substrate opposite to the die mounting surface
- D H01L 2924/15311 being a ball array, e.g. BGA
- D H01L 2924/15312 being a pin array, e.g. PGA
- D H01L 2924/15313 being a land array, e.g. LGA
- D H01L 2924/1532 the connection portion being formed on the die mounting surface of the substrate
- D H01L 2924/15321 being a ball array, e.g. BGA
- D H01L 2924/15322 being a pin array, e.g. PGA
- D H01L 2924/15323 being a land array, e.g. LGA
- D H01L 2924/1533 the connection portion being formed both on the die mounting surface of the substrate and outside the die mounting surface of the substrate
- D H01L 2924/15331 being a ball array, e.g. BGA
- D H01L 2924/15332 being a pin array, e.g. PGA
- D H01L 2924/15333 being a land array, e.g. LGA
- D H01L 2924/156 . . . Material
- D H01L 2924/157 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
- D H01L 2924/15701 the principal constituent melting at a temperature of less than 400 C
- D H01L 2924/15717 the principal constituent melting at a temperature of greater than or equal to 400 C and less than 950 C
- D H01L 2924/15724 Aluminium [Al] as principal constituent
- D H01L 2924/15738 the principal constituent melting at a temperature of greater than or equal to 950 C and less than 1550 C
- D H01L 2924/15747 Copper [Cu] as principal constituent
- D H01L 2924/1576 Iron [Fe] as principal constituent
- D H01L 2924/15763 the principal constituent melting at a temperature of greater than 1550 C

- D H01L 2924/15786 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
- D H01L 2924/15787 Ceramics, e.g. crystalline carbides, nitrides or oxides
- D H01L 2924/15788 Glasses, e.g. amorphous oxides, nitrides or fluorides
- D H01L 2924/1579 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
- D H01L 2924/15791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
- D H01L 2924/15793 with a principal constituent of the material being a solid not provided for in groups H01L 2924/157 - H01L 2924/15791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- D H01L 2924/15798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- D H01L 2924/161 . . Cap
<administratively transferred to [H10W 76/10](#)>
- D H01L 2924/1611 . . . Structure
<administratively transferred to [H10W 76/10](#)>
- D H01L 2924/1615 . . . Shape
<administratively transferred to [H10W 76/12](#)>
- D H01L 2924/16151 Cap comprising an aperture, e.g. for pressure control, encapsulation
- D H01L 2924/16152 Cap comprising a cavity for hosting the device, e.g. U-shaped cap
- D H01L 2924/16153 Cap enclosing a plurality of side-by-side cavities [e.g. E-shaped cap]
- D H01L 2924/1616 Cavity shape
- D H01L 2924/1617 Cavity coating
- D H01L 2924/16171 Material
- D H01L 2924/16172 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
- D H01L 2924/16173 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
- D H01L 2924/16174 Ceramics, e.g. crystalline carbides, nitrides or oxides
- D H01L 2924/16175 Glasses, e.g. amorphous oxides, nitrides or fluorides
- D H01L 2924/16176 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
- D H01L 2924/16177 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
- D H01L 2924/16178 with a principal constituent of the material being a solid not provided for in groups H01L 2924/157 - H01L 2924/15791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- D H01L 2924/16179 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- D H01L 2924/1619 Cavity coating shape
- D H01L 2924/16195 Flat cap [not enclosing an internal cavity]
- D H01L 2924/16196 Cap forming a cavity, e.g. being a curved metal foil
- D H01L 2924/162 . . . Disposition
- D H01L 2924/16235 Connecting to a semiconductor or solid-state bodies, i.e. cap-to-chip

- D H01L 2924/16251 Connecting to an item not being a semiconductor or solid-state body, e.g. cap-to-substrate
- D H01L 2924/1626 Cap-in-cap assemblies
- D H01L 2924/1627 stacked type assemblies, e.g. stacked multi-cavities
- D H01L 2924/163 Connection portion, e.g. seal
<administratively transferred to [H10W 76/60](#)>
- D H01L 2924/1631 Structure
<administratively transferred to [H10W 76/60](#)>
- D H01L 2924/16315 Shape
<administratively transferred to [H10W 76/63](#)>
- D H01L 2924/1632 Disposition
<administratively transferred to [H10W 76/63](#)>
- D H01L 2924/164 Material
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/165 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/16586 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/16587 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/16588 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/1659 with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/16593 with a principal constituent of the material being a solid not provided for in groups H01L 2924/157 - H01L 2924/15791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/16598 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 76/67](#)>
- D H01L 2924/166 Material
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/167 with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/16701 the principal constituent melting at a temperature of less than 400 °C
<administratively transferred to [H10W 76/17](#)>

- D H01L 2924/16717 the principal constituent melting at a temperature of greater than or equal to 400 C and less than 950 C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/16724 Aluminium [Al] as principal constituent
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/16738 the principal constituent melting at a temperature of greater than or equal to 950 C and less than 1550 C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/16747 Copper [Cu] as principal constituent
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/1676 Iron [Fe] as principal constituent
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/16763 the principal constituent melting at a temperature of greater than 1550 C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/16786 with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 76/18](#)>
- D H01L 2924/16787 Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 76/18](#)>
- D H01L 2924/16788 Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 76/18](#)>
- D H01L 2924/1679 with a principal constituent of the material being a polymer, e.g. polyester, phenolic-based polymer, epoxy
<administratively transferred to [H10W 76/18](#)>
- D H01L 2924/16791 The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 76/18](#)>
- D H01L 2924/16793 with a principal constituent of the material being a solid not provided for in groups H01L 2924/167 - H01L 2924/16791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
- D H01L 2924/16798 with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
- D H01L 2924/171 . . Frame
<administratively transferred to [H10W 76/10](#)>
- D H01L 2924/1711 . . . Structure
<administratively transferred to [H10W 76/10](#)>
- D H01L 2924/1715 . . . Shape
<administratively transferred to [H10W 76/12](#)>
- D H01L 2924/17151 Frame comprising an aperture, e.g. for pressure control, encapsulation
<administratively transferred to [H10W 76/167](#)>
- D H01L 2924/172 . . . Disposition
<administratively transferred to [H10W 76/10](#)>
- D H01L 2924/173 . . . Connection portion, e.g. seal
<administratively transferred to [H10W 76/60](#)>

- D H01L 2924/176 . . . Material
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/177 . . . with a principal constituent of the material being a metal or a metalloid, e.g. boron [B], silicon [Si], germanium [Ge], arsenic [As], antimony [Sb], tellurium [Te] and polonium [Po], and alloys thereof
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17701 . . . the principal constituent melting at a temperature of less than 400 °C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17717 . . . the principal constituent melting at a temperature of greater than or equal to 400 °C and less than 950 °C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17724 . . . Aluminium [Al] as principal constituent
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17738 . . . the principal constituent melting at a temperature of greater than or equal to 950 °C and less than 1550 °C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17747 . . . Copper [Cu] as principal constituent
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/1776 . . . Iron [Fe] as principal constituent
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17763 . . . the principal constituent melting at a temperature of greater than 1550 °C
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17786 . . . with a principal constituent of the material being a non-metallic, non-metalloid inorganic material
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17787 . . . Ceramics, e.g. crystalline carbides, nitrides or oxides
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17788 . . . Glasses, e.g. amorphous oxides, nitrides or fluorides
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/1779 . . . with a principal constituent of the material being a polymer, e.g. polyester, phenolic based polymer, epoxy
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17791 . . . The principal constituent being an elastomer, e.g. silicones, isoprene, neoprene
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17793 . . . with a principal constituent of the material being a solid not provided for in groups H01L 2924/177 - H01L 2924/17791, e.g. allotropes of carbon, fullerene, graphite, carbon-nanotubes, diamond
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/17798 . . . with a principal constituent of the material being a combination of two or more materials in the form of a matrix with a filler, i.e. being a hybrid material, e.g. segmented structures, foams
<administratively transferred to [H10W 76/17](#)>
- D H01L 2924/181 . . Encapsulation
<administratively transferred to [H10W 74/00](#)>

- D H01L 2924/1811
 - • • Structure
 - <administratively transferred to [H10W 74/00](#)>
- D H01L 2924/1815
 - • • Shape
 - <administratively transferred to [H10W 74/10](#)>
- D H01L 2924/1816
 - • • • Exposing the passive side of the semiconductor or solid-state body
 - <administratively transferred to [H10W 74/142](#)>
- D H01L 2924/18161
 - • • • • of a flip-chip
 - <administratively transferred to [H10W 74/142](#)>
- D H01L 2924/18162
 - • • • • of a chip with build-up interconnect
 - <administratively transferred to [H10W 74/142](#)>
- D H01L 2924/18165
 - • • • • of a wire-bonded chip
 - <administratively transferred to [H10W 74/142](#)>
- D H01L 2924/182
 - • • Disposition
 - <administratively transferred to [H10W 74/00](#)>
- D H01L 2924/183
 - • • Connection portion, e.g. seal
 - <administratively transferred to [H10W 74/127](#)>
- D H01L 2924/18301
 - • • • being an anchoring portion, i.e. mechanical interlocking between the encapsulation resin and another package part
 - <administratively transferred to [H10W 74/127](#)>
- D H01L 2924/186
 - • • Material
 - <administratively transferred to [H10W 74/40](#)>
- D H01L 2924/19
 - Details of hybrid assemblies other than the semiconductor or other solid state devices to be connected
- D H01L 2924/1901
 - • Structure
- D H01L 2924/19011
 - • • including integrated passive components
- D H01L 2924/19015
 - • • including thin film passive components
- D H01L 2924/1902
 - • • including thick film passive components
- D H01L 2924/1903
 - • • including wave guides
- D H01L 2924/19031
 - • • • being a strip line type
- D H01L 2924/19032
 - • • • being a microstrip line type
- D H01L 2924/19033
 - • • • being a coplanar line type
- D H01L 2924/19038
 - • • • being a hybrid line type
- D H01L 2924/19039
 - • • • • impedance transition between different types of wave guides
- D H01L 2924/1904
 - • • Component type
- D H01L 2924/19041
 - • • • being a capacitor
- D H01L 2924/19042
 - • • • being an inductor
- D H01L 2924/19043
 - • • • being a resistor
- D H01L 2924/1905
 - • Shape
- D H01L 2924/19051
 - • • Impedance matching structure [e.g. balun]
- D H01L 2924/191
 - • Disposition
- D H01L 2924/19101
 - • • of discrete passive components
- D H01L 2924/19102
 - • • • in a stacked assembly with the semiconductor or solid state device
- D H01L 2924/19103
 - • • • • interposed between the semiconductor or solid state device and the die mounting substrate, i.e. chip-on-passive

D	H01L 2924/19104	• • • • on the semiconductor or solid-state device, i.e. passive-on-chip
D	H01L 2924/19105	• • • • in a side-by-side arrangement on a common die mounting substrate
D	H01L 2924/19106	• • • • in a mirrored arrangement on two different side of a common die mounting substrate
D	H01L 2924/19107	• • • • off-chip wires
D	H01L 2924/20	• Parameters
D	H01L 2924/201	• Temperature ranges
D	H01L 2924/20101	• • Temperature range $T < 0\text{ }^{\circ}\text{C}$, $T < 273.15\text{ K}$
D	H01L 2924/20102	• • Temperature range $0\text{ }^{\circ}\text{C} = < T < 60\text{ }^{\circ}\text{C}$, $273.15\text{ K} = < T < 333.15\text{ K}$
D	H01L 2924/20103	• • Temperature range $60\text{ }^{\circ}\text{C} = < T < 100\text{ }^{\circ}\text{C}$, $333.15\text{ K} = < T < 373.15\text{ K}$
D	H01L 2924/20104	• • Temperature range $100\text{ }^{\circ}\text{C} = < T < 150\text{ }^{\circ}\text{C}$, $373.15\text{ K} = < T < 423.15\text{ K}$
D	H01L 2924/20105	• • Temperature range $150\text{ }^{\circ}\text{C} = < T < 200\text{ }^{\circ}\text{C}$, $423.15\text{ K} = < T < 473.15\text{ K}$
D	H01L 2924/20106	• • Temperature range $200\text{ }^{\circ}\text{C} = < T < 250\text{ }^{\circ}\text{C}$, $473.15\text{ K} = < T < 523.15\text{ K}$
D	H01L 2924/20107	• • Temperature range $250\text{ }^{\circ}\text{C} = < T < 300\text{ }^{\circ}\text{C}$, $523.15\text{ K} = < T < 573.15\text{ K}$
D	H01L 2924/20108	• • Temperature range $300\text{ }^{\circ}\text{C} = < T < 350\text{ }^{\circ}\text{C}$, $573.15\text{ K} = < T < 623.15\text{ K}$
D	H01L 2924/20109	• • Temperature range $350\text{ }^{\circ}\text{C} = < T < 400\text{ }^{\circ}\text{C}$, $623.15\text{ K} = < T < 673.15\text{ K}$
D	H01L 2924/2011	• • Temperature range $400\text{ }^{\circ}\text{C} = < T < 450\text{ }^{\circ}\text{C}$, $673.15\text{ K} = < T < 723.15\text{ K}$
D	H01L 2924/20111	• • Temperature range $450\text{ }^{\circ}\text{C} = < T < 500\text{ }^{\circ}\text{C}$, $723.15\text{ K} = < T < 773.15\text{ K}$
D	H01L 2924/202	• Electromagnetic wavelength ranges [W]
D	H01L 2924/20201	• • Gamma radiation, i.e. wavelength less than 0.01 nm
D	H01L 2924/20202	• • X-ray radiation, i.e. wavelength 0.01 to 10 nm
D	H01L 2924/2021	• • Ultraviolet radiation
D	H01L 2924/20211	• • • UV-C $100 = < W < 280\text{ nm}$
D	H01L 2924/20212	• • • UV-B $280 = < W < 315\text{ nm}$
D	H01L 2924/20213	• • • UV-A $315 = < W < 400\text{ nm}$
D	H01L 2924/2024	• • Visible spectrum wavelength $390 = < W < 700\text{ nm}$, i.e. 400-790 THz
D	H01L 2924/2026	• • Infrared radiation $700 = < W < 3000\text{ nm}$
D	H01L 2924/20261	• • • IR-A $700 = < W < 1400\text{ nm}$, i.e. 215 THz-430 THz
D	H01L 2924/20262	• • • IR-B $1400 = < W < 3000\text{ nm}$, i.e. 100THz-215 THz
D	H01L 2924/20263	• • • IR-C $3000\text{ nm} = < W < 1\text{ mm}$, i.e. 300 GHz-100THz
D	H01L 2924/2027	• • Radio 1 mm – km 300 GHz – 3 Hz
D	H01L 2924/20271	• • • Microwave radiation 1 mm – 1 meter, i.e. 300 GHz – 300 MHz
D	H01L 2924/203	• Ultrasonic frequency ranges, i.e. KHz
D	H01L 2924/20301	• • Ultrasonic frequency [f] $f < 25\text{ kHz}$
D	H01L 2924/20302	• • Ultrasonic frequency [f] $25\text{ KHz} = < f < 50\text{ KHz}$
D	H01L 2924/20303	• • Ultrasonic frequency [f] $50\text{ KHz} = < f < 75\text{ KHz}$
D	H01L 2924/20304	• • Ultrasonic frequency [f] $75\text{ KHz} = < f < 100\text{ KHz}$
D	H01L 2924/20305	• • Ultrasonic frequency [f] $100\text{ KHz} = < f < 125\text{ KHz}$
D	H01L 2924/20306	• • Ultrasonic frequency [f] $125\text{ KHz} = < f < 150\text{ KHz}$
D	H01L 2924/20307	• • Ultrasonic frequency [f] $150\text{ KHz} = < f < 175\text{ KHz}$
D	H01L 2924/20308	• • Ultrasonic frequency [f] $175\text{ KHz} = < f < 200\text{ KHz}$
D	H01L 2924/20309	• • Ultrasonic frequency [f] $f \geq 200\text{ KHz}$
D	H01L 2924/206	• Length ranges
D	H01L 2924/2064	• • larger or equal to 1 micron less than 100 microns

D	H01L 2924/20641	• • • larger or equal to 100 microns less than 200 microns
D	H01L 2924/20642	• • • larger or equal to 200 microns less than 300 microns
D	H01L 2924/20643	• • • larger or equal to 300 microns less than 400 microns
D	H01L 2924/20644	• • • larger or equal to 400 microns less than 500 microns
D	H01L 2924/20645	• • • larger or equal to 500 microns less than 600 microns
D	H01L 2924/20646	• • • larger or equal to 600 microns less than 700 microns
D	H01L 2924/20647	• • • larger or equal to 700 microns less than 800 microns
D	H01L 2924/20648	• • • larger or equal to 800 microns less than 900 microns
D	H01L 2924/20649	• • • larger or equal to 900 microns less than 1000 microns
D	H01L 2924/2065	• • • larger or equal to 1000 microns less than 1500 microns
D	H01L 2924/20651	• • • larger or equal to 1500 microns less than 2000 microns
D	H01L 2924/20652	• • • larger or equal to 2000 microns less than 2500 microns
D	H01L 2924/20653	• • • larger or equal to 2500 microns less than 3000 microns
D	H01L 2924/20654	• • • larger or equal to 3000 microns less than 4000 microns
D	H01L 2924/20655	• • • larger or equal to 4000 microns less than 5000 microns
D	H01L 2924/20656	• • • larger or equal to 5000 microns less than 6000 microns
D	H01L 2924/20657	• • • larger or equal to 6000 microns less than 7000 microns
D	H01L 2924/20658	• • • larger or equal to 7000 microns less than 8000 microns
D	H01L 2924/207	• • Diameter ranges
D	H01L 2924/2075	• • • larger or equal to 1 micron less than 10 microns
D	H01L 2924/20751	• • • larger or equal to 10 microns less than 20 microns
D	H01L 2924/20752	• • • larger or equal to 20 microns less than 30 microns
D	H01L 2924/20753	• • • larger or equal to 30 microns less than 40 microns
D	H01L 2924/20754	• • • larger or equal to 40 microns less than 50 microns
D	H01L 2924/20755	• • • larger or equal to 50 microns less than 60 microns
D	H01L 2924/20756	• • • larger or equal to 60 microns less than 70 microns
D	H01L 2924/20757	• • • larger or equal to 70 microns less than 80 microns
D	H01L 2924/20758	• • • larger or equal to 80 microns less than 90 microns
D	H01L 2924/20759	• • • larger or equal to 90 microns less than 100 microns
D	H01L 2924/2076	• • • equal to or larger than 100 microns
D	H01L 2924/30	• Technical effects
D	H01L 2924/301	• • Electrical effects
D	H01L 2924/30101	• • • Resistance
D	H01L 2924/30105	• • • Capacitance
D	H01L 2924/30107	• • • Inductance
D	H01L 2924/3011	• • • Impedance
D	H01L 2924/30111	• • • • matching
D	H01L 2924/302	• • • Electrostatic
D	H01L 2924/30201	• • • • Charge
D	H01L 2924/30205	• • • • Discharge
D	H01L 2924/3025	• • • Electromagnetic shielding
D	H01L 2924/35	• • Mechanical effects
D	H01L 2924/351	• • • Thermal stress
D	H01L 2924/3511	• • • • Warping

D	H01L 2924/3512	. . . . Cracking
D	H01L 2924/35121	. . . . . Peeling or delaminating
D	H01L 2924/36	. . Material-effects
D	H01L 2924/364	. . . Polymers
D	H01L 2924/3641	. . . . Outgassing
D	H01L 2924/365	. . . Metallurgical-effects
D	H01L 2924/3651	. . . . Formation of intermetallics
		<administratively transferred to H10W 95/00 >
D	H01L 2924/36511	. . . . . Purple-plague
		<administratively transferred to H10W 95/00 >
D	H01L 2924/3656	. . . . Formation of Kirkendall-voids
		<administratively transferred to H10W 95/00 >
D	H01L 2924/37	. . Effects of the manufacturing process
D	H01L 2924/37001	. . . Yield
D	H01L 2924/37002	. . . Shelf life
D	H01L 2924/3701	. . . increased through-put
D	H01L 2924/38	. . Effects and problems related to the device-integration
D	H01L 2924/381	. . . Pitch-distance
D	H01L 2924/384	. . . Bump-effects
D	H01L 2924/3841	. . . . Solder-bridging
D	H01L 2924/386	. . . Wire-effects
D	H01L 2924/3861	. . . . Sag
D	H01L 2924/3862	. . . . Sweep
D	H01L 2924/40	. Details of apparatuses used for either manufacturing connectors or connecting the semiconductor or solid-state body
D	H01L 2924/401	. . LASER
D	H01L 2924/40101	. . . Mode
D	H01L 2924/40102	. . . . being-pulsed
D	H01L 2924/40103	. . . . being-continous
D	H01L 2924/40105	. . . Beam-details
D	H01L 2924/4015	. . . . Shape
D	H01L 2924/402	. . . Type
D	H01L 2924/40201	. . . . being-a-chemical
D	H01L 2924/40202	. . . . . Deuterium-Flouride [DF] LASER
D	H01L 2924/40203	. . . . . Hydrogen-Flouride [HF] LASER
D	H01L 2924/40207	. . . . . Dye-laser
D	H01L 2924/4025	. . . . being-a-gas
D	H01L 2924/40251	. . . . . argon-ion LASER
D	H01L 2924/40252	. . . . . CO ₂ LASER
D	H01L 2924/40253	. . . . . HeAg LASER
D	H01L 2924/40254	. . . . . HeNe LASER
D	H01L 2924/40255	. . . . . NeCu LASER
D	H01L 2924/403	. . . . being-an-Excimer
D	H01L 2924/40301	. . . . . ArF LASER

D	H01L 2924/40302	. . . . F2 LASER
D	H01L 2924/40303	. . . . KrCl LASER
D	H01L 2924/40304	. . . . KrF LASER
D	H01L 2924/40305	. . . . XeCl LASER
D	H01L 2924/40306	. . . . XeF LASER
D	H01L 2924/4035	. . . . being a fiber hosted LASER
D	H01L 2924/404	. . . . being a solid state
D	H01L 2924/40401	. . . . Free electron LASER
D	H01L 2924/40402	. . . . Photonic crystal LASER
D	H01L 2924/40403	. . . . Fiber solid state LASER
D	H01L 2924/40404	. . . . Yttrium Aluminium Garnet Nd:YAG LASER
D	H01L 2924/40405	. . . . Yttrium Lithium Fluoride Nd:YLF LASER
D	H01L 2924/40406	. . . . Ruby LASER
D	H01L 2924/40407	. . . . Yb:YAG LASER
D	H01L 2924/405	. . . Wavelength
D	H01L 2924/40501	. . . UV spectrum
D	H01L 2924/40502	. . . Visible spectrum
D	H01L 2924/40503	. . . IR spectrum

Project: Unknown (H01Q)

U	H01Q 1/00	Details of, or arrangements associated with, antennas (arrangements for varying orientation of directional pattern H01Q 3/00)
		NOTES
		1. This group <u>covers</u> only: <ul style="list-style-type: none"> • structural details or features of antennas not dependent on electric operation; • structural details or features applicable to more than one type of antenna or antenna element.
		2. Structural details or features described with reference to, or clearly applicable only to, antennas or antenna elements of a particular type are classified in the group appropriate to that type
U	H01Q 1/12	• Supports; Mounting means
U	H01Q 1/22	• • by structural association with other equipment or articles
M	H01Q 1/2291	• • {used in bluetooth or WI-FI <i>Bluetooth® or Wi-Fi®</i> devices of Wireless Local Area Networks [WLAN] (H01Q 1/241 takes precedence; WLAN in general H04W)}

Project: MP12840 (H01Q)

U	H01Q 15/00	Devices for reflection, refraction, diffraction or polarisation of waves radiated from an antenna, e.g. quasi-optical devices (variable for purpose of altering directivity H01Q 3/00; arrangements of such devices for guiding waves H01P 3/20; variable for purpose of modulation H03C 7/02)
U	H01Q 15/02	• Refracting or diffracting devices, e.g. lens, prism
M	H01Q 15/10	• • comprising three-dimensional <i>[3D]</i> array of impedance discontinuities, e.g. holes in conductive surfaces or conductive discs forming artificial dielectric
U	H01Q 15/14	• Reflecting surfaces; Equivalent structures {(electromagnetic shields H01Q 1/526)}
M	H01Q 15/16	• • curved in two dimensions <i>[2D]</i> , e.g. paraboloidal

Project: MP12823 (H01R)

- U H01R 13/00 Details of coupling devices of the kinds covered by groups [H01R 12/70](#) or [H01R 24/00](#) - [H01R 33/00](#)
- U H01R 13/46 · Bases; Cases
- U H01R 13/502 · · composed of different pieces ([H01R 13/514](#) takes precedence)
- M H01R 13/504 · · · different pieces being moulded, cemented, welded, e.g. ultrasonic *welding*, or swaged together

Project: RP12723 (H02J)

- M H02J ***ELECTRIC POWER NETWORKS; CIRCUIT ARRANGEMENTS OR SYSTEMS FOR SUPPLYING OR DISTRIBUTING ELECTRIC POWER; SYSTEMS FOR STORING ELECTRIC ENERGY***

NOTES

1. This subclass covers:

- AC ~~or DC~~, DC or unspecified mains or power distribution networks;
- remote operation of AC, DC or unspecified power networks;
- circuit arrangements for battery supplies, including charging or control thereof, or coordinated supply from two or more sources of any kind charging or discharging batteries when the load has no particular limiting effect on the circuit arrangement;
- long-term energy storage systems not otherwise provided for, having an interaction with AC or DC power networks;
- circuit arrangements or systems for wireless supply or distribution of electric power;
- operational aspects of smart grids, namely the integration of power, communications and information technologies for an improved electric power infrastructure serving loads while providing for evolution of end-use applications.

2. This subclass does not cover:

- the control of a single motor, generator or dynamo-electric converter, of the types covered by subclass [H01F](#) or [H02K](#), which is covered by subclass [H02P](#);
- the control of a single motor or generator, of the types covered by subclass [H02N](#), which is covered by that subclass [H02N](#).

3. In this subclass, it is desirable to add the indexing codes of groups [H02J 2101/00](#) - [H02J 2207/00](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

- U H02J 1/00 **Circuit arrangements for DC mains or DC distribution networks**
- U H02J 1/001 · {Hot plugging or unplugging of load or power modules to or from power distribution networks}
- M H02J 1/002 · {Intermediate AC, e.g. DC supply with intermediated AC distribution} using intermediate DC-AC-DC conversion
- U H02J 1/02 · Arrangements for reducing harmonics or ripples
- M H02J 1/04 · ~~Constant~~ Current-controlled supply systems, e.g. constant-current supply systems
- M H02J 1/06 · Two-wire DC power distribution systems
- M H02J 1/08 · Three-wire DC power distribution systems; Systems having more than three wires

- M H02J 1/082
 - ~~{Plural DC voltage, e.g. DC supply voltage with at least two DC supplies with two or more different DC voltage levels}~~
- U H02J 1/084
 - {for selectively connecting the load or loads to one or several among a plurality of power lines or power sources}
- U H02J 1/086
 - • {for providing alternative feeding paths between load or loads and source or sources when the main path fails}
- U H02J 1/10
 - Parallel operation of DC sources
- M H02J 1/102
 - ~~{being switching converters (H02J 1/108, H02J 1/12 take precedence)}~~
- U H02J 1/106
 - {for load balancing, symmetrisation, or sharing}
- M H02J 1/108
 - ~~{using diodes having arrangements for blocking reverse current flow, e.g. using diodes (H02J 1/12 takes precedence)}~~
- U H02J 1/109
 - {Scheduling or re-scheduling the operation of the DC sources in a particular order, e.g. connecting or disconnecting the sources in sequential, alternating or in subsets, to meet a given demand}
- M H02J 1/12
 - Parallel operation of DC ~~generators with converters, e.g. with mercury-arc rectifier~~ *sources having power converters with further DC sources without power converters*
- U H02J 1/122
 - {Provisions for temporary connection of DC sources of essentially the same voltage, e.g. jumpstart cables}
- C H02J 1/14
 - Balancing ~~the load in a network~~ *load and power generation in DC networks*

WARNING

Group H02J 1/14 is impacted by reclassification into groups H02J 1/15 and H02J 1/16.

Groups H02J 1/14, H02J 1/15 and H02J 1/16 should be considered in order to perform a complete search.

- N H02J 1/15
 - ~~characterised by load management~~

WARNING

Group H02J 1/15 is incomplete pending reclassification of documents from group H02J 1/14.

Groups H02J 1/14 and H02J 1/15 should be considered in order to perform a complete search.

- T H02J 1/16
 - using *energy storage units, e.g. batteries or* dynamo-electric machines coupled to flywheels

WARNING

Group H02J 1/16 is incomplete pending reclassification of documents from group H02J 1/14.

Groups H02J 1/14 and H02J 1/16 should be considered in order to perform a complete search.

C H02J 3/00 **Circuit arrangements for AC mains or AC distribution networks**

WARNING

Group H02J 3/00 is impacted by reclassification into groups H02J 3/11, H02J 13/16, H02J 13/18, H02J 13/181, H02J 13/182 and H02J 13/183.

All groups listed in this Warning should be considered in order to perform a complete search.

- C H02J 3/001
 - ~~{Methods to deal with contingencies}~~ *Arrangements for handling faults or abnormalities, e.g. abnormalities, faults or failures* ~~emergencies or contingencies~~

WARNING

Group H02J 3/001 is impacted by reclassification into group H02J 3/0014.

Groups H02J 3/001 and H02J 3/0014 should be considered in order to perform a complete search.

- | | | |
|---|--------------|---|
| M | H02J 3/0012 | <ul style="list-style-type: none"> • {Contingency detection} characterised by the contingency detection means in AC networks, e.g. using phasor measurement units [PMU], synchrophasors or contingency analysis |
| U | H02J 3/00125 | <ul style="list-style-type: none"> • {Transmission line or load transient problems, e.g. overvoltage, resonance or self-excitation of inductive loads (H02J 3/01 takes precedence)} |
| N | H02J 3/0014 | <ul style="list-style-type: none"> • for preventing or reducing power oscillations in networks <p><u>WARNING</u>
Group H02J 3/0014 is incomplete pending reclassification of documents from group H02J 3/001.
Groups H02J 3/001 and H02J 3/0014 should be considered in order to perform a complete search.</p> |
| N | H02J 3/00142 | <ul style="list-style-type: none"> • • {Oscillations concerning frequency} |
| N | H02J 3/00144 | <ul style="list-style-type: none"> • • {using phasor measuring units [PMU]} |
| U | H02J 3/002 | <ul style="list-style-type: none"> • {Flicker reduction, e.g. compensation of flicker introduced by non-linear load} |
| U | H02J 3/003 | <ul style="list-style-type: none"> • {Load forecast, e.g. methods or systems for forecasting future load demand} |
| U | H02J 3/004 | <ul style="list-style-type: none"> • {Generation forecast, e.g. methods or systems for forecasting future energy generation} |
| M | H02J 3/007 | <ul style="list-style-type: none"> • {Arrangements for selectively connecting the load or one or more loads to one or several among a plurality of power lines or power sources <i>more power sources or power lines</i> {for providing uninterruptable power supply H02J 9/00}} |
| M | H02J 3/0073 | <ul style="list-style-type: none"> • • {for by providing alternative feeding paths between load and source when the main path fails, e.g. transformers, busbars} |
| U | H02J 3/0075 | <ul style="list-style-type: none"> • {for providing alternative feeding paths between load and source according to economic or energy efficiency considerations, e.g. economic dispatch} |
| M | H02J 3/008 | <ul style="list-style-type: none"> • {involving trading of energy or energy transmission rights} <i>Circuit arrangements for power supply or distribution technologies responsive to energy trading</i> |
| U | H02J 3/01 | <ul style="list-style-type: none"> • Arrangements for reducing harmonics or ripples |
| C | H02J 3/02 | <ul style="list-style-type: none"> • using a single network for simultaneous distribution of AC power at different frequencies; using a single network for simultaneous distribution of AC power and of DC power <p><u>WARNING</u>
Group H02J 3/02 is impacted by reclassification into group H02J 4/10.
Groups H02J 3/02 and H02J 4/10 should be considered in order to perform a complete search.</p> |
| M | H02J 3/04 | <ul style="list-style-type: none"> • <i>Arrangements</i> for connecting networks of the same frequency but supplied from different sources |
| M | H02J 3/06 | <ul style="list-style-type: none"> • • Controlling <i>the</i> transfer of power between connected networks; Controlling <i>load</i> sharing of load between connected networks |
| M | H02J 3/08 | <ul style="list-style-type: none"> • • Synchronising <i>Synchronisation</i> of networks |
| M | H02J 3/10 | <ul style="list-style-type: none"> • Constant-Current-controlled supply systems, e.g. constant-current supply systems |
| N | H02J 3/11 | <ul style="list-style-type: none"> • Arrangements for adjusting frequency in AC networks, e.g. by control of active power <p><u>WARNING</u>
Group H02J 3/11 is incomplete pending reclassification of documents from group H02J 3/00.</p> |

Groups [H02J 3/00](#) and [H02J 3/11](#) should be considered in order to perform a complete search.

- | | | |
|---|------------|--|
| M | H02J 3/12 | <ul style="list-style-type: none"> • <i>Arrangements</i> for adjusting voltage in AC networks by changing a characteristic of the network load |
| M | H02J 3/14 | <ul style="list-style-type: none"> • by switching loads on to, or off from, network<i>the networks</i>, e.g. progressively balanced loading |
| D | H02J 3/144 | <ul style="list-style-type: none"> • • {Demand-response operation of the power transmission or distribution network <administratively transferred to H02J 3/17> |
| U | H02J 3/16 | <ul style="list-style-type: none"> • • by adjustment of reactive power |
| Q | H02J 3/17 | <ul style="list-style-type: none"> • <i>Demand-responsive operation of AC power transmission or distribution networks</i> |

WARNING

Group [H02J 3/17](#) is impacted by reclassification into group [H02J 3/175](#).

Groups [H02J 3/17](#) and [H02J 3/175](#) should be considered in order to perform a complete search.

- N H02J 3/175 • • responsive to end-user or load operations ([H02J 3/14](#) takes precedence)

WARNING

Group [H02J 3/175](#) is incomplete pending reclassification of documents from group [H02J 3/17](#).

Groups [H02J 3/17](#) and [H02J 3/175](#) should be considered in order to perform a complete search.

- | | | |
|---|-------------|--|
| T | H02J 3/18 | <ul style="list-style-type: none"> • Arrangements for adjusting, eliminating or compensating reactive power in networks (for adjustment of voltage H02J 3/16) |
| M | H02J 3/1807 | <ul style="list-style-type: none"> • • {using series compensators}, e.g. <i>thyristor-controlled series capacitors [TCSC]</i> |
| M | H02J 3/1814 | <ul style="list-style-type: none"> • • • {wherein at least one reactive element is <i>having reactive elements</i> actively controlled by a bridge converter<i>converters</i>, e.g. unified power flow controllers [UPFC]} <i>or controlled series voltage compensators</i> |
| M | H02J 3/1821 | <ul style="list-style-type: none"> • • {using shunt compensators (H02J 3/1807, H02J 3/1878 take precedence)} |
| M | H02J 3/1828 | <ul style="list-style-type: none"> • • • {with stepwise control, the possibility of switching in or out the entire compensating arrangement not being considered as stepwise control} <i>e.g. switched capacitor banks</i> |
| M | H02J 3/1835 | <ul style="list-style-type: none"> • • • {with stepless control} |
| M | H02J 3/1842 | <ul style="list-style-type: none"> • • • • {wherein at least one reactive element is <i>having reactive elements</i> actively controlled by a bridge converter<i>converters</i>, e.g. active filters} <i>or static compensators [STATCOM]</i> |
| M | H02J 3/185 | <ul style="list-style-type: none"> • • • • • {wherein such reactive element is <i>the reactive elements being</i> purely inductive, e.g. superconductive magnetic energy storage systems <i>systems</i> [SMES]} |
| M | H02J 3/1857 | <ul style="list-style-type: none"> • • • • • {wherein such bridge converter is a multilevel converter} <i>the bridge converters being multilevel bridge converters or modular multilevel converters</i> |
| M | H02J 3/1864 | <ul style="list-style-type: none"> • • • • • {wherein the stepless control of reactive power is obtained by at least one reactive element <i>using reactive elements</i> connected in series with a semiconductor switch} <i>semiconductor switches, e.g. static VAR compensators [SVC], thyristor-controlled reactors [TCR] or thyristor-switched capacitors [TSC]</i> |
| U | H02J 3/1871 | <ul style="list-style-type: none"> • • • {Methods for planning installation of shunt reactive power compensators} |
| M | H02J 3/1878 | <ul style="list-style-type: none"> • • {using tap changing or phase shifting transformers} |

- M H02J 3/1885 • • {using rotating ~~means~~ **AC generators**, e.g. synchronous generators}
- M H02J 3/1892 • • {the arrangements being an integral part of the ~~load, e.g. a motor, or of its control-circuit~~ **loads or of their control circuits**}
- D H02J 3/20 • • in long overhead lines
<administratively transferred to [H02J 3/18](#)>
- D H02J 3/22 • • in cables
<administratively transferred to [H02J 3/18](#)>
- D H02J 3/24 • Arrangements for preventing or reducing oscillations of power in networks (by control effected upon a single generator H02P 9/00)
<administratively transferred to [H02J 3/0014](#)>
- D H02J 3/241 • • {The oscillation concerning frequency}
<administratively transferred to [H02J 3/00142](#)>
- D H02J 3/242 • • {using phasor measuring units [PMU]}
<administratively transferred to [H02J 3/00144](#)>
- U H02J 3/26 • Arrangements for eliminating or reducing asymmetry in polyphase networks
- M H02J 3/28 • Arrangements for balancing of the load in ~~a network~~ **networks** by storage of energy
- U H02J 3/30 • • using dynamo-electric machines coupled to flywheels
- M H02J 3/32 • • using batteries **or super capacitors** with converting means
- U H02J 3/322 • • • {the battery being on-board an electric or hybrid vehicle, e.g. vehicle to grid arrangements [V2G], power aggregation, use of the battery for network load balancing, coordinated or cooperative battery charging}
- U H02J 3/34 • Arrangements for transfer of electric power between networks of substantially different frequency
- M H02J 3/36 • Arrangements for transfer of electric power between AC networks via ~~a high-tension DC link~~ **voltage DC [HVDC] links**; Arrangements for transfer of electric power between generators and networks via HVDC links
- U H02J 2003/365 • • {Reducing harmonics or oscillations in HVDC}
- C H02J 3/38 • Arrangements for ~~parallelly~~ feeding a single network **by from** two or more generators, ~~converters or transformers~~ **or sources in parallel**; Arrangements for feeding already energised networks from additional generators or sources in parallel

WARNING

Group H02J 3/38 is impacted by reclassification into groups [H02J 3/40](#), [H02J 3/44](#), [H02J 3/46](#), [H02J 3/466](#) and [H02J 3/50](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- U H02J 3/381 • • {Dispersed generators}
- M H02J 3/388 • • {~~Islanding, i.e. disconnection of local power supply from the network~~ **Arrangements for the handling of islanding, e.g. for disconnection or for avoiding the disconnection of power**}
- T H02J 3/40 • • ~~Synchronising a generator~~ **Synchronisation of generators** for connection to a network or to another generator

WARNING

Groups [H02J 3/40](#) and [H02J 3/44](#) are incomplete pending reclassification of documents from group [H02J 3/38](#).

Groups [H02J 3/38](#), [H02J 3/40](#) and [H02J 3/44](#) should be considered in order to perform a complete search.

- U H02J 3/42 . . . with automatic parallel connection when synchronisation is achieved
- T H02J 3/44 . . . with means for ensuring correct phase sequence
- T H02J 3/46 . . . Controlling ~~of~~ the sharing of ~~output~~*generated power* between the generators, ~~converters, or transformers~~*sources or networks*
- WARNING**
Groups H02J 3/46, H02J 3/466 and H02J 3/50 are incomplete pending reclassification of documents from group H02J 3/38. All groups listed in this Warning should be considered in order to perform a complete search.
- T H02J 3/466 . . . {~~Scheduling~~*Scheduling or selectively controlling* the operation of the generators *or sources*, e.g. connecting or disconnecting generators to meet a ~~given~~-demand}
- M H02J 3/472 . . . {~~For~~*for* selectively connecting the AC sources in a particular order, e.g. sequential, alternating or subsets of sources}
- M H02J 3/48 . . . Controlling the sharing of ~~the in-phase component~~*active power*
- T H02J 3/50 . . . Controlling the sharing of ~~the out-of-phase component~~*reactive power*
- C H02J 4/00** **Circuit arrangements for mains or distribution networks not specified as AC or DC; *Circuit arrangements for mains or distribution networks combining AC and DC sections or sub-networks (arrangements using intermediate DC-AC-DC conversion H02J 1/002; arrangements using high-voltage DC [HVDC] links H02J 3/36)***
- WARNING**
Group H02J 4/00 is impacted by reclassification into groups H02J 4/10 and H02J 4/20 - H02J 4/25. Groups H02J 4/00, H02J 4/10 and H02J 4/20 - H02J 4/25 should be considered in order to perform a complete search.
- N H02J 4/10 . . . using a single network for simultaneous distribution of AC and DC power
- WARNING**
Group H02J 4/10 is incomplete pending reclassification of documents from groups H02J 3/02 and H02J 4/00. Groups H02J 3/02, H02J 4/00 and H02J 4/10 should be considered in order to perform a complete search.
- N H02J 4/20 . . . Networks integrating separated AC and DC power sections
- WARNING**
Groups H02J 4/20 and H02J 4/25 are incomplete pending reclassification of documents from group H02J 4/00. Groups H02J 4/00, H02J 4/20 and H02J 4/25 should be considered in order to perform a complete search.
- N H02J 4/25 . . . for transfer of electric power between AC and DC networks, e.g. for supplying the DC section within a load from an AC mains system
- D H02J 5/00** **Circuit arrangements for transfer of electric power between AC networks and DC networks (H02J 3/36 takes precedence)**
 <administratively transferred to [H02J 4/25](#)>

Project: RP12824 (H02J)

- M H02J 7/00** **Circuit arrangements for charging or ~~depolarising~~*discharging* batteries or for supplying loads from batteries**

- D H02J 7/00032
 - {characterised by data exchange}
 - <administratively transferred to [H02J 7/40](#)>
- D H02J 7/00034
 - • {Charger exchanging data with an electronic device, i.e. telephone, whose internal battery is under charge}
 - <administratively transferred to [H02J 7/42](#)>
- D H02J 7/00036
 - • {Charger exchanging data with battery}
 - <administratively transferred to [H02J 7/44](#)>
- D H02J 7/00038
 - • {using passive battery identification means, e.g. resistors or capacitors (identification by mechanical connections H02J 7/0045)}
 - <administratively transferred to [H02J 7/443](#)>
- D H02J 7/00041
 - • • {in response to measured battery parameters, e.g. voltage, current or temperature profile}
 - <administratively transferred to [H02J 7/445](#)>
- D H02J 7/00043
 - • • {using switches, contacts or markings, e.g. optical, magnetic or barcode}
 - <administratively transferred to [H02J 7/448](#)>
- D H02J 7/00045
 - • {Authentication, i.e. circuits for checking compatibility between one component, e.g. a battery or a battery charger, and another component, e.g. a power source}
 - <administratively transferred to [H02J 7/47](#)>
- D H02J 7/00047
 - {with provisions for charging different types of batteries}
 - <administratively transferred to [H02J 7/485](#)>
- D H02J 7/0013
 - {acting upon several batteries simultaneously or sequentially (H02J 7/1423 takes precedence)}
 - <administratively transferred to [H02J 7/50](#)>
- D H02J 7/0014
 - • {Circuits for equalisation of charge between batteries}
 - <administratively transferred to [H02J 7/52](#)>
- D H02J 7/0016
 - • • {using shunting, discharge or bypass circuits}
 - <administratively transferred to [H02J 7/54](#)>
- D H02J 7/0018
 - • • {using separate charge circuits}
 - <administratively transferred to [H02J 7/56](#)>
- D H02J 7/0019
 - • • {using switched or multiplexed charge circuits}
 - <administratively transferred to [H02J 7/56](#)>
- D H02J 7/0024
 - • {Parallel/serial switching of connection of batteries to charge or load circuit}
 - <administratively transferred to [H02J 7/575](#)>
- D H02J 7/0025
 - • {Sequential battery discharge in systems with a plurality of batteries}
 - <administratively transferred to [H02J 7/585](#)>
- D H02J 7/0029
 - {with safety or protection devices or circuits}
 - <administratively transferred to [H02J 7/60](#)>
- D H02J 7/00302
 - • {Overcharge protection}
 - <administratively transferred to [H02J 7/61](#)>
- D H02J 7/00304
 - • {Overcurrent protection}
 - <administratively transferred to [H02J 7/62](#)>
- D H02J 7/00306
 - • {Overdischarge protection}
 - <administratively transferred to [H02J 7/63](#)>

- D H02J 7/00308
 - • {Overvoltage protection}
 - <administratively transferred to [H02J 7/64](#)>
- D H02J 7/00309
 - • {Overheat or overtemperature protection}
 - <administratively transferred to [H02J 7/65](#)>
- D H02J 7/0031
 - • {using battery or load disconnect circuits (H02J 9/002 takes precedence)}
 - <administratively transferred to [H02J 7/663](#)>
- D H02J 7/0032
 - • • {disconnection of loads if battery is not under charge, e.g. in vehicle if engine is not running}
 - <administratively transferred to [H02J 7/667](#)>
- D H02J 7/0034
 - • {using reverse polarity correcting or protecting circuits (mechanical means of polarity protection H02J 7/0045)}
 - <administratively transferred to [H02J 7/68](#)>
- D H02J 7/0036
 - • {using connection detecting circuits (H02J 7/0034 takes precedence)}
 - <administratively transferred to [H02J 7/685](#)>
- D H02J 7/0042
 - {characterised by the mechanical construction}
 - <administratively transferred to [H02J 7/70](#)>
- D H02J 7/0044
 - • {specially adapted for holding portable devices containing batteries (H02J 7/0045 takes precedence)}
 - <administratively transferred to [H02J 7/731](#)>
- D H02J 7/0045
 - • {concerning the insertion or the connection of the batteries}
 - <administratively transferred to [H02J 7/751](#)>
- D H02J 7/0047
 - {with monitoring or indicating devices or circuits}
 - <administratively transferred to [H02J 7/80](#)>
- D H02J 7/0048
 - • {Detection of remaining charge capacity or state of charge [SOC]}
 - <administratively transferred to [H02J 7/82](#)>
- D H02J 7/0049
 - • • {Detection of fully charged condition}
 - <administratively transferred to [H02J 7/825](#)>
- D H02J 7/005
 - • {Detection of state of health [SOH]}
 - <administratively transferred to [H02J 7/84](#)>
- D H02J 7/0063
 - {with circuits adapted for supplying loads from the battery}
 - <administratively transferred to [H02J 7/855](#)>
- D H02J 7/0068
 - {Battery or charger load switching, e.g. concurrent charging and load supply (H02J 7/0013 takes precedence)}
 - <administratively transferred to [H02J 7/865](#)>
- D H02J 7/0069
 - {Charging or discharging for charge maintenance, battery initiation or rejuvenation}
 - <administratively transferred to [H02J 7/875](#)>
- D H02J 7/007
 - {Regulation of charging or discharging current or voltage}
 - <administratively transferred to [H02J 7/90](#)>
- D H02J 7/0071
 - • {with a programmable schedule}
 - <administratively transferred to [H02J 7/92](#)>
- D H02J 7/00711
 - • {with introduction of pulses during the charging process}
 - <administratively transferred to [H02J 7/927](#)>

- D H02J 7/00712
 - • {the cycle being controlled or terminated in response to electric parameters}
 - <administratively transferred to [H02J 7/933](#)>
- D H02J 7/00714
 - • • {in response to battery charging or discharging current}
 - <administratively transferred to [H02J 7/94](#)>
- D H02J 7/00716
 - • • • {in response to integrated charge or discharge current}
 - <administratively transferred to [H02J 7/947](#)>
- D H02J 7/00718
 - • • • {in response to charge current gradient}
 - <administratively transferred to [H02J 7/953](#)>
- D H02J 7/007182
 - • • {in response to battery voltage}
 - <administratively transferred to [H02J 7/96](#)>
- D H02J 7/007184
 - • • • {in response to battery voltage gradient}
 - <administratively transferred to [H02J 7/963](#)>
- D H02J 7/007186
 - • • • {obtained with the battery disconnected from the charge or discharge circuit}
 - <administratively transferred to [H02J 7/965](#)>
- D H02J 7/007188
 - • {the charge cycle being controlled or terminated in response to non-electric parameters}
 - <administratively transferred to [H02J 7/971](#)>
- D H02J 7/00719
 - • • {in response to degree of gas development in the battery}
 - <administratively transferred to [H02J 7/973](#)>
- D H02J 7/007192
 - • • {in response to temperature}
 - <administratively transferred to [H02J 7/975](#)>
- D H02J 7/007194
 - • • • {of the battery}
 - <administratively transferred to [H02J 7/977](#)>
- U H02J 7/34
 - Parallel operation in networks using both storage and other DC sources, e.g. providing buffering ([H02J 7/14](#) takes precedence)
- M H02J 7/342
 - • {The other DC source being a battery actively interacting with the first one, i.e. battery to battery charging (with circuits for polarity protection [H02J 7/0034](#) [H02J 7/68](#))}
- U H02J 7/36
 - Arrangements using end-cell switching
- Q H02J 7/40
 - *characterised by the exchange of charge or discharge related data*

WARNING
 Group [H02J 7/40](#) is impacted by reclassification into group [H02J 7/46](#).
 Groups [H02J 7/40](#) and [H02J 7/46](#) should be considered in order to perform a complete search.
- N H02J 7/42
 - • *with electronic devices having internal batteries, e.g. mobile phones*
- Q H02J 7/44
 - • *between battery management systems and power sources*

WARNING
 Group [H02J 7/44](#) is impacted by reclassification into group [H02J 7/45](#).
 Groups [H02J 7/44](#) and [H02J 7/45](#) should be considered in order to perform a complete search.
- N H02J 7/443
 - • {using passive battery identification means, e.g. resistors or capacitors (identification by mechanical connections [H02J 7/751](#))}
- N H02J 7/445
 - • • {in response to measured battery parameters, e.g. voltage, current or temperature profile}

- N H02J 7/448 • • {using switches, contacts or markings, e.g. optical, magnetic or barcode}
- N H02J 7/45 • • between battery management systems and external servers (batteries used in smart grids for balancing of the load [H02J 3/32](#))
- WARNING
Group [H02J 7/45](#) is incomplete pending reclassification of documents from group [H02J 7/44](#).
Groups [H02J 7/44](#) and [H02J 7/45](#) should be considered in order to perform a complete search.
- N H02J 7/46 • • Leader-follower arrangements
- WARNING
Group [H02J 7/46](#) is incomplete pending reclassification of documents from group [H02J 7/40](#).
Groups [H02J 7/40](#) and [H02J 7/46](#) should be considered in order to perform a complete search.
- N H02J 7/47 • • Arrangements for checking compatibility or authentication between one component, e.g. a battery or a battery charger, and another component, e.g. a power source
- N H02J 7/485 • {with provisions for charging different types of batteries}
- N H02J 7/50 • acting upon multiple batteries simultaneously or sequentially
- N H02J 7/52 • • for charge balancing, e.g. equalisation of charge between batteries
- N H02J 7/54 • • • Passive balancing, e.g. using resistors or parallel MOSFETs
- N H02J 7/56 • • • Active balancing, e.g. using capacitor-based, inductor-based or DC-DC converters
- N H02J 7/575 • • {Parallel/serial switching of connection of batteries to charge or load circuit}
- N H02J 7/585 • • {Sequential battery discharge in systems with a plurality of batteries}
- N H02J 7/60 • including safety or protection arrangements
- N H02J 7/61 • • against overcharge
- N H02J 7/62 • • against overcurrent
- N H02J 7/63 • • against overdischarge
- N H02J 7/64 • • against overvoltage
- N H02J 7/65 • • against overtemperature
- N H02J 7/663 • • {using battery or load disconnect circuits ([H02J 9/002](#) takes precedence)}
- N H02J 7/667 • • • {disconnection of loads if battery is not under charge, e.g. in vehicle if engine is not running}
- N H02J 7/68 • • using circuits for correcting or protecting against reverse-polarity
- N H02J 7/685 • • {using connection detecting circuits ([H02J 7/68](#) takes precedence)}
- N H02J 7/70 • characterised by the mechanical construction
- N H02J 7/731 • • {specially adapted for holding portable devices containing batteries ([H02J 7/751](#) takes precedence)}
- N H02J 7/751 • • {concerning the insertion or the connection of the batteries}
- N H02J 7/80 • including monitoring or indicating arrangements
- N H02J 7/82 • • Control of state of charge [SOC]
- N H02J 7/825 • • • {Detection of fully charged condition}
- N H02J 7/84 • • Control of state of health [SOH]
- N H02J 7/855 • {with circuits adapted for supplying loads from the battery}
- N H02J 7/865 • {Battery or charger load switching, e.g. concurrent charging and load supply ([H02J 7/50](#) takes precedence)}

- N H02J 7/875 • {Charging or discharging for charge maintenance, battery initiation or rejuvenation}
- N H02J 7/90 • Regulation of charging or discharging current or voltage
- N H02J 7/92 • • with prioritisation of loads or sources
- N H02J 7/927 • • {with introduction of pulses during the charging process}
- N H02J 7/933 • • {the cycle being controlled or terminated in response to electric parameters}
- N H02J 7/94 • • in response to battery current
- N H02J 7/947 • • • {in response to integrated charge or discharge current}
- N H02J 7/953 • • • {in response to charge current gradient}
- N H02J 7/96 • • in response to battery voltage
- N H02J 7/963 • • • {in response to battery voltage gradient}
- N H02J 7/965 • • • {obtained with the battery disconnected from the charge or discharge circuit}
- N H02J 7/971 • • {the charge cycle being controlled or terminated in response to non-electric parameters}
- N H02J 7/973 • • • {in response to degree of gas development in the battery}
- N H02J 7/975 • • • {in response to temperature}
- N H02J 7/977 • • • • {of the battery}

Project: RP12723 (H02J)

- C H02J 13/00** **Circuit arrangements for providing remote indication of network conditions, e.g. an instantaneous record of the open or closed condition of each circuitbreaker in the network; Circuit arrangements for providing remote monitoring or remote control of switching means equipment in a power distribution network, e.g. switching in and out of current consumers by using a pulse code signal carried by the network**

WARNING

Group H02J 13/00 is impacted by reclassification into group H02J 13/38. Groups H02J 13/00 and H02J 13/38 should be considered in order to perform a complete search.

- D H02J 13/00001 • {characterised by the display of information or by user interaction, e.g. supervisory control and data acquisition systems [SCADA] or graphical user interfaces [GUI]}
<administratively transferred to [H02J 13/10](#)>
- D H02J 13/00002 • {characterised by monitoring}
<administratively transferred to [H02J 13/12](#)>
- D H02J 13/00004 • {characterised by the power network being locally controlled}
<administratively transferred to [H02J 13/14](#)>
- D H02J 13/00006 • {characterised by information or instructions transport means between the monitoring, controlling or managing units and monitored, controlled or operated power network element or electrical equipment}
<administratively transferred to [H02J 13/13](#)>
- D H02J 13/00007 • • {using the power network as support for the transmission}
<administratively transferred to [H02J 13/1311](#)>
- D H02J 13/00009 • • • {using pulsed signals}
<administratively transferred to [H02J 13/1313](#)>

- N H02J 13/1315 . . . {using modification of a parameter of the network power signal}
- N H02J 13/1317 . . {using an auxiliary transmission line}
- N H02J 13/1319 . . . {carrying signals having the network frequency or DC signals}
- N H02J 13/1321 . . {using a wired telecommunication network or a data transmission bus}
- N H02J 13/1323 . . . {using optical fibres}
- N H02J 13/1325 . . . {using phone lines}
- N H02J 13/1327 . . {using optical means}
- N H02J 13/1329 . . {using ultrasonic means}
- N H02J 13/1331 . . {using wireless data transmission}
- N H02J 13/1333 . . . {by means of mobile telephony}
- N H02J 13/1335 . . . {involving a local wireless network, e.g. Wi-Fi®, ZigBee® or Bluetooth®}
- N H02J 13/1337 . . {involving the use of Internet protocols}
- N H02J 13/14 . . the power network being locally controlled, e.g. home energy management systems [HEMS]
- Q H02J 13/16 . . the power network being controlled at grid-level, e.g. using aggregators

WARNING

Group [H02J 13/16](#) is incomplete pending reclassification of documents from group [H02J 3/00](#). Group [H02J 13/16](#) is also impacted by reclassification into groups [H02J 13/18](#), [H02J 13/181](#), [H02J 13/182](#) and [H02J 13/183](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H02J 13/18 . . characterised by the remotely-controlled equipment, e.g. converters or transformers

WARNING

Groups [H02J 13/18](#), [H02J 13/181](#), [H02J 13/182](#) and [H02J 13/183](#) are incomplete pending reclassification of documents from groups [H02J 3/00](#) and [H02J 13/16](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H02J 13/181 . . the equipment comprising generators
- N H02J 13/182 . . the equipment comprising loads connected to the power network
- N H02J 13/183 . . the equipment comprising energy storage systems
- N H02J 13/333 . . the equipment forming part of substations
- N H02J 13/34 . . the equipment being switches, relays or circuit breakers
- N H02J 13/36 . . . specially adapted for protection systems
- N H02J 13/38 . . the equipment being power outlets

WARNING

Group [H02J 13/38](#) is incomplete pending reclassification of documents from group [H02J 13/00](#). Groups [H02J 13/00](#) and [H02J 13/38](#) should be considered in order to perform a complete search.

- C H02J 15/00 **Systems for storing electric energy specially adapted for power networks**~~(mechanical systems therefor F01-F04; in chemical form H01M)~~

WARNING

Group [H02J 15/00](#) is impacted by reclassification into group [H02J 15/40](#).

Groups [H02J 15/00](#) and [H02J 15/40](#) should be considered in order to perform a complete search.

- D H02J 15/003 • {in the form of hydraulic energy}
 <administratively transferred to [H02J 15/10](#)>
- D H02J 15/006 • {in the form of pneumatic energy, e.g. compressed air energy storage [CAES]
 (accumulators for supplying fluid under pressure F15B 1/04)}
 <administratively transferred to [H02J 15/20](#)>
- D H02J 15/007 • {involving storage in the form of mechanical energy, e.g. fly-wheels}
 <administratively transferred to [H02J 15/30](#)>
- D H02J 15/008 • {using hydrogen as energy vector}
 <administratively transferred to [H02J 15/50](#)>
- N H02J 15/10 • using storage of hydraulic energy
- N H02J 15/20 • using storage of pneumatic energy, e.g. compressed air energy storage [CAES]
- N H02J 15/30 • using storage of inertial or mechanical energy, e.g. using flywheels
- N H02J 15/40 • using coils, e.g. superconductive magnetic energy storage [SMES] systems

WARNING

Group [H02J 15/40](#) is incomplete pending reclassification of documents from group [H02J 15/00](#).

Groups [H02J 15/00](#) and [H02J 15/40](#) should be considered in order to perform a complete search.

- N H02J 15/50 • using stored hydrogen

U H02J 50/00 Circuit arrangements or systems for wireless supply or distribution of electric power

NOTE

In this main group, the specific types of wireless technology used for the power transmission are covered in groups [H02J 50/05-H02J 50/30](#), while aspects relevant to the circuit arrangements or systems thereof are covered in groups [H02J 50/40-H02J 50/90](#).

- U H02J 50/90 • involving detection or optimisation of position, e.g. alignment

N H02J 2101/00 - H02J 2101/00 Indexing scheme relating to dispersed electric power generation

N H02J 2101/00 Supply or distribution of decentralised, dispersed or local electric power generation

- N H02J 2101/10 • Dispersed power generation using fossil fuels, e.g. diesel generators
- Q H02J 2101/20 • Dispersed power generation using renewable energy sources

WARNING

Group [H02J 2101/20](#) is impacted by reclassification into group [H02J 2101/35](#). Groups [H02J 2101/20](#) and [H02J 2101/35](#) should be considered in order to perform a complete search.

- N H02J 2101/22 • • Solar energy
- N H02J 2101/24 • • • Photovoltaics
- N H02J 2101/25 • • • {involving maximum power point tracking control for photovoltaic sources}
- N H02J 2101/28 • • Wind energy
- N H02J 2101/30 • • Fuel cells

- N H02J 2101/35
- Renewable hydrocarbon sources
- WARNING
Group [H02J 2101/35](#) is incomplete pending reclassification of documents from group [H02J 2101/20](#).
Groups [H02J 2101/20](#) and [H02J 2101/35](#) should be considered in order to perform a complete search.
- N H02J 2101/40
- Hybrid power plants, i.e. a plurality of different generation technologies being operated at one power plant
- N H02J 2103/00 - H02J 2103/00**
- Indexing scheme relating to circuit arrangements for AC distribution networks**
- Q H02J 2103/00**
- Details of circuit arrangements for mains or AC distribution networks**
- WARNING
Group [H02J 2103/00](#) is impacted by reclassification into groups [H02J 2103/40](#) and [H02J 2103/50](#).
Groups [H02J 2103/00](#), [H02J 2103/40](#) and [H02J 2103/50](#) should be considered in order to perform a complete search.
- N H02J 2103/30
- Simulating, planning, modelling, reliability check or computer assisted design [CAD] of electric power networks
- N H02J 2103/35
- Grid-level management of power transmission or distribution systems, e.g. load flow analysis or active network management
- N H02J 2103/40
- Circuit arrangements adaptive to forecasted demand
- WARNING
Group [H02J 2103/40](#) is incomplete pending reclassification of documents from group [H02J 2103/00](#).
Groups [H02J 2103/00](#) and [H02J 2103/40](#) should be considered in order to perform a complete search.
- N H02J 2103/50
- Circuit arrangements adaptive to forecasted power generation
- WARNING
Group [H02J 2103/50](#) is incomplete pending reclassification of documents from group [H02J 2103/00](#).
Groups [H02J 2103/00](#) and [H02J 2103/50](#) should be considered in order to perform a complete search.
- N H02J 2105/00 - H02J 2105/00**
- Indexing scheme relating to spatial reach or load**
- N H02J 2105/00**
- Networks for supplying or distributing electric power characterised by their spatial reach or by the load**
- N H02J 2105/10
- Local stationary networks having a local or delimited stationary reach
- N H02J 2105/12
- supplying households or buildings
- N H02J 2105/16
- being internal to power sources or power generation plants
- N H02J 2105/30
- the load networks being external to vehicles, i.e. exchanging power with vehicles
- N H02J 2105/31
- {for ships or vessels}
- N H02J 2105/32
- {for aircrafts}
- N H02J 2105/33
- exchanging power with road vehicles
- N H02J 2105/37
- exchanging power with electric vehicles [EV] or with hybrid electric vehicles [HEV]

- N H02J 2105/40 • characterised by the loads connecting to the networks or being supplied by the networks
- N H02J 2105/42 • • Home appliances
- N H02J 2105/425 • • {the loads being an Information and Communication Technology [ICT] facility}
- N H02J 2105/44 • • Portable electronic devices
- N H02J 2105/46 • • Medical devices, medical implants or life supporting devices
- N H02J 2105/50 • for selectively controlling the operation of the loads
- N H02J 2105/51 • • {according to a condition being electrical}
- N H02J 2105/52 • • for limitation of the power consumption in the networks or in one section of the networks, e.g. load shedding or peak shaving
- N H02J 2105/53 • • for partial power limitation, e.g. entering degraded or current limitation modes
- N H02J 2105/54 • • according to a non-electrical condition, e.g. temperature
- N H02J 2105/55 • • according to an economic condition, e.g. tariff-based load management
- N H02J 2105/57 • • {according to a pre-established time schedule}
- N H02J 2105/59 • • {one of the loads acting as leader and the other or others acting as followers}
- N H02J 2105/61 • {Load identification}
- N H02J 2107/00 - H02J 2107/00** **Indexing scheme relating to circuit arrangements for communication**
- Q H02J 2107/00** **Circuit arrangements for communication specially adapted for monitoring, managing or controlling operation of power networks remotely**
- WARNING**
Group [H02J 2107/00](#) is impacted by reclassification into groups [H02J 2107/10](#) - [H02J 2107/105](#), [H02J 2107/20](#) and [H02J 2107/30](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H02J 2107/10 • using wired networks, e.g. data transmission buses or optical fibres
- WARNING**
Groups [H02J 2107/10](#) and [H02J 2107/105](#) are incomplete pending reclassification of documents from group [H02J 2107/00](#).
Groups [H02J 2107/00](#), [H02J 2107/10](#) and [H02J 2107/105](#) should be considered in order to perform a complete search.
- N H02J 2107/105 • • Power line communication [PLC]
- N H02J 2107/20 • using wireless networks, e.g. mobile telephones
- WARNING**
Group [H02J 2107/20](#) is incomplete pending reclassification of documents from group [H02J 2107/00](#).
Groups [H02J 2107/00](#) and [H02J 2107/20](#) should be considered in order to perform a complete search.
- N H02J 2107/30 • involving the use of Internet protocols
- WARNING**
Group [H02J 2107/30](#) is incomplete pending reclassification of documents from group [H02J 2107/00](#).
Groups [H02J 2107/00](#) and [H02J 2107/30](#) should be considered in order to perform a complete search.
- N H02J 2107/40 • {using simultaneously two or more different transmission means}

D	H02J 2203/00	Indexing scheme relating to details of circuit arrangements for AC mains or AC distribution networks <administratively transferred to H02J 2103/00 ADD>
D	H02J 2203/10	<ul style="list-style-type: none"> Power transmission or distribution systems management focussing at grid-level; e.g. load flow analysis, node profile computation, meshed network optimisation; active network management or spinning reserve management <administratively transferred to H02J 2103/35 ADD>
D	H02J 2203/20	<ul style="list-style-type: none"> Simulating, e.g. planning, reliability check, modelling or computer-assisted design [CAD] <administratively transferred to H02J 2103/30 ADD>
N	H02J 2207/00 - H02J 2207/00	<u>Indexing scheme relating to circuit arrangements for charging or discharging batteries or supplying loads from batteries</u>
M	H02J 2207/00	Indexing scheme relating to details <i>Details</i> of circuit arrangements for charging or depolarising <i>discharging</i> batteries or for supplying loads from batteries
D	H02J 2213/00	Indexing scheme relating to details of circuit arrangements for providing remote indication of network conditions of for circuit arrangements for providing remote control of switching means in a power distribution network <administratively transferred to H02J 2107/00 ADD>
D	H02J 2213/10	<ul style="list-style-type: none"> using simultaneously two or more different transmission means <administratively transferred to H02J 2107/40 ADD>
D	H02J 2300/00	Systems for supplying or distributing electric power characterised by decentralized, dispersed, or local generation <administratively transferred to H02J 2101/00 ADD>
D	H02J 2300/10	<ul style="list-style-type: none"> The dispersed energy generation being of fossil origin, e.g. diesel generators <administratively transferred to H02J 2101/10 ADD>
D	H02J 2300/20	<ul style="list-style-type: none"> The dispersed energy generation being of renewable origin <administratively transferred to H02J 2101/20 ADD>
D	H02J 2300/22	<ul style="list-style-type: none"> • The renewable source being solar energy <administratively transferred to H02J 2101/22 ADD>
D	H02J 2300/24	<ul style="list-style-type: none"> • • of photovoltaic origin <administratively transferred to H02J 2101/24 ADD>
D	H02J 2300/26	<ul style="list-style-type: none"> • • • involving maximum power point tracking control for photovoltaic sources <administratively transferred to H02J 2101/25 ADD>
D	H02J 2300/28	<ul style="list-style-type: none"> • • The renewable source being wind energy <administratively transferred to H02J 2101/28 ADD>
D	H02J 2300/30	<ul style="list-style-type: none"> The power source being a fuel cell <administratively transferred to H02J 2101/30 ADD>
D	H02J 2300/40	<ul style="list-style-type: none"> wherein a plurality of decentralised, dispersed or local energy generation technologies are operated simultaneously <administratively transferred to H02J 2101/40 ADD>
D	H02J 2310/00	The network for supplying or distributing electric power characterised by its spatial reach or by the load <administratively transferred to H02J 2105/00 ADD>

- D H02J 2310/10
 - The network having a local or delimited stationary reach
<administratively transferred to [H02J 2105/10](#) ADD>
- D H02J 2310/12
 - • The local stationary network supplying a household or a building
<administratively transferred to [H02J 2105/12](#) ADD>
- D H02J 2310/14
 - • • The load or loads being home appliances
<administratively transferred to [H02J 2105/42](#) ADD>
- D H02J 2310/16
 - • • The load or loads being an Information and Communication Technology [ICT] facility
<administratively transferred to [H02J 2105/425](#) ADD>
- D H02J 2310/18
 - • The network being internal to a power source or plant
<administratively transferred to [H02J 2105/16](#) ADD>
- D H02J 2310/20
 - • The network being internal to a load
<administratively transferred to [H02J 2105/40](#) ADD>
- D H02J 2310/22
 - • • The load being a portable electronic device
<administratively transferred to [H02J 2105/44](#) ADD>
- D H02J 2310/23
 - • • The load being a medical device, a medical implant, or a life supporting device
<administratively transferred to [H02J 2105/46](#) ADD>
- D H02J 2310/40
 - The network being an on-board power network, i.e. within a vehicle
<administratively transferred to [H02J 2105/30](#) ADD>
- D H02J 2310/42
 - • for ships or vessels
<administratively transferred to [H02J 2105/31](#) ADD>
- D H02J 2310/44
 - • for aircrafts
<administratively transferred to [H02J 2105/32](#) ADD>
- D H02J 2310/46
 - • for ICE-powered road vehicles
<administratively transferred to [H02J 2105/33](#) ADD>
- D H02J 2310/48
 - • for electric vehicles [EV] or hybrid vehicles [HEV]
<administratively transferred to [H02J 2105/37](#) ADD>
- D H02J 2310/50
 - for selectively controlling the operation of the loads
<administratively transferred to [H02J 2105/50](#) ADD>
- D H02J 2310/52
 - • The controlling of the operation of the load not being the total disconnection of the load, i.e. entering a degraded mode or in current limitation
<administratively transferred to [H02J 2105/53](#) ADD>
- D H02J 2310/54
 - • according to a pre-established time schedule
<administratively transferred to [H02J 2105/57](#) ADD>
- D H02J 2310/56
 - • characterised by the condition upon which the selective controlling is based
<administratively transferred to [H02J 2105/50](#) ADD>
- D H02J 2310/58
 - • • The condition being electrical
<administratively transferred to [H02J 2105/51](#) ADD>
- D H02J 2310/60
 - • • • Limiting power consumption in the network or in one section of the network, e.g. load shedding or peak shaving
<administratively transferred to [H02J 2105/52](#) ADD>
- D H02J 2310/62
 - • • The condition being non-electrical, e.g. temperature
<administratively transferred to [H02J 2105/54](#) ADD>

- D H02J 2310/64 . . . The condition being economic, e.g. tariff based load management
<administratively transferred to [H02J 2105/55](#) ADD>
- D H02J 2310/66 . . one of the loads acting as master and the other or others acting as slaves
<administratively transferred to [H02J 2105/59](#) ADD>
- D H02J 2310/70 . Load identification
<administratively transferred to [H02J 2105/61](#) ADD>

Project: RP12800 (H02M)

M H02M APPARATUS FOR CONVERSION BETWEEN AC AND AC, BETWEEN AC AND DC, OR BETWEEN DC AND DC, AND FOR USE WITH MAINS OR SIMILAR POWER SUPPLY SYSTEMS; CONVERSION OF DC OR AC INPUT POWER INTO SURGE OUTPUT POWER; CONTROL OR REGULATION THEREOF (transformers [H01F](#); dynamo-electric converters [H02K 47/00](#); controlling transformers, reactors or choke coils, control or regulation of electric motors, generators or dynamo-electric converters [H02P](#))

NOTES

1. This subclass covers only circuits or apparatus for the conversion of electric power, or arrangements for control or regulation of such circuits or apparatus. The electrotechnical elements employed are dealt within the appropriate subclasses, e.g. inductors, transformers [H01F](#), capacitors, electrolytic rectifiers [H01G](#), mercury rectifying or other discharge tubes [H01J](#), semiconductor devices [H01L](#), [H10](#), impedance networks or resonant circuit not primarily concerned with the transfer of electric power [H03H](#).
2. In this subclass, the following term is used with the meaning indicated:
 - "conversion", in respect of an electric variable, e.g. voltage or current, means the change of one or more of the parameters of the variable, e.g. amplitude, frequency, phase, polarity.

WARNINGS

1.
The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

H02M 9/00	covered by	H03K 3/53
H02M 9/02	covered by	H03K 3/53
H02M 9/04	covered by	H03K 3/53
H02M 9/06	covered by	H03K 3/53
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: RP12800 (H02N)

M H02N ELECTRIC MACHINES NOT OTHERWISE PROVIDED FOR

NOTES

1. This subclass covers:
 - electrostatic generators, motors, clutches, or holding devices;
 - other non-dynamo-electric generators or motors;
 - holding or levitation devices using magnetic attraction or repulsion;

- arrangements for starting, regulating, braking, or otherwise controlling such machines unless in conjoint operation with a second machine.
2. Specific provision for generators, motors, or other means for converting between electric and other forms of energy also exists in other subclasses, e.g. in class [H10](#) and subclasses ~~H01L~~, [H01M](#), [H02K](#), [H04R](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: RP12800 (H02S)

- U H02S 50/00 Monitoring or testing of PV systems, e.g. load balancing or fault identification**
- M H02S 50/10** • Testing of PV devices, e.g. of PV modules or single PV cells (~~testing of semiconductor devices during manufacturing {H01L 22/00}~~ [testing of semiconductor devices during manufacturing {H10P 74/00}](#))

Project: RP12800 (H03B)

- M H03B 9/00 Generation of oscillations using transit-time effects {(construction of tube and circuit arrangements not adapted to a particular application [H01J](#); ~~construction of the semiconductor devices H01L~~; [construction of the semiconductor devices H10](#))}**

Project: MP12754 (H03H)

- U H03H 17/00 Networks using digital techniques**
- U H03H 17/02** • Frequency selective networks {(digital computers for complex mathematical operations [G06F 17/10](#))}
- U H03H 17/0223** • • {Computation saving measures; Accelerating measures (computations per se [G06F](#))}
- M H03H 2017/0245** • • • {Measures to reduce power consumption-~~(H03H 17/0223 takes precedence)~~}

Project: MP12708 (H03H)

- U H03H 2210/00 Indexing scheme relating to details of tunable filters**
- U H03H 2210/04** • Filter calibration method
- M H03H 2210/046** • • ~~Master-slave~~ [Leader-follower](#)

Project: MP12708 (H03J)

- M H03J 2200/18** • Tuning of a ~~master~~ [leader](#) filter in order to tune its ~~slave~~ [follower](#) filter

Project: MP12828 (H03J)

- M H03J 2200/20** • Radio receiver with possibility to choose a station with a certain ~~program~~ [programme](#) style
- M H03J 2200/21** • Television receiver with possibility to choose a station with a certain ~~program~~ [programme](#) style
- M H03J 2200/24** • Remote control device with display showing ~~program~~ [programme](#) content

Project: RP11666-F (H04B)

- U H04B 7/00 Radio transmission systems, i.e. using radiation field ([H04B 10/00](#), [H04B 15/00](#) take precedence)**

U	H04B 7/02	<ul style="list-style-type: none"> • Diversity systems; Multi-antenna system, i.e. transmission or reception using multiple antennas (RAKE receivers H04B 1/7115)
M	H04B 7/04	<ul style="list-style-type: none"> • • using two or more spaced independent antennas <p><u>WARNING</u> Group H04B 7/04 is impacted by reclassification into groups H04B 7/04013 and H04B 7/04026. Groups H04B 7/04, H04B 7/04013 and H04B 7/04026 should be considered in order to perform a complete search.</p>
M	H04B 7/04013	<ul style="list-style-type: none"> • • • {Intelligent reflective surfaces} <p><u>WARNING</u> Groups H04B 7/04013 and H04B 7/04026 are incomplete pending reclassification of documents from group H04B 7/04. Groups H04B 7/04, H04B 7/04013 and H04B 7/04026 should be considered in order to perform a complete search.</p>
U	H04B 7/0413	<ul style="list-style-type: none"> • • • MIMO systems
U	H04B 7/0456	<ul style="list-style-type: none"> • • • • Selection of precoding matrices or codebooks, e.g. using matrices antenna weighting
M	H04B 7/0478	<ul style="list-style-type: none"> • • • • • {Special codebook structures directed to feedback optimisation} <p><u>WARNING</u> Group H04B 7/0478 is impacted by reclassification into groups H04B 7/0479, H04B 7/048 and H04B 7/0481. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H04B 7/0479	<ul style="list-style-type: none"> • • • • • • {for multi-dimensional arrays, e.g. horizontal or vertical pre-distortion matrix index [PMI]} <p><u>WARNING</u> Group H04B 7/0479 is incomplete pending reclassification of documents from group H04B 7/0478. Groups H04B 7/0478 and H04B 7/0479 should be considered in order to perform a complete search.</p>
M	H04B 7/048	<ul style="list-style-type: none"> • • • • • • {using three or more PMIs} <p><u>WARNING</u> Group H04B 7/048 is incomplete pending reclassification of documents from group H04B 7/0478. Groups H04B 7/0478 and H04B 7/048 should be considered in order to perform a complete search.</p>
M	H04B 7/0481	<ul style="list-style-type: none"> • • • • • • {using subset selection of codebooks} <p><u>WARNING</u> Group H04B 7/0481 is incomplete pending reclassification of documents from group H04B 7/0478. Groups H04B 7/0478 and H04B 7/0481 should be considered in order to perform a complete search.</p>
M	H04B 7/0486	<ul style="list-style-type: none"> • • • • • {taking channel rank into account} <p><u>WARNING</u> Group H04B 7/0486 is impacted by reclassification into group H04B 7/0487. Groups H04B 7/0486 and H04B 7/0487 should be considered in order to perform a complete search.</p>

M H04B 7/0487 {Codebooks having a nested structure}

WARNING

Group H04B 7/0487 is incomplete pending reclassification of documents from group H04B 7/0486.
Groups H04B 7/0486 and H04B 7/0487 should be considered in order to perform a complete search.

U H04B 7/06 . . . at the transmitting station

U H04B 7/0686 {Hybrid systems, i.e. switching and simultaneous transmission}

M H04B 7/0695 {using beam selection}

WARNING

Group H04B 7/0695 is impacted by reclassification into groups H04B 7/06952, H04B 7/06954, H04B 7/06956, H04B 7/06958, H04B 7/0696, H04B 7/06962, H04B 7/06964, H04B 7/06966 and H04B 7/06968.
All groups listed in this Warning should be considered in order to perform a complete search.

M H04B 7/06952 {Selecting one or more beams from a plurality of beams, e.g. beam training, management or sweeping}

WARNING

Groups H04B 7/06952, H04B 7/06954, H04B 7/06956, H04B 7/06958, H04B 7/0696, H04B 7/06962, H04B 7/06964, H04B 7/06966 and H04B 7/06968 are incomplete pending reclassification of documents from group H04B 7/0695.
All groups listed in this Warning should be considered in order to perform a complete search.

Project: MP12708 (H04B)

U H04B 7/24 . . . for communication between two or more posts (wireless communication networks [H04W](#))

U H04B 7/26 . . . at least one of which is mobile

U H04B 7/2662 . . . {Arrangements for Wireless System Synchronisation}

U H04B 7/2671 {Arrangements for Wireless Time-Division Multiple Access [TDMA] System Synchronisation}

U H04B 7/2678 {Time synchronisation}

U H04B 7/2687 {Inter base stations synchronisation}

M H04B 7/269 {~~Master/slave~~~~Leader-follower~~ synchronisation}

Project: MP12823 (H04B)

M H04B 11/00 Transmission systems employing ~~sonic~~, ~~ultrasonic~~~~ultrasonic~~, ~~sonic~~ or infrasonic waves

Project: Unknown (H04B)

U H04B 2201/00 Indexing scheme relating to details of transmission systems not covered by a single group of [H04B 3/00](#) - [H04B 13/00](#)

U H04B 2201/69 . Orthogonal indexing scheme relating to spread spectrum techniques in general

U H04B 2201/713 . . Frequency hopping

M H04B 2201/71346 . . . Bluetooth®

Project: MP12721 (H04L)

- U H04L 12/00** **Data switching networks (interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units [G06F 13/00](#))**
- U H04L 12/02 • Details
- M H04L 12/14 • • Charging {, metering or billing} ~~arrangements {for data wireline or wireless communications}~~ *arrangements specially adapted for data communications, e.g. authentication, authorisation and accounting [AAA] framework*
- WARNING
Group [H04L 12/14](#) is incomplete pending reclassification of documents from group [G06Q 50/40](#).
Groups [G06Q 50/40](#) and [H04L 12/14](#) should be considered in order to perform a complete search.

Project: Unknown (H04M)

- U H04M 17/00** **Prepayment {of wireline communication systems, wireless communication systems or} telephone systems (using a coded card to authorise calls from a telephone set [H04M 1/675](#))**
- WARNING
Group [H04M 17/00](#) is incomplete pending reclassification of documents from group [G06Q 50/40](#).
Groups [G06Q 50/40](#) and [H04M 17/00](#) should be considered in order to perform a complete search.
- U H04M 2017/25 • {using a code}
- U H04M 2017/2506 • • {code input or reading}
- M H04M 2017/2531 • • • {wireless, e.g. Bluetooth®, RFID}
- U H04M 17/30 • {using a code}
- U H04M 17/301 • • {Code input or reading}
- M H04M 17/305 • • • {Wireless codes, e.g. Bluetooth® or RFID}
- U H04M 2250/00** **Details of telephonic subscriber devices**
- M H04M 2250/02 • including a Bluetooth® interface

Project: MP12840 (H04N)

- U H04N 1/00** **Scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission; Details thereof**
- U H04N 1/04 • Scanning arrangements {, i.e. arrangements for the displacement of active reading or reproducing elements relative to the original or reproducing medium, or vice versa} ([H04N 1/387](#) takes precedence)
- U H04N 1/19 • • using multi-element arrays
- M H04N 1/191 • • • the array comprising a one-dimensional ~~array {, or a combination of one-dimensional arrays, or a substantially one-dimensional array, e.g. an array of staggered elements}~~ *[1D] array*
- M H04N 1/195 • • • the array comprising a two-dimensional ~~array {or a combination of two-dimensional arrays}~~ *[2D] array*
- U H04N 1/41 • Bandwidth or redundancy reduction (by scanning [H04N 1/17](#) {; methods or arrangements for coding, decoding, compressing or decompressing digital video signals [H04N 19/00](#)})
- U H04N 1/411 • • for the transmission {or storage} or reproduction of two-tone pictures, e.g. black and white pictures

- U H04N 1/413 . . . Systems or arrangements allowing the picture to be reproduced without loss or modification of picture-information
- M H04N 1/415 . . . in which the picture-elements are subdivided or grouped into fixed one-dimensional [\[1D\]](#) or two-dimensional [\[2D\]](#) blocks

Project: MP12754 (H04N)

- U H04N 5/00 **Details of television systems (scanning details or combination thereof with generation of supply voltages [H04N 3/00](#))**
- U H04N 5/76 . Television signal recording
- U H04N 5/91 . . Television signal processing therefor
- U H04N 5/92 . . . Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback
- U H04N 5/9201 {involving the multiplexing of an additional signal and the video signal}
- M H04N 5/9202 {the additional signal being a sound signal ([H04N 5/9155](#); [H04N 5/92](#) ~~take~~[takes](#) precedence)}
- M H04N 9/3147 {Multi-projection systems (~~displays in general~~ [H04N 9/12](#); video walls [G06F 3/1446](#); ~~G09G 2300/026~~)}

Project: MP12840 (H04N)

- U H04N 13/00 **Stereoscopic video systems; Multi-view video systems; Details thereof**
NOTE
This group covers systems providing a three-dimensional [3D] effect, or different views to one or more viewers by means of electronic signals representing images, which could be taken from different viewpoints, or by means of signals including depth information {, e.g. taken from different viewpoint locations representing the interocular distance}
- U H04N 13/10 . Processing, recording or transmission of stereoscopic or multi-view image signals
- U H04N 13/106 . . Processing image signals (for multi-view video sequence encoding [H04N 19/597](#))
- M H04N 13/122 . . . Improving the ~~3D~~[three-dimensional](#) [\[3D\]](#) impression of stereoscopic images by modifying image signal contents, e.g. by filtering or adding monoscopic depth cues ([H04N 13/128](#) takes precedence)
- U H04N 13/20 . Image signal generators
- U H04N 13/204 . . using stereoscopic image cameras (stereoscopic photography [G03B 35/00](#))
- M H04N 13/207 . . . using a single ~~2D~~[two-dimensional](#) [\[2D\]](#) image sensor
- M H04N 13/239 . . . using two ~~2D~~[two-dimensional](#) [\[2D\]](#) image sensors having a relative position equal to or related to the interocular distance ([H04N 13/243](#) takes precedence)
- M H04N 13/243 . . . using three or more ~~2D~~[two-dimensional](#) [\[2D\]](#) image sensors
- M H04N 13/275 . . from ~~3D~~[three-dimensional](#) [\[3D\]](#) object models, e.g. computer-generated stereoscopic image signals
- M H04N 13/30 . Image reproducers (optical systems for producing stereoscopic or other three-dimensional [\[3D\]](#) effects [G02B 30/00](#))
- U H04N 13/388 . . Volumetric displays, i.e. systems where the image is built up from picture elements distributed through a volume
- M H04N 13/395 . . . with depth sampling, i.e. the volume being constructed from a stack or sequence of ~~2D~~[two-dimensional](#) [\[2D\]](#) image planes

U	H04N 19/00	Methods or arrangements for coding, decoding, compressing or decompressing digital video signals
U	H04N 19/50	• using predictive coding (H04N 19/61 takes precedence)
U	H04N 19/503	• • involving temporal prediction (adaptive coding with adaptive selection between spatial and temporal predictive coding H04N 19/107 ; adaptive coding with adaptive selection among a plurality of temporal predictive coding modes H04N 19/109)
U	H04N 19/51	• • • Motion estimation or motion compensation
M	H04N 19/533	• • • • Motion estimation using multistep search, e.g. 2D <i>two-dimensional</i> [2D]-log search or one-at-a-time search [OTS]
U	H04N 19/60	• using transform coding
M	H04N 19/62	• • by frequency transforming in three dimensions [3D] (H04N 19/63 takes precedence)

Project: MP12828 (H04N)

U	H04N 21/00	Selective content distribution, e.g. interactive television or video on demand [VOD] (real-time bi-directional transmission of motion video data H04N 7/14 {; broadcast or conference over packet switching networks H04L 12/18})
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NOTES

1. This group covers :

- interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements.
- such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process.
- typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing or data flow at various points in the system. This interaction is typically occasional or intermittent in nature.
- processes, systems or elements thereof specially adapted to the generation, distribution and processing of data, which is either associated with video content, e.g. metadata, ratings, or related to the user or his environment and which has been actively or passively gathered. This data is either used to facilitate interaction or to alter or target the content.

2. In this main group, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

3. In this main group, the following terms and expressions are used with the meaning indicated:

additional data - designates still pictures, textual, graphical or executable data such as software. It is used to convey supplemental information and can be generated prior to or during the distribution process itself, e.g. metadata, keys.

content designates video or audio streams, which may be combined with additional data. Video data will always be present and occupy most of the downlink bandwidth in the distribution process

server - designates an apparatus designed for adapting the content received from the content provider to the distribution network. It also manages the distribution to client devices or intermediate components over a network. Further servers may also be present for gathering or generating additional data, e.g. rights management server

additional data server - designates a server, which sole purpose is the distribution or management of additional data. It is not in charge of the distribution of video or audio data

client - designates an apparatus such as a TV receiver, a set-top-box, a PC-TV, a mobile appliance (e.g. mobile phone or receiver in a vehicle), for receiving video, audio and possibly additional data from one or several servers or intermediate components via a network for further processing, storing or displaying. It can also transmit this data on a home-based local network to further devices, e.g. a home server transmitting video to PCs and set-top-boxes within a home.

local network - pertains to a restricted area, e.g. a home or a vehicle, and designates the link between a client and its peripheral devices

network - is to be distinguished from "local network": "network" designates the link between the server and the clients, or between the server and the intermediate components, or between the intermediate components and the clients, or between remotely located clients

distribution - encompasses broadcasting, multicasting and unicasting techniques for transmitting content from one or more sources to one or more receiving stations. The distribution follows a request by a receiving station to the source, e.g. VOD or from a customization of the content by the source, e.g. targeting advertisements to a demographic group in a unidirectional or bidirectional system. Additionally, distribution encompasses techniques where the client acts as a source and another client acts as a receiving station, e.g. a peer-to-peer system for sharing video among client devices

end-user - designates a physical person, e.g. a TV viewer, who consumes the content using the client device. He is the final recipient of the content distributed by the server

interaction - covers actions occurring between or among two or more objects that have an effect upon one another, wherein objects comprise users, system operators, system elements, or content. The user may interact with content locally at the client device, e.g. for requesting additional data stored within the client device. The user may interact with content remotely through a server e.g. for VOD playback control or for uploading video to a server. The client device may interact with the content e.g. selecting content based upon the user profile. The client device may interact with a server using a return channel, e.g. for authenticating client or uploading client hardware capabilities. The server may interact with a client device, e.g. to force a client to tune to an advertisement channel

upstream - designates the direction of data flow towards the source, e.g. a server receiving a request via a mobile phone network.

downstream - designates the direction of data flow towards a client, e.g. a client receiving data originating from a server elementary stream An elementary stream (ES) as defined by the MPEG system layer designates the output of an audio or video encoder.

- | | | |
|---|------------|--|
| U | H04N 21/20 | <ul style="list-style-type: none"> • Servers specifically adapted for the distribution of content, e.g. VOD servers; Operations thereof |
| U | H04N 21/23 | <ul style="list-style-type: none"> • • Processing of content or additional data; Elementary server operations; Server middleware |

- M H04N 21/242
 - • • **Synchronization****Synchronisation** processes, e.g. processing of PCR [Program**Programme** Clock References] {(arrangements for synchronising broadcast or distribution via plural systems in broadcast distribution systems [H04H 20/18](#))}
- U H04N 21/25
 - • Management operations performed by the server for facilitating the content distribution or administrating data related to end-users or client devices, e.g. end-user or client device authentication, learning user preferences for recommending movies {(maintenance or administration in data networks [H04L 41/00](#))}
- U H04N 21/262
 - • • Content or additional data distribution scheduling, e.g. sending additional data at off-peak times, updating software modules, calculating the carousel transmission frequency, delaying a video stream transmission, generating play-lists {(scheduling strategies for dispatcher in multiprogramming arrangements [G06F 9/4881](#); arrangements for scheduling broadcast services or broadcast-related services [H04H 60/06](#); flow control in packet networks [H04L 47/10](#); establishing a time schedule or organising the servicing of application requests [H04L 67/62](#))}
- U H04N 21/26208
 - • • • {the scheduling operation being performed under constraints}
- M H04N 21/26241
 - • • • • {involving the time of distribution, e.g. the best time of the day for inserting an advertisement or airing a children **program****programme**}
- M H04N 21/26283
 - • • • {for associating distribution time parameters to content, e.g. to generate electronic **program****programme** guide data}
- U H04N 21/27
 - • Server based end-user applications
- U H04N 21/274
 - • • Storing end-user {multimedia} data in response to end-user request {, e.g. network recorder}
- M H04N 21/2747
 - • • • Remote storage of video **programs****programmes** received via the downstream path, e.g. from the server
- U H04N 21/40
 - Client devices specifically adapted for the reception of or interaction with content, e.g. set-top-box [STB]; Operations thereof
- U H04N 21/41
 - • Structure of client; Structure of client peripherals
- U H04N 21/422
 - • • Input-only peripherals {, i.e. input devices connected to specially adapted client devices}, e.g. global positioning system [GPS] {(input devices also receiving signals from specially adapted client devices [H04N 21/4104](#))}
- U H04N 21/42204
 - • • • {User interfaces specially adapted for controlling a client device through a remote control device; Remote control devices therefor (constructive details of casings for the remote control device [H01H 9/0235](#); user interfaces for controlling a tuning device of a television receiver through a remote control [H03J 9/00](#); remote control of peripheral devices connected to a television receiver through the remote control device of the television receiver [H04B 1/205](#))}
- U H04N 21/42206
 - • • • • {characterized by hardware details}
- U H04N 21/42208
 - • • • • • {Display device provided on the remote control}
- M H04N 21/42209
 - • • • • • • {for displaying non-command information, e.g. electronic **program****programme** guide [EPG], e-mail, messages or a second television channel}
- U H04N 21/43
 - • Processing of content or additional data, e.g. demultiplexing additional data from a digital video stream; Elementary client operations, e.g. monitoring of home network or synchronising decoder's clock; Client middleware {(real-time communication protocols in data switching networks [H04L 65/00](#))}
- U H04N 21/4302
 - • • {Content synchronisation processes, e.g. decoder synchronisation}
- U H04N 21/4307
 - • • • {Synchronising the rendering of multiple content streams or additional data on devices, e.g. synchronisation of audio on a mobile phone with the video output on the TV screen}

- M H04N 21/43074 {of additional data with content streams on the same device, e.g. of EPG data or interactive icon with a TV **program****programme**}
- M H04N 21/43078 {for seamlessly watching content streams when changing device, e.g. when watching the same **program****programme** sequentially on a TV and then on a tablet}

Project: Unknown (H04N)

- U H04N 21/436 . . . Interfacing a local distribution network, e.g. communicating with another STB {or one or more peripheral devices} inside the home
- U H04N 21/4363 Adapting the video stream to a specific local network, e.g. a Bluetooth® network
- M H04N 21/43637 {involving a wireless protocol, e.g. Bluetooth®, RF or wireless LAN [IEEE 802.11] (arrangements for wireless networking or broadcasting of information in indoor or near-field type systems [H04B 10/114](#))}

Project: MP12828 (H04N)

- U H04N 21/442 . . . Monitoring of processes or resources, e.g. detecting the failure of a recording device, monitoring the downstream bandwidth, the number of times a movie has been viewed, the storage space available from the internal hard disk {(arrangements for monitoring broadcast services or broadcast-related services [H04H 60/29](#); arrangements for identifying or recognising characteristics with a direct linkage to broadcast information [H04H 60/35](#); monitoring of user activities for profile generation for accessing a video database [G06F 16/739](#); monitoring in wireless networks [H04W 24/00](#))}
- U H04N 21/44213 {Monitoring of end-user related data (arrangements for monitoring the users' behaviour or opinions in broadcast systems [H04H 60/33](#))}
- M H04N 21/44218 {Detecting physical presence or behaviour of the user, e.g. using sensors to detect if the user is leaving the room or changes his face expression during a TV **program****programme** (methods or arrangements for recognising human body or animal bodies or body parts [G06V 40/10](#); methods or arrangements for acquiring or recognising human faces, facial parts, facial sketches, facial expressions [G06V 40/16](#); methods or arrangements for recognising movements or behaviour [G06V 40/20](#); arrangements for identifying users in broadcast systems [H04H 60/45](#))}
- M H04N 21/44222 {Analytics of user selections, e.g. selection of **programs****programmes** or purchase activity (monitoring of user selections in data processing systems [G06F 11/34](#); arrangements for monitoring the user's behaviour or opinions in broadcast systems [H04H 60/33](#))}
- U H04N 21/45 . . . Management operations performed by the client for facilitating the reception of or the interaction with the content or administrating data related to the end-user or to the client device itself, e.g. learning user preferences for recommending movies, resolving scheduling conflicts
- U H04N 21/458 Scheduling content for creating a personalised stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules {; time-related management operations (arrangements for replacing or switching information during the broadcast or during the distribution [H04H 20/10](#))}
- M H04N 21/4583 {Automatically resolving scheduling conflicts, e.g. when a recording by reservation has been programmed for two **programs****programmes** in the same time slot}

- M H04N 21/462
 - • • Content or additional data management; e.g. creating a master electronic ~~program~~*programme* guide from data received from the Internet and a Head-end; *or* controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities
- U H04N 21/47
 - • End-user applications
- M H04N 21/482
 - • • End-user interface for ~~program~~*programme* selection-~~{{broadcast systems using EPGs H04H 60/72}}~~
- M H04N 21/4826
 - • • • {using recommendation lists, e.g. of ~~programs~~*programmes* or channels sorted out according to their score}
- M H04N 21/4828
 - • • • {for searching ~~program~~*programme* descriptors (retrieval of video data [G06F 16/739](#))}
- U H04N 21/80
 - Generation or processing of content or additional data by content creator independently of the distribution process; Content *per se* {{arrangements for generating broadcast information [H04H 60/02](#)}}
- U H04N 21/81
 - • Monomedia components thereof
- U H04N 21/8126
 - • • {involving additional data, e.g. news, sports, stocks, weather forecasts}
- M H04N 21/8133
 - • • • {specifically related to the content, e.g. biography of the actors in a movie, detailed information about an article seen in a video ~~program~~*programme*}

Project: MP12708 (H04N)

- U H04N 23/00 **Cameras or camera modules comprising electronic image sensors; Control thereof**
- U H04N 23/60
 - Control of cameras or camera modules
- U H04N 23/66
 - • Remote control of cameras or camera parts, e.g. by remote control devices
- U H04N 23/661
 - • • Transmitting camera control signals through networks, e.g. control via the Internet
- M H04N 23/662
 - • • • {by using ~~master/slave camera arrangements for affecting camera~~*arrangements where one camera controls another camera to affect* the control of camera image capture, e.g. placing the camera in a desirable condition to capture a desired image}

Project: MP12840 (H04N)

- U H04N 25/00 **Circuitry of solid-state image sensors [SSIS]; Control thereof**
 WARNING
 Groups [H04N 25/00](#), [H04N 25/10](#), [H04N 25/11](#), [H04N 25/13](#), [H04N 25/131](#), [H04N 25/133](#), [H04N 25/134](#), [H04N 25/135](#), [H04N 25/136](#), [H04N 25/17](#), [H04N 25/20](#), [H04N 25/21](#), [H04N 25/30](#), [H04N 25/70](#), [H04N 25/702](#), [H04N 25/703](#), [H04N 25/704](#), [H04N 25/705](#), [H04N 25/706](#), [H04N 25/707](#), [H04N 25/708](#), [H04N 25/709](#) and [H04N 25/79](#) are incomplete pending reclassification of documents from group [H04N 3/15](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- U H04N 25/40
 - Extracting pixel data from image sensors by controlling scanning circuits, e.g. by modifying the number of pixels sampled or to be sampled
 WARNING
 Groups [H04N 25/40](#), [H04N 25/41](#), [H04N 25/42](#), [H04N 25/44](#), [H04N 25/441](#), [H04N 25/443](#), [H04N 25/445](#), [H04N 25/447](#) and [H04N 25/46](#) are incomplete pending reclassification of documents from groups [H04N 3/155](#) and [H04N 3/1562](#).
 All groups listed in this Warning should be considered in order to perform a complete search.

- U H04N 25/44 • • by partially reading an SSIS array
- M H04N 25/443 • • • by reading pixels from selected ~~2D~~two-dimensional [2D] regions of the array, e.g. for windowing or digital zooming

Project: MP12708 (H04N)

- U H04N 2201/00 Indexing scheme relating to scanning, transmission or reproduction of documents or the like, and to details thereof**
- U H04N 2201/0008 • Connection or combination of a still picture apparatus with another apparatus
- U H04N 2201/0015 • • Control of image communication with the connected apparatus, e.g. signalling capability
- M H04N 2201/0031 • • • where the still picture apparatus ~~acts as the master~~controls another apparatus
- M H04N 2201/0032 • • • where the still picture apparatus ~~acts as the slave~~is controlled by another apparatus

Project: MP12828 (H04Q)

- U H04Q 3/00 Selecting arrangements (H04Q 5/00 - H04Q 11/00 take precedence)**
- U H04Q 3/42 • Circuit arrangements for indirect selecting controlled by common circuits, e.g. register controller, marker
- U H04Q 3/54 • • in which the logic circuitry controlling the exchange is centralised
- M H04Q 3/545 • • • using a stored ~~programme~~program
- U H04Q 11/00 Selecting arrangements for multiplex systems (multiplex systems H04J)**
- U H04Q 11/02 • for frequency-division multiplexing {(H04Q 11/0001 takes precedence)}
- M H04Q 11/023 • • {using a stored ~~programme~~program control}
- U H04Q 11/04 • for time-division multiplexing {(H04Q 11/0001 takes precedence)}
- M H04Q 11/0407 • • {using a stored ~~programme~~program control}

Project: Unknown (H04Q)

- U H04Q 2209/00 Arrangements in telecontrol or telemetry systems**
- U H04Q 2209/40 • using a wireless architecture
- M H04Q 2209/43 • • using wireless personal area networks [WPAN], e.g. 802.15, 802.15.1, 802.15.4, Bluetooth~~or ZigBee®~~ or Zigbee®

Project: MP12822 (H04R)

- M H04R LOUDSPEAKERS, MICROPHONES, GRAMOPHONE PICK-UPS OR LIKE ACOUSTIC ELECTROMECHANICAL TRANSDUCERS; ~~DEAF-AID SETS~~ELECTRIC HEARING AIDS; PUBLIC ADDRESS SYSTEMS (generating mechanical vibrations in general B06B; transducers for measuring particular variables G01; transducers in clocks G04; producing sounds with frequency not determined by supply frequency G10K; transducers in recording or reproducing heads G11B; transducers in motors H02)**

NOTE

This subclass covers :

- loudspeakers, microphones, {acoustic} transducers {therefor} producing acoustic waves or variations of electric current or voltage, or gramophone pick-ups;
- arrangements actuated by variations of electric current or voltage for cutting grooves in records;
- circuits for the above-mentioned {loudspeakers, microphones, acoustic transducers, gramophone pick-ups or} arrangements;

- monitoring or testing {of the above-mentioned loudspeakers, microphones, acoustic transducers, gramophone pick-ups or arrangements}

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

U H04R 1/00

Details of transducers, {loudspeakers or microphones}

U H04R 1/02

- Casings; Cabinets {; Supports therefor;} Mountings therein ([H04R 1/28](#) takes precedence {; attachments for microphones [H04R 1/08](#); mounting of transducers in earpieces [H04R 1/1075](#)})

M H04R 1/04

- • Structural association of microphone with electric circuitry therefor (~~in-deaf-aid sets H04R 25/00~~ *in electric hearing aids H04R 25/00*)

Project: MP12812 (H04R)

U H04R 1/10

- Earpieces; Attachments therefor {; Earphones; Monophonic headphones ([H04R 1/28](#) takes precedence; stereophonic headphones [H04R 5/033](#))}

NOTES

1. {This group covers details of headphones, both of monophonic and stereophonic type. }
2. {When classifying in this group or in its subgroups, aspects relating to stereophonic headphones are to be classified in [H04R 5/033](#) as well.}

M H04R 1/1025

- • ~~{Accumulators or arrangements for charging secondary cells per se H01M 10/00; charging in general H02J 7/00}~~ *Accumulators specially adapted for earpieces (secondary cells per se H01M 10/00; charging in general H02J 7/00); Arrangements specially adapted for charging thereof*

Project: MP12754 (H04R)

U H04R 1/20

- Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purpose [H04R 5/00](#))

U H04R 1/22

- • for obtaining desired frequency characteristic only {(circuit for combining transducers having different responses [H04R 3/00](#); for hearing aids [H04R 25/407](#))}

U H04R 1/28

- • • Transducer mountings or enclosures modified by provision of mechanical or acoustic impedances, e.g. resonator, damping means {(combinations of transducers with horns, i.e. front-loaded horns [H04R 1/30](#))}

U H04R 1/2807

- • • {Enclosures comprising vibrating or resonating arrangements (for the reduction of undesired resonances or vibrations [H04R 1/2869](#))}

U H04R 1/2815

- • • • {of the bass reflex type}

M H04R 1/2823

- • • • • {Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (~~number or position of ports H04R 1/2815; vents in bandpass type enclosures H04R 1/2846~~)}

U H04R 1/2838

- • • • • {of the bandpass type}

M H04R 1/2846

- • • • • {Vents, i.e. ports, e.g. shape thereof or tuning thereof with damping material (~~number or position of ports H04R 1/2838; vents in bass reflex type enclosures H04R 1/2823~~)}

U H04R 1/2869

- • • • {Reduction of undesired resonances, i.e. standing waves within enclosure, or of undesired vibrations, i.e. of the enclosure itself}

M H04R 1/2884

- • • • • {by means of the enclosure structure, i.e. strengthening or shape of the enclosure (~~by means of Helmholtz resonators H04R 1/2869~~)}

Project: MP12822 (H04R)

- M H04R 3/00 Circuits for transducers ~~{, loudspeakers or microphones}~~ (arrangements for producing a reverberation or echo sound [G10K 15/08](#); amplifiers [H03F](#))

Project: RP12800 (H04R)

- U H04R 23/00 Transducers other than those covered by groups [H04R 9/00](#) - [H04R 21/00](#) {(diaphragms for transducers of the distributed-mode type [H04R 7/045](#))}
- M H04R 23/006 • {using solid state devices (~~solid state devices per se~~ [H01L](#) solid state devices *per se* [H10](#))}

Project: MP12822 (H04R)

- M H04R 25/00 ~~Deaf-aid sets {, i.e. electro-acoustic or electro-mechanical~~ **Electric hearing aids; Electric tinnitus maskers providing an auditory perception (electrical stimulation of auditory nerves to promote the auditory function [A61N 1/36038](#); optical stimulation of auditory nerves to promote the auditory function [A61N 5/0622](#))}**

NOTE

{Classification should be directed to groups [H04R 25/02](#), [H04R 25/04](#) or [H04R 25/50](#) and its subgroups, if and only if the technical subject in consideration cannot be classified elsewhere under the main group [H04R 25/00](#).}

Project: MP12754 (H04T)

- M H04T **INDEXING SCHEME ASSOCIATED WITH CLASS [H04](#), RELATING TO STANDARDS FOR ELECTRIC COMMUNICATION TECHNIQUE (~~CLASS [H04](#)~~)**

NOTES

1. This scheme constitutes an non-associated internal scheme for indexing exclusively documents issued by standardisation bodies (herein called standards) for electric communication technique ([H04](#)).
As standardisation bodies organize their documents in different ways, the present scheme is subdivided into main groups related to a particular CPC range to allow different indexing approaches.

2. Scheme index:

3.

Wireless communication standards [H04T 2001/00](#) - [H04T 2001/231](#)

Standards related to data switching

networks in general [H04T 2012/00](#) - [H04T 2012/00](#)

Internet standards [H04T 2029/00](#) - [H04T 2029/06](#)

Project: Unknown (H04W)

- U H04W 28/00 **Network traffic management; Network resource management**
- U H04W 28/02 • Traffic management, e.g. flow control or congestion control
- U H04W 28/08 • • Load balancing or load distribution (transferring a connection for handling the traffic [H04W 36/22](#); wireless traffic scheduling [H04W 72/12](#))
- U H04W 28/086 • • • among access entities
- U H04W 28/0861 • • • • {between base stations}
- M H04W 28/0865 • • • • • {of different Radio Access Technologies [RATs], e.g. LTE ~~or~~ [WiFi®](#) or [Wi-Fi®](#)}

Project: MP12840 (H05B)

- U H05B 3/00 Ohmic-resistance heating**
- M H05B 3/20
- Heating elements having extended surface area substantially in a two-dimensional [\[2D\]](#) plane, e.g. plate-heater ([H05B 3/62](#), [H05B 3/68](#), [H05B 3/78](#), [H05B 3/84](#) take precedence)
- U H05B 33/00 Electroluminescent light sources**
- M H05B 33/12
- Light sources with substantially two-dimensional [\[2D\]](#) radiating surfaces

Project: RP11898-F (H05G)

- U H05G 2/00 Apparatus or processes specially adapted for producing X-rays, not involving X-ray tubes, e.g. involving generation of a plasma (X-ray lasers [H01S 4/00](#))**
- M H05G 2/001
- {Production of X-ray radiation generated from plasma}
- WARNING**
Group H05G 2/001 is impacted by reclassification into groups H05G 2/002 - H05G 2/0027, H05G 2/007 and H05G 2/009 - H05G 2/0094.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/002
- {Supply of the plasma generating material}
- WARNING**
Groups H05G 2/002, H05G 2/0025 and H05G 2/0027 are incomplete pending reclassification of documents from groups H05G 2/001, H05G 2/003, H05G 2/005, H05G 2/006 and H05G 2/008.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/0023
- • {Constructional details of the ejection system}
- WARNING**
Group H05G 2/0023 is incomplete pending reclassification of documents from groups H05G 2/001, H05G 2/006 and H05G 2/008.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/003
- {the plasma being generated from a material in a liquid or gas state}
- WARNING**
Group H05G 2/003 is impacted by reclassification into groups H05G 2/002, H05G 2/0025, H05G 2/0027, H05G 2/007, H05G 2/0088 and H05G 2/009 - H05G 2/0094.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/0035
- • {the material containing metals as principal radiation-generating components}
- WARNING**
Group H05G 2/0035 is incomplete pending reclassification of documents from group H05G 2/005.
Groups H05G 2/005 and H05G 2/0035 should be considered in order to perform a complete search.

- D H05G 2/005
—(Frozen)
- • • {containing a metal as principal radiation-generating component}
- WARNING
Group H05G 2/005 is no longer used for the classification of documents as of August 1, 2024.
The content of this group is being reclassified into groups H05G 2/002, H05G 2/0025, H05G 2/0027, H05G 2/0035, H05G 2/007, H05G 2/0088 and H05G 2/009 – H05G 2/0094.
All groups listed in this Warning should be considered in order to perform a complete search.
- D H05G 2/006
—(Frozen)
- • • {details of the ejection system, e.g. constructional details of the nozzle}
- WARNING
Group H05G 2/006 is no longer used for the classification of documents as of August 1, 2024.
The content of this group is being reclassified into groups H05G 2/002 – H05G 2/0027, H05G 2/007 and H05G 2/009 – H05G 2/0094.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/007
- • {involving electric or magnetic fields in the process of plasma generation}
- WARNING
Group H05G 2/007 is incomplete pending reclassification of documents from groups H05G 2/001, H05G 2/003, H05G 2/005, H05G 2/006 and H05G 2/008.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/008
- • {involving an energy-carrying beam in the process of plasma generation}
- WARNING
Group H05G 2/008 is impacted by reclassification into groups H05G 2/002 – H05G 2/0027, H05G 2/007, H05G 2/0082 – H05G 2/0088 and H05G 2/009 – H05G 2/0094.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/0082
- • • {the energy-carrying beam being a laser beam}
- WARNING
Groups H05G 2/0082, H05G 2/0084 and H05G 2/0086 are incomplete pending reclassification of documents from group H05G 2/008.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/0088
- • • • {for preconditioning the plasma generating material}
- WARNING
Group H05G 2/0088 is incomplete pending reclassification of documents from groups H05G 2/003, H05G 2/005 and H05G 2/008.
All groups listed in this Warning should be considered in order to perform a complete search.
- M H05G 2/009
- • {Auxiliary arrangements not involved in the plasma generation}
- WARNING
Groups H05G 2/009 – H05G 2/0094 are incomplete pending reclassification of documents from groups H05G 2/001, H05G 2/003, H05G 2/005, H05G 2/006 and H05G 2/008.

All groups listed in this Warning should be considered in order to perform a complete search.

Project: MP12840 (H05K)

M H05K

PRINTED CIRCUITS; CASINGS OR CONSTRUCTIONAL DETAILS OF ELECTRIC APPARATUS; MANUFACTURE OF ASSEMBLAGES OF ELECTRICAL COMPONENTS

NOTES

1. This subclass covers:

- combinations of a radio or television receiver with apparatus having a different main function;
- printed circuits structurally associated with non-printed electric components.

2. In this subclass, the following expression is used with the meaning indicated:

- "printed circuits" covers all kinds of mechanical constructions of circuits that consist of an insulating base or support carrying the conductor and are combined structurally with the conductor throughout their length, especially in a two-dimensional [2D] plane, the conductors of which are secured to the base in a non-dismountable manner, and also covers the processes or apparatus for manufacturing such constructions, e.g. forming the circuit by mechanical or chemical treatment of a conductive foil, paste, or film on an insulating support.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Project: RP12819 (H05K)

U H05K 1/00

Printed circuits

U H05K 1/02

• Details

U H05K 1/0213

• • {Electrical arrangements not otherwise provided for}

U H05K 1/0237

• • • {High frequency adaptations ([H05K 1/0216](#) takes precedence)}

M H05K 1/025

• • • • {Impedance arrangements, e.g. impedance matching, reduction of parasitic impedance ([H05K 1/024](#) and [H05K 1/0243](#) take precedence; ~~for semiconductor devices H01L 23/66~~; *for semiconductor devices H10W 44/20*)}

Project: MP12738 (H05K)

M H05K 1/16

• incorporating printed electric components, e.g. printed ~~resistor, capacitor, inductor~~ *resistors, capacitors or inductors*

M H05K 1/18

• ~~Printed circuits~~ structurally associated with non-printed electric components (~~{H05K 1/0201, H05K 1/023, H05K 1/0243, and} H05K 1/16~~ ~~take~~ *takes* precedence)

M H05K 1/181

• • {associated with surface mounted components}

M H05K 1/182

• • {associated with components mounted in ~~the~~ printed circuit ~~board~~ *boards* [PCB], e.g. insert-~~mounted~~ components [IMC]}

M H05K 1/183

• • • {~~Components~~ *associated with components* mounted in and supported by recessed areas of the ~~printed circuit board~~ *PCBs*}

M H05K 1/184

• • • {~~Components including terminals~~ *associated with components* inserted in holes through the ~~printed circuit board and~~ *PCBs and wherein terminals of the components are* connected to printed contacts on the walls of the holes or at the edges thereof or protruding over or into the holes}

- M H05K 1/185
 - • • {~~Components~~*associated with components* encapsulated in the insulating substrate of the ~~printed circuit or incorporated in internal layers of a multilayer circuit PCBs~~(semiconductor chips encapsulated by interconnect and support structures H01L 23/5389, H01L 24/00)}; *associated with components incorporated in internal layers of multilayer circuit boards*
- M H05K 1/189
 - • {characterised by the use of ~~a~~ flexible or folded printed ~~circuit circuits~~(H05K 3/326 takes precedence)}

Project: RP12818 (H05K)

- U H05K 3/00 **Apparatus or processes for manufacturing printed circuits**
- U H05K 3/22
 - Secondary treatment of printed circuits {(H05K 3/1283 takes precedence; embedding circuits in grooves by pressure H05K 3/107)}
- M H05K 3/24
 - • Reinforcing *of* the conductive pattern {(by solder coating H05K 3/3457 H05K 3/3465)}
- M H05K 3/244
 - • • {Finish plating of conductors, especially of copper conductors, e.g. for pads or lands (selective plating methods H05K 3/243; finish plating of conductors made by printing techniques H05K 3/246; solder as finish H05K 3/3457; e.g. by plating H05K 3/3473 H05K 3/3465)}
- M H05K 3/30
 - Assembling printed circuits with electric components, e.g. with ~~resistor~~*resistors*
- M H05K 3/303
 - • {~~Surface mounted components, e.g. affixing before soldering, aligning means, spacing means~~*with surface mounted components* (H05K 3/32 takes precedence)}
- M H05K 3/306
 - • {~~Lead with lead-in-hole components, e.g. affixing or retention before soldering, spacing means~~ (H05K 3/32 takes precedence)}
- U H05K 3/32
 - • electrically connecting electric components or wires to printed circuits
- M H05K 3/321
 - • • {by conductive adhesives}
- M H05K 3/325
 - • • {by abutting or pinching, ~~i.e. without alloying process;~~ *mechanical* ~~Mechanical~~ auxiliary parts therefor ~~(adaptations of leads inserted in holes for press-fit connections H05K 3/308)~~}
- M H05K 3/328
 - • • {by welding}
- U H05K 3/34
 - • • by soldering
- M H05K 3/341
 - • • • {Surface mounted components}
- M H05K 3/3447
 - • • • {Lead-in-hole components ~~(H05K 3/3415 takes precedence)~~}
- M H05K 3/3452
 - • • • {Solder masks}
- D H05K 3/3457
 - • • • {Solder materials or compositions; Methods of application thereof}

<administratively transferred to H05K 3/3465>
- N H05K 3/346
 - • • • Solder materials or compositions specially adapted therefor
- D H05K 3/3463
 - • • • • {Solder compositions in relation to features of the printed-circuit board or the mounting process}

<administratively transferred to H05K 3/346>
- N H05K 3/3465
 - • • • Application of solder
- M H05K 3/3468
 - • • • • {~~Applying molten solder~~} *Application of molten solder, e.g. dip soldering*
- M H05K 3/3473
 - • • • • {Plating of solder}
- M H05K 3/3478
 - • • • • {~~Applying~~ *Application of* solder preforms; ~~Transferring prefabricated solder patterns~~}
- M H05K 3/3485
 - • • • • {~~Applying~~ *Application of* solder paste, slurry or powder (~~thick film methods for applying conductive paste or ink patterns H05K 3/12 using printing techniques to form the desired conductive pattern of the printed circuit by applying conductive material H05K 3/12~~)}

- M H05K 3/3489 • • • {Composition of fluxes; ~~Methods of application~~ *Application* thereof; ~~Other methods~~ *processes* of activating the contact surfaces}
- M H05K 3/3494 • • • {Heating ~~methods for reflowing of solder~~ *processes for reflow soldering* (using integral heating means H05K 1/0212)}
- U H05K 3/40 • Forming printed elements for providing electric connections to or between printed circuits
- M H05K 3/4007 • {Surface contacts, e.g. bumps (H05K 3/4092 takes precedence; deposition of finish layers on pads H05K 3/24; forming solder bumps H05K 3/3457 H05K 3/3465)}

Project: RP10454-F (H05K)**U H05K 5/00 Casings, cabinets or drawers for electric apparatus**

- M H05K 5/0017 • {with operator interface units}

WARNING

Group H05K 5/0017 is impacted by reclassification into group H05K 5/0018.-
Groups H05K 5/0017 and H05K 5/0018 should be considered in order to perform a complete search.

- M H05K 5/0018 • {having an electronic display}

WARNING

Group H05K 5/0018 is incomplete pending reclassification of documents from group H05K 5/0017.-
Groups H05K 5/0017 and H05K 5/0018 should be considered in order to perform a complete search.

Project: RP12819 (H05K)

- M H05K 5/0091 • {Housing specially adapted for small components (for resistors H01C; for capacitors H01G; ~~for integrated circuits H01L 23/00~~; *for integrated circuits H10W 99/00*)}

Project: RP10454-F (H05K)

- M H05K 5/02 • Details

WARNING

Group H05K 5/02 is impacted by reclassification into groups H05K 5/0209, H05K 5/021, H05K 5/0211, H05K 5/0212, H05K 5/0214, H05K 5/0215 and H05K 5/0216.-
All groups listed in this Warning should be considered in order to perform a complete search.

- M H05K 5/0209 • {Thermal insulation, e.g. for fire protection or for fire containment or for high temperature environments}

WARNING

Groups H05K 5/0209 - H05K 5/0211 are incomplete pending reclassification of documents from groups H05K 5/02 and H05K 5/0213.-
All groups listed in this Warning should be considered in order to perform a complete search.

- M H05K 5/0212 • {Condensation eliminators}

WARNING

Group H05K 5/0212 is incomplete pending reclassification of documents from groups H05K 5/02 and H05K 5/0213.-

Groups H05K 5/02, H05K 5/0213 and H05K 5/0212 should be considered in order to perform a complete search.

M H05K 5/0213

- {Venting apertures; Constructional details thereof}

WARNING

Group H05K 5/0213 is impacted by reclassification into groups H05K 5/0209, H05K 5/021, H05K 5/0211, H05K 5/0212, H05K 5/0214, H05K 5/0215 and H05K 5/0216.

All groups listed in this Warning should be considered in order to perform a complete search.

M H05K 5/0214

- • {with means preventing penetration of rain water or dust (semi-permeable membranes [H05K 5/0215](#), [H05K 5/0216](#))}

WARNING

Group H05K 5/0214 is incomplete pending reclassification of documents from groups H05K 5/02 and H05K 5/0213.

Groups H05K 5/02, H05K 5/0213 and H05K 5/0214 should be considered in order to perform a complete search.

M H05K 5/0215

- • {with semi-permeable membranes attached to casings}

WARNING

Group H05K 5/0215 is incomplete pending reclassification of documents from groups H05K 5/02 and H05K 5/0213.

Groups H05K 5/02, H05K 5/0213 and H05K 5/0215 should be considered in order to perform a complete search.

M H05K 5/0216

- • {Venting plugs comprising semi-permeable membranes}

WARNING

Group H05K 5/0216 is incomplete pending reclassification of documents from groups H05K 5/02 and H05K 5/0213.

Groups H05K 5/02, H05K 5/0213 and H05K 5/0216 should be considered in order to perform a complete search.

U H05K 7/00

Constructional details common to different types of electric apparatus (casings, cabinets, drawers [H05K 5/00](#))

U H05K 7/14

- Mounting supporting structure in casing or on frame or rack

U H05K 7/1422

- {Printed circuit boards receptacles, e.g. stacked structures, electronic circuit modules or box like frames}

U H05K 7/1427

- • {Housings}

M H05K 7/1432

- • • {specially adapted for power drive units or power converters}

WARNING

Group H05K 7/1432 is impacted by reclassification into groups H05K 7/14322, H05K 7/14324, H05K 7/14325, H05K 7/14327, H05K 7/14329, H05K 7/14337 and H05K 7/14339.

All groups listed in this Warning should be considered in order to perform a complete search.

M H05K 7/14322

- • • {wherein the control and power circuits of a power converter are arranged within the same casing}

WARNING

Group H05K 7/14322 is incomplete pending reclassification of documents from group H05K 7/1432.

Groups H05K 7/1432 and H05K 7/14322 should be considered in order to perform a complete search.

M	H05K 7/14324	<ul style="list-style-type: none"> • • • • {comprising modular units, e.g. DIN rail mounted units} <p><u>WARNING</u> Group H05K 7/14324 is incomplete pending reclassification of documents from group H05K 7/1432. Groups H05K 7/1432 and H05K 7/14324 should be considered in order to perform a complete search.</p>
M	H05K 7/14325	<ul style="list-style-type: none"> • • • • {for cabinets or racks} <p><u>WARNING</u> Group H05K 7/14325 is incomplete pending reclassification of documents from group H05K 7/1432. Groups H05K 7/1432 and H05K 7/14325 should be considered in order to perform a complete search.</p>
M	H05K 7/14327	<ul style="list-style-type: none"> • • • • {having supplementary functional units, e.g. data transfer modules or displays or user interfaces} <p><u>WARNING</u> Group H05K 7/14327 is incomplete pending reclassification of documents from group H05K 7/1432. Groups H05K 7/1432 and H05K 7/14327 should be considered in order to perform a complete search.</p>
M	H05K 7/14329	<ul style="list-style-type: none"> • • • • {specially adapted for the configuration of power bus bars} <p><u>WARNING</u> Group H05K 7/14329 is incomplete pending reclassification of documents from group H05K 7/1432. Groups H05K 7/1432 and H05K 7/14329 should be considered in order to perform a complete search.</p>
M	H05K 7/14337	<ul style="list-style-type: none"> • • • • {specially adapted for underwater operation} <p><u>WARNING</u> Group H05K 7/14337 is incomplete pending reclassification of documents from group H05K 7/1432. Groups H05K 7/1432 and H05K 7/14337 should be considered in order to perform a complete search.</p>
M	H05K 7/14339	<ul style="list-style-type: none"> • • • • {specially adapted for high voltage operation} <p><u>WARNING</u> Group H05K 7/14339 is incomplete pending reclassification of documents from group H05K 7/1432. Groups H05K 7/1432 and H05K 7/14339 should be considered in order to perform a complete search.</p>

Project: RP12819 (H05K)

U	H05K 9/00	Screening of apparatus or components against electric or magnetic fields (devices for absorbing radiation from an antenna H01Q 17/00)
U	H05K 9/0007	<ul style="list-style-type: none"> • {Casings (standardised racks H05K 9/0062)}
U	H05K 9/002	<ul style="list-style-type: none"> • • {with localised screening}
M	H05K 9/0022	<ul style="list-style-type: none"> • • • {of components mounted on printed circuit boards [PCB] (shields integrated within component packages H01L 23/552; shields integrated within PCB H05K 1/0218; <i>shields integrated within component packages H10W 42/20</i>)}

Project: RP10454-F (H05K)

M	H05K 9/0024	<ul style="list-style-type: none"> • • • {Shield cases mounted on a PCB, e.g. cans or caps or conformal shields} <p><u>WARNING</u> Group H05K 9/0024 is impacted by reclassification into groups H05K 9/0029 and H05K 9/0031. Groups H05K 9/0024, H05K 9/0029 and H05K 9/0031 should be considered in order to perform a complete search.</p>
M	H05K 9/0029	<ul style="list-style-type: none"> • • • • {made from non-conductive materials intermixed with electro-conductive particles (H05K 9/0031 takes precedence)} <p><u>WARNING</u> Group H05K 9/0029 is incomplete pending reclassification of documents from groups H05K 9/0024 and H05K 9/0031. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H05K 9/003	<ul style="list-style-type: none"> • • • • {made from non-conductive materials comprising an electro-conductive coating (H05K 9/0031 takes precedence)} <p><u>WARNING</u> Group H05K 9/003 is impacted by reclassification into groups H05K 9/0029 and H05K 9/0031. Groups H05K 9/003, H05K 9/0029 and H05K 9/0031 should be considered in order to perform a complete search.</p>
M	H05K 9/0031	<ul style="list-style-type: none"> • • • • {combining different shielding materials} <p><u>WARNING</u> Group H05K 9/0031 is incomplete pending reclassification of documents from groups H05K 9/0024 and H05K 9/003. All groups listed in this Warning should be considered in order to perform a complete search.</p>

Project: MP12840 (H10B)

U	H10B 41/00	Electrically erasable-and-programmable ROM [EEPROM] devices comprising floating gates
M	H10B 41/20	<ul style="list-style-type: none"> • characterised by three-dimensional [3D] arrangements, e.g. with cells on different height levels
U	H10B 43/00	EEPROM devices comprising charge-trapping gate insulators
M	H10B 43/20	<ul style="list-style-type: none"> • characterised by three-dimensional [3D] arrangements, e.g. with cells on different height levels
U	H10B 51/00	Ferroelectric RAM [FeRAM] devices comprising ferroelectric memory transistors
M	H10B 51/20	<ul style="list-style-type: none"> • characterised by the three-dimensional [3D] arrangements, e.g. with cells on different height levels
U	H10B 53/00	Ferroelectric RAM [FeRAM] devices comprising ferroelectric memory capacitors
M	H10B 53/20	<ul style="list-style-type: none"> • characterised by the three-dimensional [3D] arrangements, e.g. with cells on different height levels

Project: RP12819 (H10B)**M H10B 80/00****Assemblies of multiple devices comprising at least one memory device covered by this subclass****WARNING**

Group [H10B 80/00](#) is incomplete pending reclassification of documents from ~~groups~~[group H01L 25/065](#), ~~H01L 25/0652~~, ~~H01L 25/0655~~, ~~H01L 25/0657~~, ~~H01L 25/16~~, ~~H01L 25/162~~, ~~H01L 25/165~~, ~~H01L 25/167~~ and ~~H01L 25/18~~[H10W 90/00](#).

All groups listed in this Warning [Groups H10W 90/00 and H10B 80/00](#) should be considered in order to perform a complete search.

Project: RP12819 (H10D)**M H10D****INORGANIC ELECTRIC SEMICONDUCTOR DEVICES****NOTES**

1. This subclass covers electric semiconductor devices having inorganic semiconductor bodies. This includes the following kind of devices:

- inorganic semiconductor devices specially adapted for rectifying, amplifying, oscillating or switching, e.g. transistors or diodes;
- individual inorganic resistors or capacitors having potential barriers;
- individual resistors, capacitors or inductors having no potential barriers, and specially adapted for integration with other semiconductor components;
- semiconductor bodies, or regions thereof, of devices covered by this subclass;
- electrodes of devices covered by this subclass;
- integrated devices, e.g. CMOS integrated devices;
- processes or apparatus specially adapted for the manufacture or treatment of such devices.

2. This subclass does not cover:

- electronic memory devices, which are covered by subclass [H10B](#);
- semiconductor devices sensitive to infrared radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation, which are covered by subclass [H10F](#);
- light-emitting semiconductor devices having at least one potential barrier, which are covered by subclass [H10H](#);
- thermoelectric, thermomagnetic, piezoelectric, electrostrictive, magnetostrictive, magnetic-effect, superconducting or other electric solid-state devices, which are covered by subclass [H10N](#);
- constructional details other than semiconductor bodies or electrodes, which are covered by ~~group~~[subclass H01L 23/00](#)[H10W](#).

3. In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).

Project: MP12840 (H10D)**U H10D 30/00****Field-effect transistors [FET] (insulated-gate bipolar transistors [H10D 12/00](#))****NOTE**

In this group, when the manufacture or treatment of a device is determined to be novel and non-obvious, the device itself is also classified.

WARNING

Group [H10D 30/00](#) is impacted by reclassification into group [H10D 30/40](#).

Groups [H10D 30/00](#) and [H10D 30/40](#) should be considered in order to perform a complete search.

- U H10D 30/40
- FETs having zero-dimensional [0D], one-dimensional [1D] or two-dimensional [2D] charge carrier gas channels
- WARNING
Group [H10D 30/40](#) is incomplete pending reclassification of documents from group [H10D 30/00](#).
Groups [H10D 30/00](#) and [H10D 30/40](#) should be considered in order to perform a complete search.
- M H10D 30/43
- • having ~~1D~~*one-dimensional [1D]* charge carrier gas channels, e.g. quantum wire FETs or transistors having 1D quantum-confined channels
- WARNING
Group [H10D 30/43](#) is impacted by reclassification into groups [H10D 30/435](#) and [H10D 30/501 - H10D 30/509](#).
Groups [H10D 30/43](#), [H10D 30/435](#) and [H10D 30/501 - H10D 30/509](#) should be considered in order to perform a complete search.
- M H10D 30/47
- • having ~~2D~~*two-dimensional [2D]* charge carrier gas channels, e.g. nanoribbon FETs or high electron mobility transistors [HEMT]
- WARNING
Group [H10D 30/47](#) is impacted by reclassification into groups [H10D 30/471](#), [H10D 30/474](#), [H10D 30/476](#), [H10D 30/481](#) and [H10D 30/501 - H10D 30/509](#).
All groups listed in this Warning should be considered in order to perform a complete search.

Project: RP12800 (H10D)

- M H10D 64/01
- Manufacture or treatment
- NOTE
{Processes or apparatus specially adapted for the manufacture or treatment of devices, or parts thereof, covered by class H10, which are generically applicable to these devices are covered by subclass H10P}
- Q H10D 64/011
- • {of electrodes ohmically coupled to a semiconductor}
- WARNING
Group [H10D 64/011](#) is incomplete pending reclassification of documents from group [H10P 14/47](#). Group [H10D 64/011](#) is also impacted by reclassification into groups [H10D 64/0111 - H10D 64/0115](#), [H10D 64/0116 - H10D 64/0118](#), [H10D 64/012 - H10D 64/0126](#) and [H10D 64/013 - H10D 64/01366](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10D 64/0111
- • • {to Group IV semiconductors}
- WARNING
Groups [H10D 64/0111](#) and [H10D 64/0113](#) are incomplete pending reclassification of documents from group [H10D 64/011](#).
Groups [H10D 64/011](#), [H10D 64/0111](#) and [H10D 64/0113](#) should be considered in order to perform a complete search.
- Q H10D 64/0112
- • • {using conductive layers comprising silicides}
- WARNING
Group [H10D 64/0112](#) is incomplete pending reclassification of documents from group [H10D 64/011](#). Group [H10D 64/0112](#) is also impacted by reclassification into group [H10D 64/01125](#).

Groups [H10D 64/011](#), [H10D 64/0112](#) and [H10D 64/01125](#) should be considered in order to perform a complete search.

- N H10D 64/01125 {the silicides being formed by chemical reaction with the semiconductor after the contact hole formation}

WARNING

Group [H10D 64/01125](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0112](#). Groups [H10D 64/011](#), [H10D 64/0112](#) and [H10D 64/01125](#) should be considered in order to perform a complete search.

- N H10D 64/0113 {the conductive layers comprising highly doped semiconductor materials, e.g. polysilicon layers or amorphous silicon layers}

- Q H10D 64/0114 {to diamond, semiconducting diamond-like carbon or graphene}

WARNING

Group [H10D 64/0114](#) is incomplete pending reclassification of documents from group [H10D 64/011](#). Group [H10D 64/0114](#) is also impacted by reclassification into groups [H10D 64/0122](#) and [H10D 64/01364](#). All groups listed in this Warning should be considered in order to perform a complete search.

- Q H10D 64/0115 {to silicon carbide}

WARNING

Group [H10D 64/0115](#) is incomplete pending reclassification of documents from group [H10D 64/011](#). Group [H10D 64/0115](#) is also impacted by reclassification into groups [H10D 64/0123](#) and [H10D 64/01366](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10D 64/0116 {to Group III-V semiconductors}

WARNING

Group [H10D 64/0116](#) is incomplete pending reclassification of documents from group [H10D 64/011](#). Groups [H10D 64/011](#) and [H10D 64/0116](#) should be considered in order to perform a complete search.

- N H10D 64/0117 {characterised by the sectional shape, e.g. T or inverted T}

WARNING

Group [H10D 64/0117](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0125](#). Groups [H10D 64/011](#), [H10D 64/0125](#) and [H10D 64/0117](#) should be considered in order to perform a complete search.

- N H10D 64/0118 {asymmetrical sectional shape}

WARNING

Group [H10D 64/0118](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0126](#). Groups [H10D 64/011](#), [H10D 64/0126](#) and [H10D 64/0118](#) should be considered in order to perform a complete search.

- N H10D 64/012 {of electrodes comprising a Schottky barrier to a semiconductor}

WARNING

Group [H10D 64/012](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10P 14/47](#).

Groups [H10D 64/011](#), [H10P 14/47](#) and [H10D 64/012](#) should be considered in order to perform a complete search.

- N H10D 64/0121 • • • {to Group IV semiconductors}
WARNING
Group [H10D 64/0121](#) is incomplete pending reclassification of documents from group [H10D 64/011](#).
Groups [H10D 64/011](#) and [H10D 64/0121](#) should be considered in order to perform a complete search.
- N H10D 64/0122 • • • {to diamond, semiconducting diamond-like carbon or graphene}
WARNING
Group [H10D 64/0122](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0114](#).
Groups [H10D 64/011](#), [H10D 64/0114](#) and [H10D 64/0122](#) should be considered in order to perform a complete search.
- N H10D 64/0123 • • • {to silicon carbide}
WARNING
Group [H10D 64/0123](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0115](#).
Groups [H10D 64/011](#), [H10D 64/0115](#) and [H10D 64/0123](#) should be considered in order to perform a complete search.
- N H10D 64/0124 • • • {to Group III-V semiconductors}
WARNING
Group [H10D 64/0124](#) is incomplete pending reclassification of documents from group [H10D 64/011](#).
Groups [H10D 64/011](#) and [H10D 64/0124](#) should be considered in order to perform a complete search.
- Q H10D 64/0125 • • • {characterised by the sectional shape, e.g. T or inverted T}
WARNING
Group [H10D 64/0125](#) is incomplete pending reclassification of documents from group [H10D 64/011](#). Group [H10D 64/0125](#) is also impacted by reclassification into groups [H10D 64/0117](#) and [H10D 64/0136](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- Q H10D 64/0126 • • • {the sectional shape being asymmetrical}
WARNING
Group [H10D 64/0126](#) is incomplete pending reclassification of documents from group [H10D 64/011](#). Group [H10D 64/0126](#) is also impacted by reclassification into groups [H10D 64/0118](#) and [H10D 64/01362](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10D 64/013 • {of electrodes having a conductor capacitively coupled to a semiconductor by an insulator}
WARNING
Group [H10D 64/013](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10P 14/47](#).
Groups [H10D 64/011](#), [H10P 14/47](#) and [H10D 64/013](#) should be considered in order to perform a complete search.

- N H10D 64/01302 . . . {the insulator being formed after the semiconductor body, the semiconductor being silicon}
- WARNING
Groups [H10D 64/01302](#) - [H10D 64/01354](#) are incomplete pending reclassification of documents from group [H10D 64/011](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10D 64/01304 {characterised by the conductor}
- N H10D 64/01306 {the conductor comprising a layer of silicon contacting the insulator, e.g. polysilicon}
- N H10D 64/01308 {the conductor further comprising a non-elemental silicon additional conductive layer, e.g. a metal silicide layer formed by the reaction of silicon with an implanted metal}
- N H10D 64/0131 {the additional conductive layer comprising a silicide layer formed by the silicidation reaction between the layer of silicon with a metal layer which is not formed by metal implantation}
- N H10D 64/01312 {the additional layer comprising a metal or metal silicide formed by deposition, i.e. without a silicidation reaction, e.g. sputter deposition}
- N H10D 64/01314 {the conductor comprising a layer of Ge, C or of compounds of Si, Ge or C contacting the insulator}
- N H10D 64/01316 {the conductor comprising a layer of elemental metal contacting the insulator, e.g. Ta, W, Mo or Al}
- N H10D 64/01318 {the conductor comprising a layer of alloy material, compound material or organic material contacting the insulator, e.g. TiN (comprising a layer of alloys of Si, Ge or C [H10D 64/01314](#))}
- N H10D 64/0132 {the conductor being a metallic silicide}
- N H10D 64/01322 {the conductor contacting the insulator having a lateral variation in doping, composition or deposition steps}
- N H10D 64/01324 {characterised by the sectional shape, e.g. T or inverted-T}
- N H10D 64/01326 {Aspects related to lithography, isolation or planarisation of the conductor}
- N H10D 64/01328 {by defining the conductor using a sidewall spacer mask, a transformation under a mask or a plating at a sidewall}
- N H10D 64/0133 {at least part of the entire electrode being a sidewall spacer, being formed by transformation under a mask or being formed by plating at a sidewall}
- N H10D 64/01332 {Making the insulator}
- N H10D 64/01334 {by defining the insulator using a sidewall spacer mask, a transformation under a mask or a plating at a sidewall}
- N H10D 64/01336 {on single crystalline silicon, e.g. chemical oxidation using a liquid}
- N H10D 64/01338 {with a treatment, e.g. annealing, after the formation of the conductor}
- N H10D 64/0134 {with a treatment, e.g. annealing, after the formation of the insulator and before the formation of the conductor}
- N H10D 64/01342 {by deposition, e.g. evaporation, ALD or laser deposition ([H10D 64/01344](#) takes precedence)}
- N H10D 64/01344 {in a nitrogen-containing ambient, e.g. N₂O oxidation}
- N H10D 64/01346 {in a gaseous ambient using an oxygen or a water vapour, e.g. oxidation through a layer ([H10D 64/01344](#) takes precedence)}
- N H10D 64/01348 {with substrate doping, e.g. N, Ge or C implantation, before formation of the insulator}

- N H10D 64/0135 {by deposition of a layer, e.g. metal, metal compound or polysilicon, followed by transformation thereof into the insulator}
- N H10D 64/01352 {with sacrificial oxide}
- N H10D 64/01354 {passivation or protection of the electrode, e.g. using re-oxidation}
- N H10D 64/01356 . . . {the insulator being formed after the semiconductor body, the semiconductor being a Group IV material and not being silicon, e.g. Ge, SiGe or SiGeC ([H10D 64/01364](#), [H10D 64/01366](#) take precedence)}
- WARNING
Group [H10D 64/01356](#) is incomplete pending reclassification of documents from group [H10D 64/011](#).
Groups [H10D 64/011](#) and [H10D 64/01356](#) should be considered in order to perform a complete search.
- N H10D 64/01358 . . . {the insulator being formed after the semiconductor body, the semiconductor being a Group III-V material}
- WARNING
Group [H10D 64/01358](#) is incomplete pending reclassification of documents from group [H10D 64/011](#).
Groups [H10D 64/011](#) and [H10D 64/01358](#) should be considered in order to perform a complete search.
- N H10D 64/0136 {characterised by the sectional shape, e.g. T or inverted-T}
- WARNING
Group [H10D 64/0136](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0125](#).
Groups [H10D 64/011](#), [H10D 64/0125](#) and [H10D 64/0136](#) should be considered in order to perform a complete search.
- N H10D 64/01362 {asymmetrical sectional shape}
- WARNING
Group [H10D 64/01362](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0126](#).
Groups [H10D 64/011](#), [H10D 64/0126](#) and [H10D 64/01362](#) should be considered in order to perform a complete search.
- N H10D 64/01364 . . . {the semiconductor being diamond, semiconducting diamond-like carbon or graphene}
- WARNING
Group [H10D 64/01364](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0114](#).
Groups [H10D 64/011](#), [H10D 64/0114](#) and [H10D 64/01364](#) should be considered in order to perform a complete search.
- N H10D 64/01366 . . . {the semiconductor being silicon carbide}
- WARNING
Group [H10D 64/01366](#) is incomplete pending reclassification of documents from groups [H10D 64/011](#) and [H10D 64/0115](#).
Groups [H10D 64/011](#), [H10D 64/0115](#) and [H10D 64/01366](#) should be considered in order to perform a complete search.

Project: RP12819 (H10D)

M H10D 80/00 Assemblies of multiple devices comprising at least one device covered by this subclass

WARNING

Group H10D 80/00 is incomplete pending reclassification of documents from group H10W 90/00.

Groups H10W 90/00 and H10D 80/00 should be considered in order to perform a complete search.

Project: RP12800 (H10D)

U H10D 84/00 Integrated devices formed in or on semiconductor substrates that comprise only semiconducting layers, e.g. on Si wafers or on GaAs-on-Si wafers

NOTE

In this group, when the manufacture or treatment of a device is determined to be novel and non-obvious, the device itself is also classified.

C H10D 84/01 • Manufacture or treatment

WARNING

Group [H10D 84/01](#) is impacted by reclassification into groups [H10D 84/0102](#) - [H10D 84/0105](#), [H10D 84/0107](#) - [H10D 84/0109](#), [H10D 84/0112](#) - [H10D 84/0121](#), [H10D 84/0123](#) - [H10D 84/0195](#), [H10D 84/0198](#), [H10D 84/02](#), [H10D 84/03](#), [H10D 84/035](#), [H10D 84/038](#), [H10D 84/05](#), [H10D 84/07](#) and [H10D 84/08](#) and [H10D 89/60](#) - [H10D 89/931](#).

All groups listed in this Warning should be considered in order to perform a complete search.

M H10D 84/0102 • {of thyristors having built-in components, e.g. thyristor having built-in diode}

WARNING

Groups [H10D 84/0102](#) and [H10D 84/0105](#) are incomplete pending reclassification of documents from group [H10D 84/01](#).

Groups [H10D 84/01](#), [H10D 84/0102](#) and [H10D 84/0105](#) should be considered in order to perform a complete search.

M H10D 84/0107 • {Integrating at least one component covered by [H10D 12/00](#) or [H10D 30/00](#) with at least one component covered by [H10D 8/00](#), [H10D 10/00](#) or [H10D 18/00](#), e.g. integrating IGFETs with BJTs}

WARNING

Groups [H10D 84/0107](#) and [H10D 84/0109](#) are incomplete pending reclassification of documents from groups [H10D 84/01](#), [H10D 84/02](#), [H10D 84/032](#), [H10D 84/035](#), [H10D 84/05](#), [H10D 84/07](#) and [H10D 84/08](#).

All groups listed in this Warning should be considered in order to perform a complete search.

M H10D 84/0112 • {Integrating together multiple components covered by [H10D 8/00](#), [H10D 10/00](#) or [H10D 18/00](#), e.g. integrating multiple BJTs}

WARNING

Groups [H10D 84/0112](#) - [H10D 84/0121](#) are incomplete pending reclassification of documents from groups [H10D 84/01](#), [H10D 84/02](#), [H10D 84/032](#), [H10D 84/035](#), [H10D 84/05](#), [H10D 84/07](#) and [H10D 84/08](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- M H10D 84/0123
- {Integrating together multiple components covered by [H10D 12/00](#) or [H10D 30/00](#), e.g. integrating multiple IGBTs}
- WARNING
- Groups [H10D 84/0123](#), ~~H10D 84/0126~~, ~~H10D 84/0128~~, ~~H10D 84/013~~, ~~H10D 84/0133~~, ~~H10D 84/0135~~, ~~H10D 84/0137~~, ~~H10D 84/014~~, ~~H10D 84/0142~~, ~~H10D 84/0144~~, ~~H10D 84/0147~~, ~~H10D 84/0158~~, ~~H10D 84/016~~, ~~H10D 84/0163~~, ~~H10D 84/0165~~, ~~H10D 84/0167~~, ~~H10D 84/017~~, ~~H10D 84/0172~~, ~~H10D 84/0174~~, ~~H10D 84/0177~~, ~~H10D 84/0179~~, ~~H10D 84/0181~~, ~~H10D 84/0184~~, ~~H10D 84/0186~~, ~~H10D 84/0188~~, ~~H10D 84/0191~~, ~~H10D 84/0193~~ and [H10D 84/0195](#) are incomplete pending reclassification of documents from groups [H10D 84/01](#), [H10D 84/02](#), [H10D 84/032](#), [H10D 84/035](#), [H10D 84/05](#), [H10D 84/07](#) and [H10D 84/08](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- M H10D 84/0198
- {Integrating together multiple components covered by [H10D 44/00](#), e.g. integrating charge coupled devices}
- WARNING
- Group [H10D 84/0198](#) is incomplete pending reclassification of documents from groups [H10D 84/01](#), [H10D 84/02](#), [H10D 84/032](#), [H10D 84/035](#), [H10D 84/05](#), [H10D 84/07](#) and [H10D 84/08](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- M H10D 84/02
- characterised by using material-based technologies
- WARNING
- ~~Group~~ Groups [H10D 84/02](#) is- [H10D 84/08](#) are incomplete pending reclassification of documents from group [H10D 84/01](#).
- Group [H10D 84/02](#) is also impacted by reclassification into groups [H10D 84/0107](#) - [H10D 84/0109](#), [H10D 84/0112](#) - [H10D 84/0121](#), [H10D 84/0123](#), [H10D 84/0126](#), [H10D 84/0128](#), [H10D 84/013](#) - [H10D 84/0133](#), [H10D 84/0135](#) - [H10D 84/0142](#), [H10D 84/0144](#), [H10D 84/0147](#), [H10D 84/0151](#) - [H10D 84/0153](#), [H10D 84/0156](#), [H10D 84/0158](#), [H10D 84/016](#), [H10D 84/0163](#), [H10D 84/0165](#) - [H10D 84/0195](#), [H10D 84/0198](#), [H10D 84/03](#) and [H10D 88/01](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- U H10D 86/00
- Integrated devices formed in or on insulating or conducting substrates, e.g. formed in silicon-on-insulator [SOI] substrates or on stainless steel or glass substrates**
- NOTE
- In this group, when the manufacture or treatment of a device is determined to be novel and non-obvious, the device itself is also classified.
- M H10D 86/01
- Manufacture or treatment
- WARNING
- Groups [H10D 86/01](#) - [H10D 86/03](#) are incomplete pending reclassification of documents from group [H10D 84/01](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

M	H10D 87/00	<p>Integrated devices comprising both bulk components and either SOI or SOS components on the same substrate</p> <p><u>WARNING</u> Group H10D 87/00 is incomplete pending reclassification of documents from group H10D 84/01. Groups H10D 84/01 and H10D 87/00 should be considered in order to perform a complete search.</p>
U	H10D 88/00	<p>Three-dimensional [3D] integrated devices</p>
M	H10D 88/01	<ul style="list-style-type: none"> • {Manufacture or treatment} <p><u>WARNING</u> Group H10D 88/01 is incomplete pending reclassification of documents from groups H10D 84/01, H10D 84/02, H10D 84/032, H10D 84/035, H10D 84/05, H10D 84/07 and H10D 84/08. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10D 88/101	<ul style="list-style-type: none"> • {comprising components on opposite major surfaces of semiconductor substrates} <p><u>WARNING</u> Group H10D 88/101 is incomplete pending reclassification of documents from group H10D 84/01. Groups H10D 84/01 and H10D 88/101 should be considered in order to perform a complete search.</p>
U	H10D 89/00	<p>Aspects of integrated devices not covered by groups H10D 84/00 - H10D 88/00</p>
D	H10D 89/011	<ul style="list-style-type: none"> • {Division of wafers or substrates to produce devices, each consisting of a single electric circuit element} <p><administratively transferred to H10P 58/00></p>
D	H10D 89/013	<ul style="list-style-type: none"> • {the wafers or substrates being semiconductor bodies} <p><administratively transferred to H10P 58/00></p>
D	H10D 89/015	<ul style="list-style-type: none"> • {the wafers or substrates being other than semiconductor bodies, e.g. insulating bodies} <p><administratively transferred to H10P 58/00></p>
M	H10D 89/60	<ul style="list-style-type: none"> • Integrated devices comprising arrangements for electrical or thermal protection, e.g. protection circuits against electrostatic discharge [ESD] <p><u>WARNING</u> Groups H10D 89/60 - H10D 89/931 are incomplete pending reclassification of documents from group H10D 84/01. All groups listed in this Warning should be considered in order to perform a complete search.</p>

Project: RP12819 (H10F)

U	H10F 39/00	<p>Integrated devices, or assemblies of multiple devices, comprising at least one element covered by group H10F 30/00, e.g. radiation detectors comprising photodiode arrays</p> <p><u>WARNING</u> Groups H10F 39/00 and H10F 39/10 are incomplete pending reclassification of documents from group H10F 99/00.</p>
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Groups [H10F 99/00](#), [H10F 39/00](#) and [H10F 39/10](#) should be considered in order to perform a complete search.

M H10F 39/90

- Assemblies of multiple devices

WARNING

Groups [H10F 39/90](#) and [H10F 39/95](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

Groups [H10W 90/00](#), [H10F 39/90](#) and [H10F 39/95](#) should be considered in order to perform a complete search.

Project: RP12819 (H10H)

U H10H 29/00

Integrated devices, or assemblies of multiple devices, comprising at least one light-emitting semiconductor element covered by group [H10H 20/00](#)

M H10H 29/20

- Assemblies of multiple devices comprising at least one light-emitting semiconductor device covered by group [H10H 20/00](#) (active-matrix LED displays [H10H 29/30](#))

WARNING

Groups [H10H 29/20](#) and [H10H 29/24](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

Groups [H10W 90/00](#), [H10H 29/20](#) and [H10H 29/24](#) should be considered in order to perform a complete search.

M H10H 29/30

- Active-matrix LED displays

NOTE

This group covers active-matrix displays where the emphasis of the invention concerns the LEDs, the layers closely related to the LEDs or constructional details closely related to the LEDs, e.g. interconnections between the LEDs or their encapsulations.

WARNING

Groups [H10H 29/30](#), [H10H 29/32](#), [H10H 29/34](#), [H10H 29/345](#), [H10H 29/352](#), [H10H 29/362](#), [H10H 29/37](#), [H10H 29/39](#), [H10H 29/41](#) and [H10H 29/45](#) and [H10H 29/49](#) are incomplete pending reclassification of documents from group [H10H 29/142](#) [H10W 90/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Project: RP11801-F (H10K)

M H10K 10/00

Organic devices specially adapted for rectifying, amplifying, oscillating or switching; Organic capacitors or resistors having potential barriers (integrated devices or assemblies of multiple devices [H10K 19/00](#))

WARNING

Group [H10K 10/00](#) is impacted by reclassification into groups [H10K 10/10](#), [H10K 10/40](#) and [H10K 10/43](#).

All groups listed in this Warning should be considered in order to perform a complete search.

M H10K 10/10

- Organic capacitors or resistors having potential barriers

WARNING

Group [H10K 10/10](#) is incomplete pending reclassification of documents from group [H10K 10/00](#).

Groups [H10K 10/00](#) and [H10K 10/10](#) should be considered in order to perform a complete search.

M	H10K 10/40	<ul style="list-style-type: none"> Organic transistors <p>WARNING Groups H10K 10/40 and H10K 10/43 are incomplete pending reclassification of documents from group H10K 10/00. Groups H10K 10/00, H10K 10/40 and H10K 10/43 should be considered in order to perform a complete search.</p>
M	H10K 10/80	<ul style="list-style-type: none"> Constructional details <p>WARNING Group H10K 10/80 is impacted by reclassification into group H10K 77/00. Groups H10K 10/80 and H10K 77/00 should be considered in order to perform a complete search.</p>
M	H10K 10/82	<ul style="list-style-type: none"> Electrodes <p>WARNING Group H10K 10/82 is impacted by reclassification into group H10K 10/86. Groups H10K 10/82 and H10K 10/86 should be considered in order to perform a complete search.</p>
M	H10K 10/86	<ul style="list-style-type: none"> Schottky electrodes <p>WARNING Group H10K 10/86 is incomplete pending reclassification of documents from group H10K 10/82. Groups H10K 10/82 and H10K 10/86 should be considered in order to perform a complete search.</p>
M	H10K 19/00	<p>Integrated devices, or assemblies of multiple devices, comprising at least one organic element specially adapted for rectifying, amplifying, oscillating or switching, covered by group H10K 10/00</p> <p>WARNING Group H10K 19/00 is incomplete pending reclassification of documents from group H01L 25/18. Groups H01L 25/18 and H10K 19/00 should be considered in order to perform a complete search. Group H10K 19/00 is also impacted by reclassification into group H10K 19/80. Groups H10K 19/00 and H10K 19/80 should be considered in order to perform a complete search.</p> <p><i>Groups H10K 19/00, H10K 19/10, H10K 19/20, H10K 19/201, H10K 19/202, H10K 19/80 and H10K 19/901 are incomplete pending reclassification of documents from group H10W 90/00. All groups listed in this Warning should be considered in order to perform a complete search.</i></p>
M	H10K 19/201	<ul style="list-style-type: none"> {Integrated devices having a three-dimensional layout, e.g. 3D ICs} <p>WARNING Group H10K 19/201 is impacted by reclassification into groups H10K 39/401 and H10K 59/751. Groups H10K 19/201, H10K 39/401 and H10K 59/751 should be considered in order to perform a complete search.</p>
M	H10K 19/202	<ul style="list-style-type: none"> {Integrated devices comprising a common active layer} <p>WARNING Group H10K 19/202 is impacted by reclassification into groups H10K 39/501 and H10K 59/771. Groups H10K 19/202, H10K 39/501 and H10K 59/771 should be considered in order to perform a complete search.</p>

M	H10K 19/80	<ul style="list-style-type: none"> Interconnections, e.g. terminals <p>WARNING Group H10K 19/80 is incomplete pending reclassification of documents from group H10K 19/00. Groups H10K 19/00 and H10K 19/80 should be considered in order to perform a complete search.</p>
M	H10K 30/00	<p>Organic devices sensitive to infrared radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation (integrated devices or assemblies of multiple devices H10K 39/00, H10K 65/00; electrolytic light-sensitive devices H01G 9/20)</p> <p>NOTE This group <u>covers</u> organic semiconductor devices sensitive to radiation insofar as these devices are specially adapted for either:</p> <ul style="list-style-type: none"> the conversion of the radiation energy into electrical energy; or the control of electrical energy by such radiation. <p>WARNING Group H10K 30/00 is impacted by reclassification into groups H10K 30/50, H10K 30/53 and H10K 30/60. Groups H10K 30/00, H10K 30/50, H10K 30/53 and H10K 30/60 should be considered in order to perform a complete search.</p>
M	H10K 30/10	<ul style="list-style-type: none"> comprising heterojunctions between organic semiconductors and inorganic semiconductors <p>WARNING Group H10K 30/10 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/10, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/15	<ul style="list-style-type: none"> Sensitised wide-bandgap semiconductor devices, e.g. dye-sensitised TiO₂ (photo-electrochemical devices comprising a liquid electrolyte or a solid electrolyte H01G 9/20) <p>WARNING Group H10K 30/15 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/15, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/151	<ul style="list-style-type: none"> {the wide bandgap semiconductor comprising titanium oxide, e.g. TiO₂} <p>WARNING Group H10K 30/151 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/151, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/152	<ul style="list-style-type: none"> {the wide bandgap semiconductor comprising zinc oxide, e.g. ZnO} <p>WARNING Group H10K 30/152 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/152, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>

M	H10K 30/20	<ul style="list-style-type: none"> comprising organic-organic junctions, e.g. donor-acceptor junctions <p>WARNING Group H10K 30/20 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/20, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/211	<ul style="list-style-type: none"> {comprising multiple junctions, e.g. double heterojunctions} <p>WARNING Group H10K 30/211 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/211, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/30	<ul style="list-style-type: none"> comprising bulk heterojunctions, e.g. interpenetrating networks of donor and acceptor material domains <p>WARNING Group H10K 30/30 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/30, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/35	<ul style="list-style-type: none"> comprising inorganic nanostructures, e.g. CdSe nanoparticles <p>WARNING Group H10K 30/35 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/35, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/352	<ul style="list-style-type: none"> {the inorganic nanostructures being nanotubes or nanowires, e.g. CdTe nanotubes in P3HT polymer} <p>WARNING Group H10K 30/352 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/352, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/353	<ul style="list-style-type: none"> {comprising blocking layers, e.g. exciton blocking layers} <p>WARNING Group H10K 30/353 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/353, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/354	<ul style="list-style-type: none"> {comprising a metal-insulator-semiconductor [m-i-s] structure} <p>WARNING Group H10K 30/354 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/354, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>

M	H10K 30/40	<ul style="list-style-type: none"> comprising a p-i-n structure, e.g. having a perovskite absorber between p-type and n-type charge transport layers <p><u>WARNING</u> Group H10K 30/40 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/40, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/451	<ul style="list-style-type: none"> {comprising a metal-semiconductor-metal [m-s-m] structure} <p><u>WARNING</u> Group H10K 30/451 is impacted by reclassification into groups H10K 30/50 and H10K 30/53. Groups H10K 30/451, H10K 30/50 and H10K 30/53 should be considered in order to perform a complete search.</p>
M	H10K 30/50	<ul style="list-style-type: none"> Photovoltaic [PV] devices <p><u>WARNING</u> Groups H10K 30/50 and H10K 30/53 are incomplete pending reclassification of documents from groups H10K 30/00, H10K 30/10, H10K 30/15, H10K 30/151, H10K 30/152, H10K 30/20, H10K 30/211, H10K 30/30, H10K 30/35, H10K 30/352, H10K 30/353, H10K 30/354, H10K 30/40 and H10K 30/451. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 30/60	<ul style="list-style-type: none"> in which radiation controls flow of current through the devices, e.g. photoresistors <p><u>WARNING</u> Group H10K 30/60 is incomplete pending reclassification of documents from group H10K 30/00. Groups H10K 30/00 and H10K 30/60 should be considered in order to perform a complete search.</p>
M	H10K 30/671	<ul style="list-style-type: none"> {Organic radiation-sensitive molecular electronic devices} <p><u>WARNING</u> Group H10K 30/671 is impacted by reclassification into group H10K 50/401. Groups H10K 30/671 and H10K 50/401 should be considered in order to perform a complete search.</p>
M	H10K 30/80	<ul style="list-style-type: none"> Constructional details <p><u>WARNING</u> Group H10K 30/80 is impacted by reclassification into groups H10K 30/84 - H10K 30/86, H10K 30/89 and H10K 77/00. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 30/84	<ul style="list-style-type: none"> Layers having high charge carrier mobility <p><u>WARNING</u> Groups H10K 30/84 - H10K 30/86 are incomplete pending reclassification of documents from group H10K 30/80. All groups listed in this Warning should be considered in order to perform a complete search.</p>

M	H10K 30/89	<ul style="list-style-type: none"> • Terminals, e.g. bond pads <p>WARNING Group H10K 30/89 is incomplete pending reclassification of documents from group H10K 30/80. Groups H10K 30/80 and H10K 30/89 should be considered in order to perform a complete search.</p>
U	H10K 39/00	<p>Integrated devices, or assemblies of multiple devices, comprising at least one organic radiation-sensitive element covered by group H10K 30/00</p> <p>NOTE This group only <u>covers</u> devices that are sensitive to infrared radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation.</p>
M	H10K 39/10	<ul style="list-style-type: none"> • Organic photovoltaic [PV] modules; Arrays of single organic PV cells <p>WARNING Group H10K 39/10 is incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167, H01L 25/18 and H10K 39/601. All groups listed in this Warning should be considered in order to perform a complete search. Group H10K 39/10 is also impacted by reclassification into groups H10K 39/12, H10K 39/15 and H10K 39/18. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 39/12	<ul style="list-style-type: none"> • Electrical configurations of PV cells, e.g. series connections or parallel connections <p>WARNING Group H10K 39/12 is incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167, H01L 25/18, H10K 39/10 and H10K 39/601. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 39/15	<ul style="list-style-type: none"> • comprising both organic PV cells and inorganic PV cells <p>WARNING Group H10K 39/15 is incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167, H01L 25/18, H10K 39/10 and H10K 39/601. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 39/18	<ul style="list-style-type: none"> • Interconnections, e.g. terminals <p>WARNING Group H10K 39/18 is incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167, H01L 25/18, H10K 39/10 and H10K 39/601. All groups listed in this Warning should be considered in order to perform a complete search.</p>

M	H10K 39/30	<ul style="list-style-type: none"> • Devices controlled by radiation <p><u>WARNING</u> Group H10K 39/30 is impacted by reclassification into group H10K 39/38. Groups H10K 39/30 and H10K 39/38 should be considered in order to perform a complete search.</p>
U	H10K 39/32	<ul style="list-style-type: none"> • Organic image sensors
M	H10K 39/34	<ul style="list-style-type: none"> • integrated with organic light-emitting diodes [OLED] <p><u>WARNING</u> Group H10K 39/34 is incomplete pending reclassification of documents from group H10K 59/65. Groups H10K 59/65 and H10K 39/34 should be considered in order to perform a complete search.</p>
M	H10K 39/38	<ul style="list-style-type: none"> • Interconnections, e.g. terminals <p><u>WARNING</u> Group H10K 39/38 is incomplete pending reclassification of documents from group H10K 39/30. Groups H10K 39/30 and H10K 39/38 should be considered in order to perform a complete search.</p>
M	H10K 39/401	<ul style="list-style-type: none"> • {Integrated devices having a three-dimensional layout, e.g. 3D ICs} <p><u>WARNING</u> Group H10K 39/401 is incomplete pending reclassification of documents from group H10K 19/201. Groups H10K 19/201 and H10K 39/401 should be considered in order to perform a complete search.</p>
M	H10K 39/501	<ul style="list-style-type: none"> • {Integrated devices comprising a common active layer} <p><u>WARNING</u> Group H10K 39/501 is incomplete pending reclassification of documents from group H10K 19/202. Groups H10K 19/202 and H10K 39/501 should be considered in order to perform a complete search.</p>
M	H10K 39/601	<ul style="list-style-type: none"> • {Assemblies of multiple devices comprising at least one organic radiation-sensitive element} <p><u>WARNING</u> Groups H10K 39/601 is incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167 and H01L 25/18. All groups listed in this Warning should be considered in order to perform a complete search. Group H10K 39/601 is also impacted by reclassification into groups H10K 39/10, H10K 39/12, H10K 39/15, H10K 39/18 and H10K 39/621. All groups listed in this Warning should be considered in order to perform a complete search. <i>Groups H10K 39/601 and H10K 39/621 are incomplete pending reclassification of documents from group H10W 90/00. Groups H10W 90/00, H10K 39/601 and H10K 39/621 should be considered in order to perform a complete search.</i></p>
M	H10K 39/621	<ul style="list-style-type: none"> • {comprising only organic radiation-sensitive elements} <p><u>WARNING</u> Groups H10K 39/621 is incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657,</p>

~~H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167, H01L 25/18 and H10K 39/601.~~

~~All groups listed in this Warning should be considered in order to perform a complete search.~~

M H10K 50/00

Organic light-emitting devices (integrated devices or assemblies of multiple devices [H10K 59/00](#), [H10K 65/00](#); organic semiconductor lasers [H01S 5/36](#))

WARNING

Group H10K 50/00 is impacted by reclassification into group H10K 50/10. Groups H10K 50/00 and H10K 50/10 should be considered in order to perform a complete search.

M H10K 50/10

- OLEDs or polymer light-emitting diodes [PLED]

WARNING

Group H10K 50/10 is incomplete pending reclassification of documents from group H10K 50/00. Groups H10K 50/00 and H10K 50/10 should be considered in order to perform a complete search.

M H10K 50/17

- • Carrier injection layers

WARNING

Group H10K 50/17 is impacted by reclassification into group H10K 50/171. Groups H10K 50/17 and H10K 50/171 should be considered in order to perform a complete search.

M H10K 50/171

- • • {Electron injection layers}

WARNING

Group H10K 50/171 is incomplete pending reclassification of documents from group H10K 50/17. Groups H10K 50/17 and H10K 50/171 should be considered in order to perform a complete search.

M H10K 50/18

- • Carrier blocking layers

WARNING

Group H10K 50/18 is impacted by reclassification into group H10K 50/181. Groups H10K 50/18 and H10K 50/181 should be considered in order to perform a complete search.

M H10K 50/181

- • • {Electron blocking layers}

WARNING

Group H10K 50/181 is incomplete pending reclassification of documents from group H10K 50/18. Groups H10K 50/18 and H10K 50/181 should be considered in order to perform a complete search.

M H10K 50/401

- {Organic light-emitting molecular electronic devices}

WARNING

Group H10K 50/401 is incomplete pending reclassification of documents from group H10K 30/671. Groups H10K 30/671 and H10K 50/401 should be considered in order to perform a complete search.

M	H10K 50/80	<ul style="list-style-type: none"> • Constructional details <p><u>WARNING</u> Group H10K 50/80 is impacted by reclassification into groups H10K 50/88, H10K 59/80 and H10K 77/00. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 50/805	<ul style="list-style-type: none"> • • Electrodes <p><u>WARNING</u> Group H10K 50/805 is impacted by reclassification into group H10K 59/805. Groups H10K 50/805 and H10K 59/805 should be considered in order to perform a complete search.</p>
M	H10K 50/81	<ul style="list-style-type: none"> • • • Anodes <p><u>WARNING</u> Group H10K 50/81 is impacted by reclassification into groups H10K 50/816 and H10K 59/8051. Groups H10K 50/81, H10K 50/816 and H10K 59/8051 should be considered in order to perform a complete search.</p>
M	H10K 50/813	<ul style="list-style-type: none"> • • • characterised by their shape <p><u>WARNING</u> Group H10K 50/813 is impacted by reclassification into group H10K 59/80515. Groups H10K 50/813 and H10K 59/80515 should be considered in order to perform a complete search.</p>
M	H10K 50/814	<ul style="list-style-type: none"> • • • combined with auxiliary electrodes, e.g. ITO layer combined with metal lines <p><u>WARNING</u> Group H10K 50/814 is impacted by reclassification into group H10K 59/80516. Groups H10K 50/814 and H10K 59/80516 should be considered in order to perform a complete search.</p>
M	H10K 50/816	<ul style="list-style-type: none"> • • • Multilayers, e.g. transparent multilayers <p><u>WARNING</u> Group H10K 50/816 is incomplete pending reclassification of documents from group H10K 50/81. Group H10K 50/816 is also impacted by reclassification into group H10K 59/80517. Groups H10K 50/81, H10K 50/816 and H10K 59/80517 should be considered in order to perform a complete search.</p>
M	H10K 50/818	<ul style="list-style-type: none"> • • • Reflective anodes, e.g. ITO combined with thick metallic layers <p><u>WARNING</u> Group H10K 50/818 is impacted by reclassification into group H10K 59/80518. Groups H10K 50/818 and H10K 59/80518 should be considered in order to perform a complete search.</p>
M	H10K 50/82	<ul style="list-style-type: none"> • • • Cathodes <p><u>WARNING</u> Group H10K 50/82 is impacted by reclassification into group H10K 50/826 and H10K 59/8052.</p>

Groups H10K 50/82, H10K 50/826 and H10K 59/8052 should be considered in order to perform a complete search.

M H10K 50/822

- • • characterised by their shape

WARNING

Group H10K 50/822 is impacted by reclassification into group H10K 59/80521.

Groups H10K 50/822 and H10K 59/80521 should be considered in order to perform a complete search.

M H10K 50/824

- • • combined with auxiliary electrodes

WARNING

Group H10K 50/824 is impacted by reclassification into group H10K 59/80522.

Groups H10K 50/824 and H10K 59/80522 should be considered in order to perform a complete search.

M H10K 50/826

- • • Multilayers, e.g. opaque multilayers

WARNING

Group H10K 50/826 is incomplete pending reclassification of documents from group H10K 50/82.

Group H10K 50/826 is also impacted by reclassification into group H10K 59/80523.

Groups H10K 50/82, H10K 50/826 and H10K 59/80523 should be considered in order to perform a complete search.

M H10K 50/828

- • • Transparent cathodes, e.g. comprising thin metal layers

WARNING

Group H10K 50/828 is impacted by reclassification into group H10K 59/80524.

Groups H10K 50/828 and H10K 59/80524 should be considered in order to perform a complete search.

M H10K 50/84

- • Passivation; Containers; Encapsulations

WARNING

Group H10K 50/84 is impacted by reclassification into group H10K 59/87. Groups H10K 50/84 and H10K 59/87 should be considered in order to perform a complete search.

M H10K 50/841

- • • {Self-supporting sealing arrangements}

WARNING

Group H10K 50/841 is impacted by reclassification into groups H10K 50/842, H10K 59/871 and H10K 59/872.

All groups listed in this Warning should be considered in order to perform a complete search.

M H10K 50/842

- • • Containers

WARNING

Group H10K 50/842 is incomplete pending reclassification of documents from group H10K 50/841.

Groups H10K 50/841 and H10K 50/842 should be considered in order to perform a complete search.

M	H10K 50/8423	<ul style="list-style-type: none"> • • • {Metallic sealing arrangements} <p><u>WARNING</u> Group H10K 50/8423 is impacted by reclassification into group H10K 59/8721. Groups H10K 50/8423 and H10K 59/8721 should be considered in order to perform a complete search.</p>
M	H10K 50/8426	<ul style="list-style-type: none"> • • • {Peripheral sealing arrangements, e.g. adhesives, sealants} <p><u>WARNING</u> Group H10K 50/8426 is impacted by reclassification into group H10K 59/8722. Groups H10K 50/8426 and H10K 59/8722 should be considered in order to perform a complete search.</p>
M	H10K 50/8428	<ul style="list-style-type: none"> • • • {Vertical spacers, e.g. arranged between the sealing arrangement and the OLED} <p><u>WARNING</u> Group H10K 50/8428 is impacted by reclassification into group H10K 59/8723. Groups H10K 50/8428 and H10K 59/8723 should be considered in order to perform a complete search.</p>
M	H10K 50/844	<ul style="list-style-type: none"> • • • Encapsulations <p><u>WARNING</u> Group H10K 50/844 is impacted by reclassification into group H10K 59/873. Groups H10K 50/844 and H10K 59/873 should be considered in order to perform a complete search.</p>
M	H10K 50/8445	<ul style="list-style-type: none"> • • • {multilayered coatings having a repetitive structure, e.g. having multiple organic-inorganic bilayers} <p><u>WARNING</u> Group H10K 50/8445 is impacted by reclassification into group H10K 59/8731. Groups H10K 50/8445 and H10K 59/8731 should be considered in order to perform a complete search.</p>
M	H10K 50/846	<ul style="list-style-type: none"> • • • {comprising getter material or desiccants} <p><u>WARNING</u> Group H10K 50/846 is impacted by reclassification into group H10K 59/874. Groups H10K 50/846 and H10K 59/874 should be considered in order to perform a complete search.</p>
M	H10K 50/85	<ul style="list-style-type: none"> • • Arrangements for extracting light from the devices <p><u>WARNING</u> Group H10K 50/85 is impacted by reclassification into group H10K 59/875. Groups H10K 50/85 and H10K 59/875 should be considered in order to perform a complete search.</p>
M	H10K 50/852	<ul style="list-style-type: none"> • • • comprising a resonant cavity structure, e.g. Bragg reflector pair <p><u>WARNING</u> Group H10K 50/852 is impacted by reclassification into group H10K 59/876. Groups H10K 50/852 and H10K 59/876 should be considered in order to perform a complete search.</p>

M	H10K 50/854	<ul style="list-style-type: none"> • comprising scattering means <p><u>WARNING</u> Group H10K 50/854 is impacted by reclassification into group H10K 59/877. Groups H10K 50/854 and H10K 59/877 should be considered in order to perform a complete search.</p>
M	H10K 50/856	<ul style="list-style-type: none"> • comprising reflective means <p><u>WARNING</u> Group H10K 50/856 is impacted by reclassification into group H10K 59/878. Groups H10K 50/856 and H10K 59/878 should be considered in order to perform a complete search.</p>
M	H10K 50/858	<ul style="list-style-type: none"> • comprising refractive means, e.g. lenses <p><u>WARNING</u> Group H10K 50/858 is impacted by reclassification into group H10K 59/879. Groups H10K 50/858 and H10K 59/879 should be considered in order to perform a complete search.</p>
M	H10K 50/86	<ul style="list-style-type: none"> • Arrangements for improving contrast, e.g. preventing reflection of ambient light <p><u>WARNING</u> Group H10K 50/86 is impacted by reclassification into group H10K 59/8791. Groups H10K 50/86 and H10K 59/8791 should be considered in order to perform a complete search.</p>
M	H10K 50/865	<ul style="list-style-type: none"> • {comprising light absorbing layers, e.g. light-blocking layers} <p><u>WARNING</u> Group H10K 50/865 is impacted by reclassification into group H10K 59/8792. Groups H10K 50/865 and H10K 59/8792 should be considered in order to perform a complete search.</p>
M	H10K 50/868	<ul style="list-style-type: none"> • {Arrangements for polarized light emission (H10K 50/86 takes precedence)} <p><u>WARNING</u> Group H10K 50/868 is impacted by reclassification into group H10K 59/8793. Groups H10K 50/868 and H10K 59/8793 should be considered in order to perform a complete search.</p>
M	H10K 50/87	<ul style="list-style-type: none"> • Arrangements for heating or cooling <p><u>WARNING</u> Group H10K 50/87 is impacted by reclassification into group H10K 59/8794. Groups H10K 50/87 and H10K 59/8794 should be considered in order to perform a complete search.</p>
M	H10K 50/88	<ul style="list-style-type: none"> • Terminals, e.g. bond pads <p><u>WARNING</u> Group H10K 50/88 is incomplete pending reclassification of documents from group H10K 50/80. Groups H10K 50/80 and H10K 50/88 should be considered in order to perform a complete search.</p>

M	H10K 59/00	<p>Integrated devices, or assemblies of multiple devices, comprising at least one organic light-emitting element covered by group H10K 50/00</p> <p><u>WARNING</u> Group H10K 59/00 is impacted by reclassification into groups H10K 59/70 and H10K 59/80 – H10K 59/88. Groups H10K 59/00, H10K 59/70 and H10K 59/80 – H10K 59/88 should be considered in order to perform a complete search.</p>
M	H10K 59/10	<ul style="list-style-type: none"> • OLED displays <p><u>WARNING</u> Group H10K 59/10 is impacted by reclassification into group H10K 59/19. Groups H10K 59/10 and H10K 59/19 should be considered in order to perform a complete search.</p>
M	H10K 59/12	<ul style="list-style-type: none"> • Active-matrix OLED [AMOLED] displays <p><u>WARNING</u> Group H10K 59/12 is impacted by reclassification into groups H10K 59/131 and H10K 59/1315. Groups H10K 59/12, H10K 59/131 and H10K 59/1315 should be considered in order to perform a complete search.</p>
M	H10K 59/131	<ul style="list-style-type: none"> • • Interconnections, e.g. wiring lines or terminals <p><u>WARNING</u> Group H10K 59/131 is incomplete pending reclassification of documents from group H10K 59/12. Groups H10K 59/12 and H10K 59/131 should be considered in order to perform a complete search.</p>
M	H10K 59/1315	<ul style="list-style-type: none"> • • • {comprising structures specially adapted for lowering the resistance} <p><u>WARNING</u> Group H10K 59/1315 is incomplete pending reclassification of documents from group H10K 59/12. Groups H10K 59/12 and H10K 59/1315 should be considered in order to perform a complete search.</p>
M	H10K 59/17	<ul style="list-style-type: none"> • Passive-matrix OLED displays <p><u>WARNING</u> Group H10K 59/17 is impacted by reclassification into groups H10K 59/179 and H10K 59/1795. Groups H10K 59/17, H10K 59/179 and H10K 59/1795 should be considered in order to perform a complete search.</p>
M	H10K 59/179	<ul style="list-style-type: none"> • • Interconnections, e.g. wiring lines or terminals <p><u>WARNING</u> Group H10K 59/179 is incomplete pending reclassification of documents from group H10K 59/17. Groups H10K 59/17 and H10K 59/179 should be considered in order to perform a complete search.</p>
M	H10K 59/1795	<ul style="list-style-type: none"> • • • {comprising structures specially adapted for lowering the resistance} <p><u>WARNING</u> Group H10K 59/1795 is incomplete pending reclassification of documents from group H10K 59/17.</p>

Groups H10K 59/17 and H10K 59/1795 should be considered in order to perform a complete search.

M H10K 59/19

- Segment displays

WARNING

Group H10K 59/19 is incomplete pending reclassification of documents from group H10K 59/10.
Groups H10K 59/10 and H10K 59/19 should be considered in order to perform a complete search.

U H10K 59/60

- OLEDs integrated with inorganic light-sensitive elements, e.g. with inorganic solar cells or inorganic photodiodes

M H10K 59/65

- OLEDs integrated with inorganic image sensors

WARNING

Group H10K 59/65 is impacted by reclassification into group H10K 39/34.
Groups H10K 59/65 and H10K 39/34 should be considered in order to perform a complete search.

M H10K 59/70

- OLEDs integrated with inorganic light-emitting elements, e.g. with inorganic electroluminescent elements

WARNING

Group H10K 59/70 is incomplete pending reclassification of documents from group H10K 59/00.
Groups H10K 59/00 and H10K 59/70 should be considered in order to perform a complete search.

M H10K 59/751

- {Integrated devices having a three-dimensional layout, e.g. 3D ICs}

WARNING

Group H10K 59/751 is incomplete pending reclassification of documents from group H10K 19/201.
Groups H10K 19/201 and H10K 59/751 should be considered in order to perform a complete search.

M H10K 59/771

- {Integrated devices comprising a common active layer}

WARNING

Group H10K 59/771 is incomplete pending reclassification of documents from group H10K 19/202.
Groups H10K 19/202 and H10K 59/771 should be considered in order to perform a complete search.

M H10K 59/80

- Constructional details

WARNING

Group H10K 59/80 is incomplete pending reclassification of documents from groups H10K 50/80 and H10K 59/00.
Groups H10K 50/80, H10K 59/00 and H10K 59/80 should be considered in order to perform a complete search.

M H10K 59/805

- {Electrodes}

WARNING

Group H10K 59/805 is incomplete pending reclassification of documents from groups H10K 50/805 and H10K 59/00.
Groups H10K 50/805, H10K 59/00 and H10K 59/805 should be considered in order to perform a complete search.

M	H10K 59/8051	<ul style="list-style-type: none"> • • • {Anodes} <p><u>WARNING</u> Group H10K 59/8051 is incomplete pending reclassification of documents from groups H10K 50/81 and H10K 59/00. Groups H10K 50/81, H10K 59/00 and H10K 59/8051 should be considered in order to perform a complete search.</p>
M	H10K 59/80515	<ul style="list-style-type: none"> • • • {characterised by their shape} <p><u>WARNING</u> Group H10K 59/80515 is incomplete pending reclassification of documents from groups H10K 50/813 and H10K 59/00. Groups H10K 50/813, H10K 59/00 and H10K 59/80515 should be considered in order to perform a complete search.</p>
M	H10K 59/80516	<ul style="list-style-type: none"> • • • {combined with auxiliary electrodes, e.g. ITO layer combined with metal lines} <p><u>WARNING</u> Group H10K 59/80516 is incomplete pending reclassification of documents from groups H10K 50/814 and H10K 59/00. Groups H10K 50/814, H10K 59/00 and H10K 59/80516 should be considered in order to perform a complete search.</p>
M	H10K 59/80517	<ul style="list-style-type: none"> • • • {Multilayers, e.g. transparent multilayers} <p><u>WARNING</u> Group H10K 59/80517 is incomplete pending reclassification of documents from groups H10K 50/816 and H10K 59/00. Groups H10K 50/816, H10K 59/00 and H10K 59/80517 should be considered in order to perform a complete search.</p>
M	H10K 59/80518	<ul style="list-style-type: none"> • • • {Reflective anodes, e.g. ITO combined with thick metallic layers} <p><u>WARNING</u> Group H10K 59/80518 is incomplete pending reclassification of documents from groups H10K 50/818 and H10K 59/00. Groups H10K 50/818, H10K 59/00 and H10K 59/80518 should be considered in order to perform a complete search.</p>
M	H10K 59/8052	<ul style="list-style-type: none"> • • • {Cathodes} <p><u>WARNING</u> Group H10K 59/8052 is incomplete pending reclassification of documents from groups H10K 50/82 and H10K 59/00. Groups H10K 50/82, H10K 59/00 and H10K 59/8052 should be considered in order to perform a complete search.</p>
M	H10K 59/80521	<ul style="list-style-type: none"> • • • {characterised by their shape} <p><u>WARNING</u> Group H10K 59/80521 is incomplete pending reclassification of documents from groups H10K 50/822 and H10K 59/00. Groups H10K 50/822, H10K 59/00 and H10K 59/80521 should be considered in order to perform a complete search.</p>
M	H10K 59/80522	<ul style="list-style-type: none"> • • • {combined with auxiliary electrodes} <p><u>WARNING</u> Group H10K 59/80522 is incomplete pending reclassification of documents from groups H10K 50/824 and H10K 59/00.</p>

		Groups H10K 59/824, H10K 59/00 and H10K 59/80522 should be considered in order to perform a complete search.
M	H10K 59/80523	<ul style="list-style-type: none"> • • • {Multilayers, e.g. opaque multilayers} <p><u>WARNING</u> Group H10K 59/80523 is incomplete pending reclassification of documents from groups H10K 59/826 and H10K 59/00. Groups H10K 59/826, H10K 59/00 and H10K 59/80523 should be considered in order to perform a complete search.</p>
M	H10K 59/80524	<ul style="list-style-type: none"> • • • {Transparent cathodes, e.g. comprising thin metal layers} <p><u>WARNING</u> Group H10K 59/80524 is incomplete pending reclassification of documents from groups H10K 59/828 and H10K 59/00. Groups H10K 59/828, H10K 59/00 and H10K 59/80524 should be considered in order to perform a complete search.</p>
M	H10K 59/82	<ul style="list-style-type: none"> • • Interconnections, e.g. terminals (H10K 59/131, H10K 59/179 take precedence) <p><u>WARNING</u> Group H10K 59/82 is incomplete pending reclassification of documents from group H10K 59/00. Groups H10K 59/00 and H10K 59/82 should be considered in order to perform a complete search.</p>
M	H10K 59/84	<ul style="list-style-type: none"> • • Parallel electrical configurations of multiple OLEDs <p><u>WARNING</u> Group H10K 59/84 is incomplete pending reclassification of documents from group H10K 59/00. Groups H10K 59/00 and H10K 59/84 should be considered in order to perform a complete search.</p>
M	H10K 59/86	<ul style="list-style-type: none"> • • Series electrical configurations of multiple OLEDs <p><u>WARNING</u> Group H10K 59/86 is incomplete pending reclassification of documents from group H10K 59/00. Groups H10K 59/00 and H10K 59/86 should be considered in order to perform a complete search.</p>
M	H10K 59/87	<ul style="list-style-type: none"> • • {Passivation; Containers; Encapsulations} <p><u>WARNING</u> Group H10K 59/87 is incomplete pending reclassification of documents from groups H10K 59/84 and H10K 59/00. Groups H10K 59/84, H10K 59/00 and H10K 59/87 should be considered in order to perform a complete search.</p>
M	H10K 59/871	<ul style="list-style-type: none"> • • • {Self-supporting sealing arrangements} <p><u>WARNING</u> Groups H10K 59/871 and H10K 59/872 are incomplete pending reclassification of documents from groups H10K 59/841 and H10K 59/00. All groups listed in this Warning should be considered in order to perform a complete search.</p>

M	H10K 59/8721	<ul style="list-style-type: none"> • • • {Metallic sealing arrangements} <p><u>WARNING</u> Group H10K 59/8721 is incomplete pending reclassification of documents from groups H10K 50/8423 and H10K 59/00. Groups H10K 50/8423, H10K 59/00 and H10K 59/8721 should be considered in order to perform a complete search.</p>
M	H10K 59/8722	<ul style="list-style-type: none"> • • • {Peripheral sealing arrangements, e.g. adhesives, sealants} <p><u>WARNING</u> Group H10K 59/8722 is incomplete pending reclassification of documents from groups H10K 50/8426 and H10K 59/00. Groups H10K 50/8426, H10K 59/00 and H10K 59/8722 should be considered in order to perform a complete search.</p>
M	H10K 59/8723	<ul style="list-style-type: none"> • • • {Vertical spacers, e.g. arranged between the sealing arrangement and the OLED} <p><u>WARNING</u> Group H10K 59/8723 is incomplete pending reclassification of documents from groups H10K 50/8428 and H10K 59/00. Groups H10K 50/8428, H10K 59/00 and H10K 59/8723 should be considered in order to perform a complete search.</p>
M	H10K 59/873	<ul style="list-style-type: none"> • • • {Encapsulations} <p><u>WARNING</u> Group H10K 59/873 is incomplete pending reclassification of documents from groups H10K 50/844 and H10K 59/00. Groups H10K 50/844, H10K 59/00 and H10K 59/873 should be considered in order to perform a complete search.</p>
M	H10K 59/8731	<ul style="list-style-type: none"> • • • {multilayered coatings having a repetitive structure, e.g. having multiple organic-inorganic bilayers} <p><u>WARNING</u> Group H10K 59/8731 is incomplete pending reclassification of documents from groups H10K 50/8445 and H10K 59/00. Groups H10K 50/8445, H10K 59/00 and H10K 59/8731 should be considered in order to perform a complete search.</p>
M	H10K 59/874	<ul style="list-style-type: none"> • • • {including getter material or desiccant} <p><u>WARNING</u> Group H10K 59/874 is incomplete pending reclassification of documents from groups H10K 50/846 and H10K 59/00. Groups H10K 50/846, H10K 59/00 and H10K 59/874 should be considered in order to perform a complete search.</p>
M	H10K 59/875	<ul style="list-style-type: none"> • • {Arrangements for extracting light from the devices} <p><u>WARNING</u> Group H10K 59/875 is incomplete pending reclassification of documents from groups H10K 50/85 and H10K 59/00. Groups H10K 50/85, H10K 59/00 and H10K 59/875 should be considered in order to perform a complete search.</p>
M	H10K 59/876	<ul style="list-style-type: none"> • • • {comprising a resonant cavity structure, e.g. Bragg reflector pair} <p><u>WARNING</u> Group H10K 59/876 is incomplete pending reclassification of documents from groups H10K 50/852 and H10K 59/00.</p>

Groups H10K 50/852, H10K 59/00 and H10K 59/876 should be considered in order to perform a complete search.

- M H10K 59/877
- • {comprising scattering means}

WARNING

Group H10K 59/877 is incomplete pending reclassification of documents from groups H10K 50/854 and H10K 59/00.
Groups H10K 50/854, H10K 59/00 and H10K 59/877 should be considered in order to perform a complete search.

- M H10K 59/878
- • {comprising reflective means}

WARNING

Group H10K 59/878 is incomplete pending reclassification of documents from groups H10K 50/856 and H10K 59/00.
Groups H10K 50/856, H10K 59/00 and H10K 59/878 should be considered in order to perform a complete search.

- M H10K 59/879
- • {comprising refractive means, e.g. lenses}

WARNING

Group H10K 59/879 is incomplete pending reclassification of documents from groups H10K 50/858 and H10K 59/00.
Groups H10K 50/858, H10K 59/00 and H10K 59/879 should be considered in order to perform a complete search.

- M H10K 59/8791
- • {Arrangements for improving contrast, e.g. preventing reflection of ambient light}

WARNING

Group H10K 59/8791 is incomplete pending reclassification of documents from groups H10K 50/86 and H10K 59/00.
Groups H10K 50/86, H10K 59/00 and H10K 59/8791 should be considered in order to perform a complete search.

- M H10K 59/8792
- • {comprising light absorbing layers, e.g. black layers}

WARNING

Group H10K 59/8792 is incomplete pending reclassification of documents from groups H10K 50/865 and H10K 59/00.
Groups H10K 50/865, H10K 59/00 and H10K 59/8792 should be considered in order to perform a complete search.

- M H10K 59/8793
- • {Arrangements for polarized light emission ([H10K 59/8791](#) takes precedence)}

WARNING

Group H10K 59/8793 is incomplete pending reclassification of documents from groups H10K 50/868 and H10K 59/00.
Groups H10K 50/868, H10K 59/00 and H10K 59/8793 should be considered in order to perform a complete search.

- M H10K 59/8794
- • {Arrangements for heating and cooling}

WARNING

Group H10K 59/8794 is incomplete pending reclassification of documents from groups H10K 50/87 and H10K 59/00.
Groups H10K 50/87, H10K 59/00 and H10K 59/8794 should be considered in order to perform a complete search.

M	H10K 59/88	<ul style="list-style-type: none"> • Dummy elements, i.e. elements having non-functional features <p>WARNING Group H10K 59/88 is incomplete pending reclassification of documents from group H10K 59/00. Groups H10K 59/00 and H10K 59/88 should be considered in order to perform a complete search.</p>
M	H10K 59/90	<ul style="list-style-type: none"> • Assemblies of multiple devices comprising at least one organic light-emitting element <p>WARNING Groups H10K 59/90 and H10K 59/95 are incomplete pending reclassification of documents from groups H01L 25/065, H01L 25/0652, H01L 25/0655, H01L 25/0657, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167 and H01L 25/18. All groups listed in this Warning should be considered in order to perform a complete search. Group H10K 59/90 is also impacted by reclassification into group H10K 59/95. All groups listed in this Warning should be considered in order to perform a complete search.</p> <p><i>Groups H10K 59/90 and H10K 59/95 are incomplete pending reclassification of documents from group H10W 90/00. Groups H10W 90/00, H10K 59/90 and H10K 59/95 should be considered in order to perform a complete search.</i></p>
M	H10K 59/95	<ul style="list-style-type: none"> • wherein all light-emitting elements are organic, e.g. assembled OLED displays <p>WARNING Group H10K 59/95 is incomplete pending reclassification of documents from groups H01L 25/04, H01L 25/16, H01L 25/162, H01L 25/165, H01L 25/167, H01L 25/18 and H10K 59/90. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 65/00	<p>Integrated devices, or assemblies of multiple devices, comprising at least one organic light-emitting element and at least one organic radiation-sensitive element, e.g. organic opto-couplers (organic image sensors integrated with organic light-emitting devices H10K 39/34; OLED displays integrated with photosensors H10K 59/13)</p> <p>WARNING Group H10K 65/00 is incomplete pending reclassification of documents from groups<i>group</i> H01L 25/04 H10W 90/00. <i>Groups H10W 90/00 and H01L 25/18 H10K 65/00 should be considered in order to perform a complete search.</i> All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 71/00	<p>Manufacture or treatment specially adapted for the organic devices covered by this subclass</p> <p>WARNING Group H10K 71/00 is impacted by reclassification into groups H10K 71/40, H10K 71/421 and H10K 71/441. All groups listed in this Warning should be considered in order to perform a complete search.</p>

M	H10K 71/40	<ul style="list-style-type: none"> Thermal treatment, e.g. annealing in the presence of a solvent vapour <p>WARNING Groups H10K 71/40, H10K 71/421 and H10K 71/441 are incomplete pending reclassification of documents from group H10K 71/00. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 77/00	<p>Constructional details of devices covered by this subclass and not covered by groups H10K 10/80, H10K 30/80, H10K 50/80 or H10K 59/80</p> <p>WARNING Group H10K 77/00 is incomplete pending reclassification of documents from groups H10K 10/80, H10K 30/80, H10K 50/80 and H10K 99/00. All groups listed in this Warning should be considered in order to perform a complete search.</p>
M	H10K 85/00	<p>Organic materials used in the body or electrodes of devices covered by this subclass</p> <p>NOTE This group only <u>covers</u> organic materials for their electrical or other properties, insofar as they are specially adapted for the devices covered by this subclass.</p> <p>WARNING Group H10K 85/00 is impacted by reclassification into group H10K 85/50. Groups H10K 85/00 and H10K 85/50 should be considered in order to perform a complete search.</p>
U	H10K 85/30	<ul style="list-style-type: none"> Coordination compounds
U	H10K 85/321	<ul style="list-style-type: none"> {Metal complexes comprising a group IIIA element, e.g. Tris (8-hydroxyquinoline) gallium [Gaq3]}
M	H10K 85/322	<ul style="list-style-type: none"> {comprising boron} <p>WARNING Group H10K 85/322 is impacted by reclassification into group H10K 85/658. Groups H10K 85/322 and H10K 85/658 should be considered in order to perform a complete search.</p>
M	H10K 85/50	<ul style="list-style-type: none"> Organic perovskites; Hybrid organic-inorganic perovskites [HOIP], e.g. $\text{CH}_3\text{NH}_3\text{PbI}_3$ <p>WARNING Group H10K 85/50 is incomplete pending reclassification of documents from group H10K 85/00. Groups H10K 85/00 and H10K 85/50 should be considered in order to perform a complete search.</p>
U	H10K 85/60	<ul style="list-style-type: none"> Organic compounds having low molecular weight (H10K 85/10 - H10K 85/50 take precedence)
M	H10K 85/658	<ul style="list-style-type: none"> {Organoboranes} <p>WARNING Group H10K 85/658 is incomplete pending reclassification of documents from group H10K 85/322. Groups H10K 85/322 and H10K 85/658 should be considered in order to perform a complete search.</p>

M H10K 99/00 Subject matter not provided for in other groups of this subclass**WARNING**

Group H10K 99/00 is impacted by reclassification into group H10K 77/00. Groups H10K 99/00 and H10K 77/00 should be considered in order to perform a complete search.

M H10K 2101/00 Properties of the organic materials covered by group [H10K 85/00](#)**WARNING**

Group H10K 2101/00 is impacted by reclassification into groups H10K 2101/20 - H10K 2101/25, H10K 2101/60, H10K 2101/70 and H10K 2102/00. All groups listed in this Warning should be considered in order to perform a complete search.

M H10K 2101/20 • Delayed fluorescence emission**WARNING**

Groups H10K 2101/20 and H10K 2101/25 are incomplete pending reclassification of documents from group H10K 2101/00. Groups H10K 2101/00, H10K 2101/20 and H10K 2101/25 should be considered in order to perform a complete search.

M H10K 2101/60 • Up-conversion, e.g. by triplet-triplet annihilation**WARNING**

Group H10K 2101/60 is incomplete pending reclassification of documents from group H10K 2101/00. Groups H10K 2101/00 and H10K 2101/60 should be considered in order to perform a complete search.

M H10K 2101/70 • Down-conversion, e.g. by singlet fission**WARNING**

Group H10K 2101/70 is incomplete pending reclassification of documents from group H10K 2101/00. Groups H10K 2101/00 and H10K 2101/70 should be considered in order to perform a complete search.

M H10K 2102/00 Constructional details relating to the organic devices covered by this subclass**WARNING**

Group H10K 2102/00 is incomplete pending reclassification of documents from group H10K 2101/00. Groups H10K 2101/00 and H10K 2102/00 should be considered in order to perform a complete search.

Project: RP12800 (H10P)**N H10P****GENERIC PROCESSES OR APPARATUS FOR THE MANUFACTURE OR TREATMENT OF DEVICES COVERED BY CLASS [H10](#)****NOTES**

1. This subclass covers processes or apparatus specially adapted for the manufacture or treatment of devices, or parts thereof, covered by class [H10](#), which are generically applicable to these devices.
2. Attention is drawn to the following:
 - a. a. processes or apparatus specially adapted for the manufacture or treatment of devices, or parts thereof, which are covered by a single

subclass of [H10B](#) - [H10N](#), are classified in the subclass in question. For example, the manufacture of a transistor is classified in subclass [H10D](#);
b. b. processes or apparatus specially adapted for the manufacture or treatment of generic packages, interconnections, connectors or other constructional details of devices, which are covered by subclass [H10W](#), are classified in the subclass in question. For example, the formation of a copper pillar bump connector is classified in subclass [H10W](#).

N H10P 10/00 -
H10P 14/00

Building up of layers, structures or materials

Q H10P 10/00

Bonding of wafers, substrates or parts of devices

NOTES

1. This group covers bonding of wafers or substrates either
(i) before the step of making of any interconnections or (ii) before the step of packaging of devices, whichever step comes first.
2. Attention is drawn to the following:
 - aspects of bonding involving chips, package parts or interconnections, e.g. chip-on-chip bonding or chip-on-wafer bonding, are classified in subclass [H10W](#), e.g. in group [H10W 80/00](#).

WARNING

Group [H10P 10/00](#) is impacted by reclassification into groups [H10P 14/00](#) and [H10P 95/00](#).

Groups [H10P 10/00](#), [H10P 14/00](#) and [H10P 95/00](#) should be considered in order to perform a complete search.

Q H10P 10/12

- {Bonding of semiconductor wafers or semiconductor substrates to semiconductor wafers or semiconductor substrates (preparing SOI wafers using bonding [H10P 90/1914](#))}

WARNING

Group [H10P 10/12](#) is incomplete pending reclassification of documents from group [H10P 90/00](#). Group [H10P 10/12](#) is also impacted by reclassification into groups [H10P 10/126](#), [H10P 10/128](#) - [H10P 10/1285](#), [H10P 54/52](#), [H10P 56/00](#), [H10P 90/1914](#) and [H10P 90/1916](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 10/126

- • {characterised by the composition of the bonding layer, e.g. dopant concentration or stoichiometry}

WARNING

Group [H10P 10/126](#) is incomplete pending reclassification of documents from groups [H10P 10/12](#), [H10P 90/1914](#) and [H10P 90/1916](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 10/128

- • {by direct semiconductor to semiconductor bonding}

WARNING

Groups [H10P 10/128](#) and [H10P 10/1285](#) are incomplete pending reclassification of documents from groups [H10P 10/12](#), [H10P 90/1914](#) and [H10P 90/1916](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 10/1285

- • • {by bonding laterally separated doped regions to each other}

- N H10P 10/14 • {Bonding of semiconductor wafers to insulating substrates}
- WARNING
Group [H10P 10/14](#) is incomplete pending reclassification of documents from groups [H10P 90/1914](#) and [H10P 90/1916](#).
Groups [H10P 90/1914](#), [H10P 90/1916](#) and [H10P 10/14](#) should be considered in order to perform a complete search.
- N H10P 14/00 Formation of materials, e.g. in the shape of layers or pillars**
- WARNING
Group [H10P 14/00](#) is incomplete pending reclassification of documents from group [H10P 10/00](#).
Groups [H10P 10/00](#) and [H10P 14/00](#) should be considered in order to perform a complete search.
- N H10P 14/20 • of semiconductor materials
- N H10P 14/203 • • {using transformation of metal, e.g. oxidation or nitridation}
- N H10P 14/22 • • using physical deposition, e.g. vacuum deposition or sputtering
- N H10P 14/24 • • using chemical vapour deposition [CVD]
- N H10P 14/26 • • using liquid deposition
- N H10P 14/263 • • • {using melted materials}
- N H10P 14/265 • • • {using solutions}
- N H10P 14/27 • • {using selective deposition, e.g. simultaneous growth of monocrystalline and non-monocrystalline semiconductor materials}
- N H10P 14/271 • • • {characterised by the preparation of substrate for selective deposition}
- N H10P 14/272 • • • • {using mask materials other than SiO₂ or SiN}
- N H10P 14/274 • • • • {using seed materials}
- N H10P 14/276 • • • {Lateral overgrowth}
- N H10P 14/278 • • • • {Pendeoepitaxy}
- N H10P 14/279 • • • {Vapour-liquid-solid growth}
- Q H10P 14/29 • • {characterised by the substrates}
- WARNING
Group [H10P 14/29](#) is impacted by reclassification into groups [H10P 14/2924](#) - [H10P 14/2925](#) and [H10P 14/2926](#).
Groups [H10P 14/29](#), [H10P 14/2924](#) - [H10P 14/2925](#) and [H10P 14/2926](#) should be considered in order to perform a complete search.
- N H10P 14/2901 • • • {Materials}
- N H10P 14/2902 • • • • {being Group IVA materials}
- N H10P 14/2903 • • • • • {Carbon, e.g. diamond-like carbon}
- N H10P 14/2904 • • • • • {Silicon carbide}
- N H10P 14/2905 • • • • • {Silicon, silicon germanium or germanium}
- N H10P 14/2906 • • • • • {including tin}
- N H10P 14/2907 • • • • {being Group IIIA-VA materials}
- N H10P 14/2908 • • • • • {Nitrides}
- N H10P 14/2909 • • • • • {Phosphides}
- N H10P 14/2911 • • • • • {Arsenides}
- N H10P 14/2912 • • • • • {Antimonides}
- N H10P 14/2913 • • • • {being Group IIB-VIA materials}

- N H10P 14/2914 {Oxides}
- N H10P 14/2915 {Sulfides}
- N H10P 14/2916 {Selenides}
- N H10P 14/2917 {Tellurides}
- N H10P 14/2918 {being semiconductor metal oxides (Group IIB-VIA materials [H10P 14/2913](#))}
- N H10P 14/2919 {being chalcogenide semiconducting materials not being oxides, e.g. ternary compounds}
- N H10P 14/2921 {being crystalline insulating materials}
- N H10P 14/2922 {being non-crystalline insulating materials, e.g. glass or polymers}
- N H10P 14/2923 {being conductive materials, e.g. metallic silicides}
- N H10P 14/2924 . . . {Structures}

WARNING

Groups [H10P 14/2924](#) and [H10P 14/2925](#) are incomplete pending reclassification of documents from group [H10P 14/29](#).

Groups [H10P 14/29](#), [H10P 14/2924](#) and [H10P 14/2925](#) should be considered in order to perform a complete search.

- N H10P 14/2925 {Surface structures}
- N H10P 14/2926 . . . {Crystal orientations}

WARNING

Group [H10P 14/2926](#) is incomplete pending reclassification of documents from group [H10P 14/29](#).

Groups [H10P 14/29](#) and [H10P 14/2926](#) should be considered in order to perform a complete search.

- N H10P 14/32 . . {characterised by intermediate layers between substrates and deposited layers}
- N H10P 14/3202 . . . {Materials thereof}
- N H10P 14/3204 {being Group IVA semiconducting materials}
- N H10P 14/3206 {Carbon, e.g. diamond-like carbon}
- N H10P 14/3208 {Silicon carbide}
- N H10P 14/3211 {Silicon, silicon germanium or germanium}
- N H10P 14/3212 {including tin}
- N H10P 14/3214 {being Group IIIA-VA semiconductors}
- N H10P 14/3216 {Nitrides}
- N H10P 14/3218 {Phosphides}
- N H10P 14/3221 {Arsenides}
- N H10P 14/3222 {Antimonides}
- N H10P 14/3224 {being Group IIB-VIA semiconductors}
- N H10P 14/3226 {Oxides}
- N H10P 14/3228 {Sulfides}
- N H10P 14/3231 {Selenides}
- N H10P 14/3232 {Tellurides}
- N H10P 14/3234 {being oxide semiconducting materials (Group IIB-VIA semiconductors [H10P 14/3224](#))}
- N H10P 14/3236 {being chalcogenide semiconducting materials not being oxides, e.g. ternary compounds}

N	H10P 14/3238	. . . . {being insulating materials}
N	H10P 14/3241	. . . . {being conductive materials}
N	H10P 14/3242	. . . {Structure}
N	H10P 14/3244	. . . . {Layer structure}
N	H10P 14/3246	. . . . . {Monolayers}
N	H10P 14/3248	. . . . . {consisting of two layers}
N	H10P 14/3251	. . . . . {consisting of three or more layers}
N	H10P 14/3252	. . . . . {Alternating layers, e.g. superlattice}
N	H10P 14/3254	. . . . . {Graded layers}
N	H10P 14/3256	. . . . {Microstructure}
N	H10P 14/3258	. . . {Crystal orientation}
N	H10P 14/34	. . {Deposited materials, e.g. layers}
N	H10P 14/3402	. . . {characterised by the chemical composition}
N	H10P 14/3404	. . . . {being Group IVA materials}
N	H10P 14/3406	. . . . . {Carbon, e.g. diamond-like carbon}
N	H10P 14/3408	. . . . . {Silicon carbide}
N	H10P 14/3411	. . . . . {Silicon, silicon germanium or germanium}
N	H10P 14/3412	. . . . . {including tin}
N	H10P 14/3414	. . . . {being group IIIA-VIA materials}
N	H10P 14/3416	. . . . . {Nitrides}
N	H10P 14/3418	. . . . . {Phosphides}
N	H10P 14/3421	. . . . . {Arsenides}
N	H10P 14/3422	. . . . . {Antimonides}
N	H10P 14/3424	. . . . {being Group IIB-VIA materials}
N	H10P 14/3426	. . . . . {Oxides}
N	H10P 14/3428	. . . . . {Sulfides}
N	H10P 14/3431	. . . . . {Selenides}
N	H10P 14/3432	. . . . . {Tellurides}
N	H10P 14/3434	. . . . {being oxide semiconductor materials (Group IIB-VIA semiconductor materials H10P 14/3424)}
N	H10P 14/3436	. . . . {being chalcogenide semiconductor materials not being oxides, e.g. ternary compounds}
N	H10P 14/3438	. . . {Doping during depositing}
N	H10P 14/3441	. . . . {Conductivity type}
N	H10P 14/3442	. . . . . {N-type}
N	H10P 14/3444	. . . . . {P-type}
N	H10P 14/3446	. . . . . {Transition metal elements; Rare earth elements}
N	H10P 14/3448	. . . . {Delta-doping}
N	H10P 14/3451	. . . {Structure}
N	H10P 14/3452	. . . . {Microstructure}
N	H10P 14/3454	. . . . . {Amorphous}
N	H10P 14/3456	. . . . . {Polycrystalline}
N	H10P 14/3458	. . . . . {Monocrystalline}
N	H10P 14/3461	. . . . . {Nanoparticles}
N	H10P 14/3462	. . . . . {Nanowires}

- N H10P 14/3464 {Nanotubes}
- N H10P 14/3466 . . . {Crystal orientation}
- N H10P 14/36 . . {characterised by treatments done before the formation of the materials}
- N H10P 14/3602 . . . {In-situ cleaning}
- N H10P 14/38 . . {characterised by treatments done after the formation of the materials}
- N H10P 14/3802 . . . {Crystallisation or recrystallisation of non-monocrystalline semiconductor materials, e.g. regrowth}
- N H10P 14/3804 {using crystallisation-inhibiting elements}
- N H10P 14/3806 {using crystallisation-enhancing elements}
- N H10P 14/3808 {using laser beams}
- N H10P 14/381 {Beam shaping, e.g. using a mask}
- N H10P 14/3812 {Shape of mask}
- N H10P 14/3814 {Continuous wave laser beam}
- N H10P 14/3816 {Pulsed laser beam}
- N H10P 14/3818 {using particle beams}
- N H10P 14/382 {Scanning of a beam}
- N H10P 14/3822 . . . {Controlling the interface between substrate and epitaxial layer, e.g. by ion implantation followed by annealing}
- N H10P 14/3824 . . . {Intermixing, interdiffusion or disordering of III-V heterostructures, e.g. IILD}
- N H10P 14/40 . . . of conductive or resistive materials
- N H10P 14/412 . . {Deposition of metallic or metal-silicide materials}
- N H10P 14/414 . . . {of metal-silicide materials}
- N H10P 14/416 . . . {of highly doped semiconductor materials, e.g. polysilicon layers or amorphous silicon layers}
- N H10P 14/418 . . {the conductive layers comprising transition metals}
- Q H10P 14/42 . . using a gas or vapour

WARNING

Group [H10P 14/42](#) is impacted by reclassification into group [H10P 14/43](#). Groups [H10P 14/42](#) and [H10P 14/43](#) should be considered in order to perform a complete search.

- N H10P 14/43 . . . Chemical deposition, e.g. chemical vapour deposition [CVD]

WARNING

Group [H10P 14/43](#) is incomplete pending reclassification of documents from group [H10P 14/42](#). Groups [H10P 14/42](#) and [H10P 14/43](#) should be considered in order to perform a complete search.

- N H10P 14/432 {using selective deposition}
- Q H10P 14/44 . . . Physical vapour deposition [PVD]

WARNING

Group [H10P 14/44](#) is impacted by reclassification into group [H10P 14/45](#). Groups [H10P 14/44](#) and [H10P 14/45](#) should be considered in order to perform a complete search.

- N H10P 14/45 Sputtering

WARNING

Group [H10P 14/45](#) is incomplete pending reclassification of documents from group [H10P 14/44](#).

Groups [H10P 14/44](#) and [H10P 14/45](#) should be considered in order to perform a complete search.

Q H10P 14/46

- • using a liquid

WARNING

Group [H10P 14/46](#) is incomplete pending reclassification of documents from group [H10P 14/47](#). Group [H10P 14/46](#) is also impacted by reclassification into group [H10P 14/48](#).

Groups [H10P 14/47](#), [H10P 14/46](#) and [H10P 14/48](#) should be considered in order to perform a complete search.

Q H10P 14/47

- • • Electrolytic deposition, i.e. electroplating; Electroless plating

WARNING

Group [H10P 14/47](#) is impacted by reclassification into groups [H10P 14/46](#), [H10P 14/48](#), [H10D 64/011](#), [H10D 64/012](#) and [H10D 64/013](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 14/48

- • • • {Electroless plating}

WARNING

Group [H10P 14/48](#) is incomplete pending reclassification of documents from groups [H10P 14/46](#) and [H10P 14/47](#).

Groups [H10P 14/46](#), [H10P 14/47](#) and [H10P 14/48](#) should be considered in order to perform a complete search.

Q H10P 14/60

- of insulating materials

WARNING

Group [H10P 14/60](#) is impacted by reclassification into groups [H10P 95/70](#) and [H10P 95/80](#).

Groups [H10P 14/60](#), [H10P 95/70](#) and [H10P 95/80](#) should be considered in order to perform a complete search.

N H10P 14/61

- • using masks

N H10P 14/63

- • {characterised by the formation processes}

N H10P 14/6302

- • • {Non-deposition formation processes}

N H10P 14/6304

- • • • {Formation by oxidation, e.g. oxidation of the substrate}

N H10P 14/6306

- • • • • {of the semiconductor materials}

Q H10P 14/6308

- • • • • • {of Group IV semiconductors}

WARNING

Group [H10P 14/6308](#) is impacted by reclassification into groups [H10P 14/6309](#), [H10P 14/6318](#), [H10P 14/6319](#), [H10P 14/6322](#) and [H10P 14/6324](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 14/6309

- • • • • • {of silicon in uncombined form, i.e. pure silicon}

WARNING

Group [H10P 14/6309](#) is incomplete pending reclassification of documents from group [H10P 14/6308](#).

Groups [H10P 14/6308](#) and [H10P 14/6309](#) should be considered in order to perform a complete search.

N H10P 14/6312

- • • • • • {of Group III-V semiconductors}

N H10P 14/6314

- • • • • • {of a metallic layer}

- Q H10P 14/6316 . . . {Formation by nitridation, e.g. nitridation of the substrate}
- WARNING
Group [H10P 14/6316](#) is impacted by reclassification into groups [H10P 14/6318](#), [H10P 14/6319](#), [H10P 14/6322](#) and [H10P 14/6324](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 14/6318 . . . {Formation by simultaneous oxidation and nitridation}
- WARNING
Group [H10P 14/6318](#) is incomplete pending reclassification of documents from groups [H10P 14/6308](#) and [H10P 14/6316](#). Groups [H10P 14/6308](#), [H10P 14/6316](#) and [H10P 14/6318](#) should be considered in order to perform a complete search.
- N H10P 14/6319 . . . {Formation by plasma treatments, e.g. plasma oxidation of the substrate}
- WARNING
Group [H10P 14/6319](#) is incomplete pending reclassification of documents from groups [H10P 14/6308](#) and [H10P 14/6316](#). Groups [H10P 14/6308](#), [H10P 14/6316](#) and [H10P 14/6319](#) should be considered in order to perform a complete search.
- N H10P 14/6322 . . . {Formation by thermal treatments (formation by plasma treatment [H10P 14/6319](#))}
- WARNING
Group [H10P 14/6322](#) is incomplete pending reclassification of documents from groups [H10P 14/6308](#) and [H10P 14/6316](#). Groups [H10P 14/6308](#), [H10P 14/6316](#) and [H10P 14/6322](#) should be considered in order to perform a complete search.
- N H10P 14/6324 . . . {Formation by anodic treatments, e.g. anodic oxidation}
- WARNING
Group [H10P 14/6324](#) is incomplete pending reclassification of documents from groups [H10P 14/6308](#) and [H10P 14/6316](#). Groups [H10P 14/6308](#), [H10P 14/6316](#) and [H10P 14/6324](#) should be considered in order to perform a complete search.
- N H10P 14/6326 . . . {Deposition processes}
- N H10P 14/6328 . . . {Deposition from the gas or vapour phase}
- N H10P 14/6329 . . . {using physical ablation of a target, e.g. physical vapour deposition or pulsed laser deposition}
- N H10P 14/6332 . . . {using thermal evaporation (formation of epitaxial layers by a deposition process [H10P 14/6349](#))}
- N H10P 14/6334 . . . {using decomposition or reaction of gaseous or vapour phase compounds, i.e. chemical vapour deposition (deposition by physical ablation of a target [H10P 14/6329](#))}
- N H10P 14/6336 . . . {in the presence of a plasma [PECVD]}
- N H10P 14/6338 . . . {the reactions being activated by other means than plasma or thermal, e.g. photo-CVD}
- N H10P 14/6339 . . . {deposition by cyclic CVD, e.g. ALD, ALE or pulsed CVD}
- N H10P 14/6342 . . . {Liquid deposition, e.g. spin-coating, sol-gel techniques or spray coating}
- N H10P 14/6344 . . . {using Langmuir-Blodgett techniques}
- N H10P 14/6346 . . . {using printing, e.g. ink-jet printing}
- N H10P 14/6348 . . . {Liquid ALD}

N	H10P 14/6349	. . . . {Deposition of epitaxial materials}
N	H10P 14/65	. . {characterised by treatments performed before or after the formation of the materials}
N	H10P 14/6502	. . . {of treatments performed before formation of the materials}
N	H10P 14/6504	. . . . {In-situ cleaning}
N	H10P 14/6506	. . . . {Formation of intermediate materials}
N	H10P 14/6508	. . . . {by exposure to a liquid}
N	H10P 14/6509	. . . . {by exposure to electromagnetic radiation, e.g. UV light}
N	H10P 14/6512	. . . . {by exposure to a gas or vapour}
N	H10P 14/6514	. . . . . {by exposure to a plasma}
N	H10P 14/6516	. . . {of treatments performed after formation of the materials}
N	H10P 14/6518	. . . . {by introduction of substances into an already-existing insulating layer}
N	H10P 14/6519	. . . . . {the substance being oxygen}
N	H10P 14/6522	. . . . . {introduced into a nitride material, e.g. changing SiN to SiON}
N	H10P 14/6524	. . . . . {the substance being nitrogen}
N	H10P 14/6526	. . . . . {introduced into an oxide material, e.g. changing SiO to SiON}
N	H10P 14/6528	. . . . {In-situ cleaning after layer formation, e.g. removing process residues}
N	H10P 14/6529	. . . . {by exposure to a gas or vapour}
N	H10P 14/6532	. . . . . {by exposure to a plasma}
N	H10P 14/6534	. . . . {by exposure to a liquid}
N	H10P 14/6536	. . . . {by exposure to radiation, e.g. visible light}
N	H10P 14/6538	. . . . . {by exposure to UV light}
N	H10P 14/6539	. . . . . {by exposure to corpuscular radiation, e.g. exposure to electrons, alpha-particles, protons or ions}
N	H10P 14/6542	. . . . . {by using coherent radiation, e.g. using a laser}
N	H10P 14/6544	. . . . {to change the morphology of the insulating materials, e.g. transformation of an amorphous layer into a crystalline layer}
N	H10P 14/6546	. . . . {to change the surface groups of the insulating materials}
N	H10P 14/6548	. . . . {by forming intermediate materials, e.g. capping layers or diffusion barriers}
N	H10P 14/66	. . {characterised by the type of materials}
N	H10P 14/662	. . . {Laminate layers, e.g. stacks of alternating high-k metal oxides (adhesion layers or buffer layers H10P 14/6508 , H10P 14/6548)}
N	H10P 14/665	. . . {Porous materials}
N	H10P 14/668	. . . {the materials being characterised by the deposition precursor materials}
N	H10P 14/6681	. . . . {the precursor containing a compound comprising Si}
N	H10P 14/6682	. . . . . {the compound being a silane, e.g. disilane, methylsilane or chlorosilane}
N	H10P 14/6684	. . . . . {the compound comprising silicon and oxygen}
N	H10P 14/6686	. . . . . {the compound being a molecule comprising at least one silicon-oxygen bond and the compound having hydrogen or an organic group attached to the silicon or oxygen, e.g. a siloxane}
N	H10P 14/6687	. . . . . {the compound comprising silicon and nitrogen}
N	H10P 14/6689	. . . . . {the compound being a silazane}

- Q H10P 14/68
- • Organic materials, e.g. photoresists
- WARNING
Group [H10P 14/68](#) is impacted by reclassification into group [H10P 14/69](#). Groups [H10P 14/68](#) and [H10P 14/69](#) should be considered in order to perform a complete search.
- Q H10P 14/683
- • • {carbon-based polymeric organic materials, e.g. polyimides, poly cyclobutene or PVC}
- WARNING
Group [H10P 14/683](#) is impacted by reclassification into group [H10P 14/69](#). Groups [H10P 14/683](#) and [H10P 14/69](#) should be considered in order to perform a complete search.
- Q H10P 14/687
- • • {the materials being fluorocarbon compounds, e.g. (CH_xF_y)_n or polytetrafluoroethylene}
- WARNING
Group [H10P 14/687](#) is impacted by reclassification into group [H10P 14/69](#). Groups [H10P 14/687](#) and [H10P 14/69](#) should be considered in order to perform a complete search.
- Q H10P 14/69
- • Inorganic materials
- WARNING
Group [H10P 14/69](#) is incomplete pending reclassification of documents from groups [H10P 14/68](#), [H10P 14/683](#) and [H10P 14/687](#). Group [H10P 14/69](#) is also impacted by reclassification into group [H10P 14/694](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 14/6902
- • • {composed of carbon, e.g. alpha-C, diamond or hydrogen doped carbon}
- Q H10P 14/6903
- • • {containing silicon}
- WARNING
Group [H10P 14/6903](#) is impacted by reclassification into groups [H10P 14/6921](#) and [H10P 14/6943](#). Groups [H10P 14/6903](#), [H10P 14/6921](#) and [H10P 14/6943](#) should be considered in order to perform a complete search.
- N H10P 14/6905
- • • • {being a silicon carbide or silicon carbonitride and not containing oxygen, e.g. SiC or SiC:H}
- N H10P 14/6906
- • • {containing at least one metal element and not containing oxygen, e.g. metal carbides or metal carbonitrides (metal nitrides [H10P 14/6947](#))}
- WARNING
Group [H10P 14/6906](#) is incomplete pending reclassification of documents from group [H10P 14/6938](#). Groups [H10P 14/6938](#) and [H10P 14/6906](#) should be considered in order to perform a complete search.
- N H10P 14/6907
- • • • {characterised by the metal}
- WARNING
Group [H10P 14/6907](#) is incomplete pending reclassification of documents from group [H10P 14/6939](#). Groups [H10P 14/6939](#) and [H10P 14/6907](#) should be considered in order to perform a complete search.

- N H10P 14/6908 {the material containing aluminium}
WARNING
 Group [H10P 14/6908](#) is incomplete pending reclassification of documents from group [H10P 14/69391](#).
 Groups [H10P 14/69391](#) and [H10P 14/6908](#) should be considered in order to perform a complete search.
- N H10P 14/6909 {the material containing hafnium}
WARNING
 Group [H10P 14/6909](#) is incomplete pending reclassification of documents from group [H10P 14/69392](#).
 Groups [H10P 14/69392](#) and [H10P 14/6909](#) should be considered in order to perform a complete search.
- N H10P 14/691 {the material containing tantalum}
WARNING
 Group [H10P 14/691](#) is incomplete pending reclassification of documents from group [H10P 14/69393](#).
 Groups [H10P 14/69393](#) and [H10P 14/691](#) should be considered in order to perform a complete search.
- N H10P 14/6911 {the material containing titanium}
WARNING
 Group [H10P 14/6911](#) is incomplete pending reclassification of documents from group [H10P 14/69394](#).
 Groups [H10P 14/69394](#) and [H10P 14/6911](#) should be considered in order to perform a complete search.
- N H10P 14/6912 {the material containing zirconium}
WARNING
 Group [H10P 14/6912](#) is incomplete pending reclassification of documents from group [H10P 14/69395](#).
 Groups [H10P 14/69395](#) and [H10P 14/6912](#) should be considered in order to perform a complete search.
- N H10P 14/6913 {the material containing at least one rare earth metal element}
WARNING
 Group [H10P 14/6913](#) is incomplete pending reclassification of documents from group [H10P 14/69396](#).
 Groups [H10P 14/69396](#) and [H10P 14/6913](#) should be considered in order to perform a complete search.
- N H10P 14/6914 {the material containing two or more metal elements}
WARNING
 Group [H10P 14/6914](#) is incomplete pending reclassification of documents from group [H10P 14/69397](#).
 Groups [H10P 14/69397](#) and [H10P 14/6914](#) should be considered in order to perform a complete search.
- N H10P 14/692 . . . composed of oxides, glassy oxides or oxide-based glasses
- N H10P 14/6921 {containing silicon}
WARNING
 Group [H10P 14/6921](#) is incomplete pending reclassification of documents from group [H10P 14/6903](#).

Groups [H10P 14/6903](#) and [H10P 14/6921](#) should be considered in order to perform a complete search.

- N H10P 14/69215 {the material being a silicon oxide, e.g. SiO₂}
- N H10P 14/6922 {the material containing Si, O and at least one of H, N, C, F or other non-metal elements, e.g. SiOC, SiOC:H or SiONC}
- N H10P 14/6923 {the material being boron or phosphorus doped silicon oxides, e.g. BPSG, BSG or PSG}
- N H10P 14/6924 {the material being halogen doped silicon oxides, e.g. FSG}
- N H10P 14/6925 {the material comprising hydrogen silsesquioxane, e.g. HSQ}
- N H10P 14/6926 {the material comprising alkyl silsesquioxane, e.g. MSQ}
- N H10P 14/6927 {the material being a silicon oxynitride, e.g. SiON or SiON:H}
- N H10P 14/6928 {the material containing silicon and at least one metal element, e.g. metal silicate based insulators or metal silicon oxynitrides}
- N H10P 14/6929 {the material containing aluminium, e.g. AlSiO_x}
- N H10P 14/693 {the material containing hafnium, e.g. HfSiO_x or HfSiON}
- N H10P 14/6931 {the material containing tantalum, e.g. TaSiO_x}
- N H10P 14/6932 {the material containing titanium, e.g. TiSiO_x}
- N H10P 14/6933 {the material containing at least one rare earth element, e.g. silicate of scandium or silicate of yttrium}
- N H10P 14/6934 {the material containing zirconium, e.g. ZrSiO_x}
- N H10P 14/6936 {the material containing two or more metal elements}
- Q H10P 14/6938 {the material containing at least one metal element, e.g. metal oxides, metal oxynitrides or metal oxycarbides}

WARNING

Group [H10P 14/6938](#) is impacted by reclassification into groups [H10P 14/6906](#) and [H10P 14/6947](#).

Groups [H10P 14/6938](#), [H10P 14/6906](#) and [H10P 14/6947](#) should be considered in order to perform a complete search.

- Q H10P 14/6939 {characterised by the metal}

WARNING

Group [H10P 14/6939](#) is impacted by reclassification into groups [H10P 14/6907](#) and [H10P 14/69471](#).

Groups [H10P 14/6939](#), [H10P 14/6907](#) and [H10P 14/69471](#) should be considered in order to perform a complete search.

- Q H10P 14/69391 {the material containing aluminium, e.g. Al₂O₃}

WARNING

Group [H10P 14/69391](#) is impacted by reclassification into groups [H10P 14/6908](#) and [H10P 14/69472](#).

Groups [H10P 14/69391](#), [H10P 14/6908](#) and [H10P 14/69472](#) should be considered in order to perform a complete search.

- Q H10P 14/69392 {the material containing hafnium, e.g. HfO₂}

WARNING

Group [H10P 14/69392](#) is impacted by reclassification into groups [H10P 14/6909](#) and [H10P 14/69473](#).

Groups [H10P 14/69392](#), [H10P 14/6909](#) and [H10P 14/69473](#) should be considered in order to perform a complete search.

- Q H10P 14/69393 {the material containing tantalum, e.g. Ta₂O₅}
- WARNING
Group [H10P 14/69393](#) is impacted by reclassification into groups [H10P 14/691](#) and [H10P 14/69474](#).
Groups [H10P 14/69393](#), [H10P 14/691](#) and [H10P 14/69474](#) should be considered in order to perform a complete search.
- Q H10P 14/69394 {the material containing titanium, e.g. TiO₂}
- WARNING
Group [H10P 14/69394](#) is impacted by reclassification into groups [H10P 14/6911](#) and [H10P 14/69475](#).
Groups [H10P 14/69394](#), [H10P 14/6911](#) and [H10P 14/69475](#) should be considered in order to perform a complete search.
- Q H10P 14/69395 {the material containing zirconium, e.g. ZrO₂}
- WARNING
Group [H10P 14/69395](#) is impacted by reclassification into groups [H10P 14/6912](#) and [H10P 14/69476](#).
Groups [H10P 14/69395](#), [H10P 14/6912](#) and [H10P 14/69476](#) should be considered in order to perform a complete search.
- Q H10P 14/69396 {the material containing at least one rare earth metal element, e.g. oxides of lanthanides, scandium or yttrium}
- WARNING
Group [H10P 14/69396](#) is impacted by reclassification into groups [H10P 14/6913](#) and [H10P 14/69477](#).
Groups [H10P 14/69396](#), [H10P 14/6913](#) and [H10P 14/69477](#) should be considered in order to perform a complete search.
- Q H10P 14/69397 {the material containing two or more metal elements}
- WARNING
Group [H10P 14/69397](#) is impacted by reclassification into groups [H10P 14/6914](#) and [H10P 14/69478](#).
Groups [H10P 14/69397](#), [H10P 14/6914](#) and [H10P 14/69478](#) should be considered in order to perform a complete search.
- N H10P 14/69398 {the material having a perovskite structure, e.g. BaTiO₃}
- N H10P 14/694 composed of nitrides
- WARNING
Group [H10P 14/694](#) is incomplete pending reclassification of documents from group [H10P 14/69](#).
Groups [H10P 14/69](#) and [H10P 14/694](#) should be considered in order to perform a complete search.
- N H10P 14/6943 {containing silicon (silicon oxynitrides [H10P 14/6927](#))}
- WARNING
Group [H10P 14/6943](#) is incomplete pending reclassification of documents from group [H10P 14/6903](#).
Groups [H10P 14/6903](#) and [H10P 14/6943](#) should be considered in order to perform a complete search.
- N H10P 14/69433 {the material being a silicon nitride not containing oxygen, e.g. SixNy or SixByNz}

- N H10P 14/6947 {the material containing at least one metal element and not containing oxygen, e.g. metal nitrides}
WARNING
 Group [H10P 14/6947](#) is incomplete pending reclassification of documents from group [H10P 14/6938](#).
 Groups [H10P 14/6938](#) and [H10P 14/6947](#) should be considered in order to perform a complete search.
- N H10P 14/69471 {characterised by the metal}
WARNING
 Group [H10P 14/69471](#) is incomplete pending reclassification of documents from group [H10P 14/6939](#).
 Groups [H10P 14/6939](#) and [H10P 14/69471](#) should be considered in order to perform a complete search.
- N H10P 14/69472 {the material containing aluminium}
WARNING
 Group [H10P 14/69472](#) is incomplete pending reclassification of documents from group [H10P 14/69391](#).
 Groups [H10P 14/69391](#) and [H10P 14/69472](#) should be considered in order to perform a complete search.
- N H10P 14/69473 {the material containing hafnium}
WARNING
 Group [H10P 14/69473](#) is incomplete pending reclassification of documents from group [H10P 14/69392](#).
 Groups [H10P 14/69392](#) and [H10P 14/69473](#) should be considered in order to perform a complete search.
- N H10P 14/69474 {the material containing tantalum}
WARNING
 Group [H10P 14/69474](#) is incomplete pending reclassification of documents from group [H10P 14/69393](#).
 Groups [H10P 14/69393](#) and [H10P 14/69474](#) should be considered in order to perform a complete search.
- N H10P 14/69475 {the material containing titanium}
WARNING
 Group [H10P 14/69475](#) is incomplete pending reclassification of documents from group [H10P 14/69394](#).
 Groups [H10P 14/69394](#) and [H10P 14/69475](#) should be considered in order to perform a complete search.
- N H10P 14/69476 {the material containing zirconium}
WARNING
 Group [H10P 14/69476](#) is incomplete pending reclassification of documents from group [H10P 14/69395](#).
 Groups [H10P 14/69395](#) and [H10P 14/69476](#) should be considered in order to perform a complete search.
- N H10P 14/69477 {the material containing at least one rare earth metal element}
WARNING
 Group [H10P 14/69477](#) is incomplete pending reclassification of documents from group [H10P 14/69396](#).

Groups [H10P 14/69396](#) and [H10P 14/69477](#) should be considered in order to perform a complete search.

N H10P 14/69478 {the material containing two or more metal elements}

WARNING

Group [H10P 14/69478](#) is incomplete pending reclassification of documents from group [H10P 14/69397](#).

Groups [H10P 14/69397](#) and [H10P 14/69478](#) should be considered in order to perform a complete search.

N H10P 30/00 -
H10P 36/00

Modification of layers, structures or materials

N H10P 30/00

Ion implantation into wafers, substrates or parts of devices

WARNING

Group [H10P 30/00](#) is incomplete pending reclassification of documents from group [H10P 30/20](#).

Groups [H10P 30/20](#) and [H10P 30/00](#) should be considered in order to perform a complete search.

Q H10P 30/20

. into semiconductor materials, e.g. for doping

NOTE

{When classifying in this group, the classification both in process and material subgroups is mandatory}

WARNING

Group [H10P 30/20](#) is impacted by reclassification into group [H10P 30/00](#).

Groups [H10P 30/20](#) and [H10P 30/00](#) should be considered in order to perform a complete search.

Q H10P 30/202

. {characterised by the semiconductor materials}

WARNING

Group [H10P 30/202](#) is impacted by reclassification into groups [H10P 30/208](#), [H10P 30/21](#) - [H10P 30/212](#), [H10P 30/22](#) - [H10P 30/221](#), [H10P 30/222](#) and [H10P 30/28](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 30/204

. . . {into Group IV semiconductors}

Q H10P 30/2042

. . . {into crystalline silicon carbide}

WARNING

Group [H10P 30/2042](#) is impacted by reclassification into groups [H10P 30/21](#), [H10P 30/218](#) and [H10P 30/28](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Q H10P 30/2044

. . . {into semiconducting carbon, e.g. diamond or semiconducting diamond-like carbon}

WARNING

Group [H10P 30/2044](#) is impacted by reclassification into groups [H10P 30/208](#), [H10P 30/21](#) - [H10P 30/212](#), [H10P 30/22](#) - [H10P 30/221](#), [H10P 30/222](#) and [H10P 30/28](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 30/206

. . . {into Group III-V semiconductors}

- N H10P 30/208
- • {of electrically inactive species}
- WARNING
 Group [H10P 30/208](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#) and [H10P 30/2044](#).
 Groups [H10P 30/202](#), [H10P 30/2044](#) and [H10P 30/208](#) should be considered in order to perform a complete search.
- N H10P 30/209
- Q H10P 30/21
- • • {in silicon to make buried insulating layers}
 - • {of electrically active species}
- WARNING
 Group [H10P 30/21](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#), [H10P 30/2042](#) and [H10P 30/2044](#). Group [H10P 30/21](#) is also impacted by reclassification into groups [H10P 30/214](#) and [H10P 30/28](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- Q H10P 30/212
- • • {Through-implantation}
- WARNING
 Group [H10P 30/212](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#) and [H10P 30/2044](#). Group [H10P 30/212](#) is also impacted by reclassification into groups [H10P 30/214](#) and [H10P 30/28](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 30/214
- • {Recoil-implantation}
- WARNING
 Group [H10P 30/214](#) is incomplete pending reclassification of documents from groups [H10P 30/21](#) and [H10P 30/212](#).
 Groups [H10P 30/21](#), [H10P 30/212](#) and [H10P 30/214](#) should be considered in order to perform a complete search.
- N H10P 30/218
- • {characterised by the implantation in a compound semiconductor of both electrically active and inactive species in the same semiconductor region to be doped n-type or p-type}
- WARNING
 Group [H10P 30/218](#) is incomplete pending reclassification of documents from group [H10P 30/2042](#).
 Groups [H10P 30/2042](#) and [H10P 30/218](#) should be considered in order to perform a complete search.
- N H10P 30/22
- • using masks
- WARNING
 Group [H10P 30/22](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#) and [H10P 30/2044](#).
 Groups [H10P 30/202](#), [H10P 30/2044](#) and [H10P 30/22](#) should be considered in order to perform a complete search.
- N H10P 30/221
- • • {characterised by the angle between the ion beam and the mask}
- WARNING
 Group [H10P 30/221](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#), [H10P 30/2044](#) and [H10P 30/222](#).
 All groups listed in this Warning should be considered in order to perform a complete search.

- Q H10P 30/222
- {characterised by the angle between the ion beam and the crystal planes or the main crystal surface (characterised by the angle between the ion beam and the mask [H10P 30/221](#))}

WARNING

Group [H10P 30/222](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#) and [H10P 30/2044](#). Group [H10P 30/222](#) is also impacted by reclassification into group [H10P 30/221](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10P 30/224
- {of a cluster, e.g. using a gas cluster ion beam}
- N H10P 30/225
- {of a molecular ion, e.g. decaborane}
- N H10P 30/226
- {at a temperature lower than room temperature}
- N H10P 30/28
- characterised by an annealing step, e.g. for activation of dopants

WARNING

Group [H10P 30/28](#) is incomplete pending reclassification of documents from groups [H10P 30/202](#), [H10P 30/2042](#), [H10P 30/2044](#), [H10P 30/21](#), [H10P 30/212](#), [H10P 95/90](#) and [H10P 95/904](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- Q H10P 30/40
- into insulating materials

WARNING

Group [H10P 30/40](#) is impacted by reclassification into group [H10P 32/20](#).

Groups [H10P 30/40](#) and [H10P 32/20](#) should be considered in order to perform a complete search.

- Q H10P 32/00
- Diffusion of dopants within, into or out of wafers, substrates or parts of devices (during formation of materials [H10P 14/00](#))**

WARNING

Group [H10P 32/00](#) is impacted by reclassification into group [H10P 32/10](#).

Groups [H10P 32/00](#) and [H10P 32/10](#) should be considered in order to perform a complete search.

- N H10P 32/10
- Diffusion of dopants within, into or out of semiconductor bodies or layers

WARNING

Group [H10P 32/10](#) is incomplete pending reclassification of documents from group [H10P 32/00](#).

Groups [H10P 32/00](#) and [H10P 32/10](#) should be considered in order to perform a complete search.

- N H10P 32/12
- between a solid phase and a gaseous phase
- N H10P 32/1204
- {from a plasma phase}
- N H10P 32/14
- within a single semiconductor body or layer in a solid phase; between different semiconductor bodies or layers, both in a solid phase
- N H10P 32/1404
- {using predeposition followed by drive-in of impurities into the semiconductor surface, e.g. predeposition from a gaseous phase}
- N H10P 32/1406
- {by ion implantation}

- N H10P 32/1408
- • • {from or through or into an external applied layer, e.g. photoresist or nitride layers}
- NOTE
{In the range [H10P 32/1408](#) - 32/1414 the main compositional part of the applied layer just before the diffusion step has to be considered for classification}
- N H10P 32/141
- • • • {the applied layer comprising oxides only}
- N H10P 32/1412
- • • • {through the applied layer}
- N H10P 32/1414
- • • • {the applied layer being silicon, silicide or SIPOS, e.g. polysilicon or porous silicon}
- N H10P 32/15
- • {from the substrate during epitaxy, e.g. autodoping; Preventing or using autodoping}
- N H10P 32/16
- • between a solid phase and a liquid phase
- N H10P 32/17
- • {characterised by the semiconductor material}
- N H10P 32/171
- • • {being group IV material}
- N H10P 32/172
- • • • {being crystalline silicon carbide}
- N H10P 32/173
- • • • {being semiconducting carbon, e.g. diamond or semiconducting diamond-like carbon}
- WARNING
Group [H10P 32/173](#) is incomplete pending reclassification of documents from group [H10P 95/92](#).
Groups [H10P 95/92](#) and [H10P 32/173](#) should be considered in order to perform a complete search.
- N H10P 32/174
- • • {being Group III-V material}
- N H10P 32/18
- • {Diffusion lifetime killers}
- N H10P 32/185
- • {Lithium-drift diffusion}
- N H10P 32/19
- • {Diffusion sources}
- N H10P 32/20
- Diffusion for doping of insulating layers
- WARNING
Group [H10P 32/20](#) is incomplete pending reclassification of documents from group [H10P 30/40](#).
Groups [H10P 30/40](#) and [H10P 32/20](#) should be considered in order to perform a complete search.
- N H10P 32/30
- Diffusion for doping of conductive or resistive layers
- N H10P 32/302
- • {Doping polycrystalline silicon or amorphous silicon layers}
- Q H10P 34/00**
- Irradiation with electromagnetic or particle radiation of wafers, substrates or parts of devices**
- WARNING
Group [H10P 34/00](#) is impacted by reclassification into groups [H10P 34/10](#), [H10P 34/20](#) and [H10P 34/40](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 34/10
- {with corpuscular radiation}
- WARNING
Group [H10P 34/10](#) is incomplete pending reclassification of documents from group [H10P 34/00](#).

Groups [H10P 34/00](#) and [H10P 34/10](#) should be considered in order to perform a complete search.

N H10P 34/20

- for inducing a nuclear reaction transmuting chemical elements

WARNING

Group [H10P 34/20](#) is incomplete pending reclassification of documents from group [H10P 34/00](#).

Groups [H10P 34/00](#) and [H10P 34/20](#) should be considered in order to perform a complete search.

N H10P 34/40

- with high-energy radiation

WARNING

Group [H10P 34/40](#) is incomplete pending reclassification of documents from group [H10P 34/00](#).

Groups [H10P 34/00](#) and [H10P 34/40](#) should be considered in order to perform a complete search.

N H10P 34/42

- • with electromagnetic radiation, e.g. laser annealing (laser cutting [H10P 54/20](#))

N H10P 34/422

- • • {using incoherent radiation}

Q H10P 36/00

Gettering within semiconductor bodies

WARNING

Group [H10P 36/00](#) is impacted by reclassification into groups [H10P 36/20](#) and [H10P 95/40](#).

Groups [H10P 36/00](#), [H10P 36/20](#) and [H10P 95/40](#) should be considered in order to perform a complete search.

Q H10P 36/03

- {within silicon bodies}

WARNING

Group [H10P 36/03](#) is impacted by reclassification into group [H10P 95/402](#).

Groups [H10P 36/03](#) and [H10P 95/402](#) should be considered in order to perform a complete search.

N H10P 36/07

- • {of silicon-on-insulator structures}

N H10P 36/20

- Intrinsic gettering, i.e. thermally inducing defects by using oxygen present in the silicon body

WARNING

Group [H10P 36/20](#) is incomplete pending reclassification of documents from group [H10P 36/00](#).

Groups [H10P 36/00](#) and [H10P 36/20](#) should be considered in order to perform a complete search.

N H10P 50/00 -
H10P 58/00

Removal of layers, structures or materials

Q H10P 50/00

Etching of wafers, substrates or parts of devices

WARNING

Group [H10P 50/00](#) is impacted by reclassification into groups [H10P 50/20](#), [H10P 50/24](#), [H10P 50/26](#), [H10P 50/60](#), [H10P 50/61](#), [H10P 50/64](#), [H10P 50/66](#), [H10P 52/00](#), [H10P 95/00](#), [H10P 95/02](#) and [H10P 95/70](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Q H10P 50/20

- Dry etching; Plasma etching; Reactive-ion etching

WARNING

Group [H10P 50/20](#) is incomplete pending reclassification of documents from group [H10P 50/00](#). Group [H10P 50/20](#) is also impacted by reclassification into groups [H10P 50/24](#), [H10P 50/26](#), [H10P 50/60](#), [H10P 50/61](#), [H10P 50/64](#) and [H10P 50/66](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 50/24

- • of semiconductor materials

WARNING

Group [H10P 50/24](#) is incomplete pending reclassification of documents from groups [H10P 50/00](#) and [H10P 50/20](#).

Groups [H10P 50/00](#), [H10P 50/20](#) and [H10P 50/24](#) should be considered in order to perform a complete search.

N H10P 50/242

- • • {of Group IV materials}

N H10P 50/244

- • • • {comprising alternated and repeated etching and passivation steps}

N H10P 50/246

- • • {of Group III-V materials}

N H10P 50/26

- • of conductive or resistive materials

WARNING

Group [H10P 50/26](#) is incomplete pending reclassification of documents from groups [H10P 50/00](#) and [H10P 50/20](#).

Groups [H10P 50/00](#), [H10P 50/20](#) and [H10P 50/26](#) should be considered in order to perform a complete search.

N H10P 50/262

- • • {by physical means only}

N H10P 50/263

- • • • {of silicon-containing layers}

Q H10P 50/264

- • • {by chemical means}

WARNING

Group [H10P 50/264](#) is impacted by reclassification into group [H10P 50/663](#).

Groups [H10P 50/264](#) and [H10P 50/663](#) should be considered in order to perform a complete search.

N H10P 50/266

- • • • {by vapour etching only}

N H10P 50/267

- • • • • {using plasmas}

N H10P 50/268

- • • • • • {of silicon-containing layers}

N H10P 50/269

- • • • • • {pre- or post-treatments, e.g. anti-corrosion processes}

Q H10P 50/28

- • of insulating materials

WARNING

Group [H10P 50/28](#) is impacted by reclassification into group [H10P 50/68](#).

Groups [H10P 50/28](#) and [H10P 50/68](#) should be considered in order to perform a complete search.

Q H10P 50/282

- • • {of inorganic materials}

WARNING

Group [H10P 50/282](#) is impacted by reclassification into group [H10P 50/683](#).

Groups [H10P 50/282](#) and [H10P 50/683](#) should be considered in order to perform a complete search.

- Q H10P 50/283 . . . {by chemical means}
- WARNING
Group [H10P 50/283](#) is impacted by reclassification into group [H10P 50/683](#).
Groups [H10P 50/283](#) and [H10P 50/683](#) should be considered in order to perform a complete search.
- N H10P 50/285 {of materials not containing Si, e.g. PZT or Al₂O₃}
- Q H10P 50/286 . . . {of organic materials}
- WARNING
Group [H10P 50/286](#) is impacted by reclassification into group [H10P 50/68](#).
Groups [H10P 50/286](#) and [H10P 50/68](#) should be considered in order to perform a complete search.
- Q H10P 50/287 {by chemical means}
- WARNING
Group [H10P 50/287](#) is impacted by reclassification into group [H10P 50/68](#).
Groups [H10P 50/287](#) and [H10P 50/68](#) should be considered in order to perform a complete search.
- N H10P 50/60 . Wet etching
- WARNING
Groups [H10P 50/60](#), [H10P 50/61](#), [H10P 50/64](#) and [H10P 50/66](#) are incomplete pending reclassification of documents from groups [H10P 50/00](#) and [H10P 50/20](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 50/61 . . Electrolytic etching
- N H10P 50/613 . . . {of Group IV materials}
- N H10P 50/617 . . . {of Group III-V materials}
- N H10P 50/64 . . of semiconductor materials
- N H10P 50/642 . . . {Chemical etching}
- N H10P 50/644 {Anisotropic liquid etching ([H10P 50/61](#) takes precedence)}
- N H10P 50/646 {of Group III-V materials}
- N H10P 50/648 {Anisotropic liquid etching}
- N H10P 50/66 . . of conductive or resistive materials
- N H10P 50/663 . . . {by chemical means only}
- WARNING
Group [H10P 50/663](#) is incomplete pending reclassification of documents from group [H10P 50/264](#).
Groups [H10P 50/264](#) and [H10P 50/663](#) should be considered in order to perform a complete search.
- N H10P 50/667 {by liquid etching only}
- N H10P 50/68 . . of insulating materials
- WARNING
Group [H10P 50/68](#) is incomplete pending reclassification of documents from groups [H10P 50/28](#), [H10P 50/286](#) and [H10P 50/287](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 50/683

- • • {of inorganic materials}

WARNING

Group [H10P 50/683](#) is incomplete pending reclassification of documents from groups [H10P 50/282](#) and [H10P 50/283](#).

Groups [H10P 50/282](#), [H10P 50/283](#) and [H10P 50/683](#) should be considered in order to perform a complete search.

N H10P 50/69

- {using masks for semiconductor materials}

N H10P 50/691

- • {for Group V materials or Group III-V materials}

N H10P 50/692

- • • {characterised by their composition, e.g. multilayer masks or materials}

N H10P 50/693

- • • {characterised by their size, orientation, disposition, behaviour or shape, in horizontal or vertical plane}

N H10P 50/694

- • • • {characterised by their behaviour during the process, e.g. soluble masks or redeposited masks}

N H10P 50/695

- • • • {characterised by the process involved to create the mask, e.g. lift-off masks or sidewalls or to modify the mask}

N H10P 50/696

- • • • {Process specially adapted to improve the resolution of the mask}

N H10P 50/71

- {using masks for conductive or resistive materials}

N H10P 50/73

- {using masks for insulating materials}

Q H10P 52/00

Grinding, lapping or polishing of wafers, substrates or parts of devices

WARNING

Group [H10P 52/00](#) is incomplete pending reclassification of documents from group [H10P 50/00](#). Group [H10P 52/00](#) is incomplete pending reclassification of documents from group [H10P 50/00](#). Group [H10P 52/00](#) is also impacted by reclassification into groups [H10P 52/20](#), [H10P 52/40](#), [H10P 54/00](#) - [H10P 54/94](#) and [H10P 95/60](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 52/20

- Electromechanical polishing [EMP]; Electrochemical mechanical polishing [ECMP]

WARNING

Group [H10P 52/20](#) is incomplete pending reclassification of documents from group [H10P 52/00](#).

Groups [H10P 52/00](#) and [H10P 52/20](#) should be considered in order to perform a complete search.

N H10P 52/202

- • {of semiconductor materials}

WARNING

Group [H10P 52/202](#) is incomplete pending reclassification of documents from group [H10P 52/402](#).

Groups [H10P 52/402](#) and [H10P 52/202](#) should be considered in order to perform a complete search.

N H10P 52/203

- • {of conductive or resistive materials}

N H10P 52/207

- • {of inorganic insulating materials}

WARNING

Group [H10P 52/207](#) is incomplete pending reclassification of documents from group [H10P 95/062](#).

Groups [H10P 95/062](#) and [H10P 52/207](#) should be considered in order to perform a complete search.

N H10P 52/209

- {of organic insulating materials}

WARNING

Group [H10P 52/209](#) is incomplete pending reclassification of documents from group [H10P 95/08](#).

Groups [H10P 95/08](#) and [H10P 52/209](#) should be considered in order to perform a complete search.

N H10P 52/40

- Chemomechanical polishing [CMP] (electrochemical mechanical polishing [H10P 52/20](#))

WARNING

Group [H10P 52/40](#) is incomplete pending reclassification of documents from group [H10P 52/00](#).

Groups [H10P 52/00](#) and [H10P 52/40](#) should be considered in order to perform a complete search.

Q H10P 52/402

- {of semiconductor materials}

WARNING

Group [H10P 52/402](#) is impacted by reclassification into group [H10P 52/202](#).

Groups [H10P 52/402](#) and [H10P 52/202](#) should be considered in order to perform a complete search.

N H10P 52/403

- {of conductive or resistive materials}

N H10P 52/407

- {of inorganic insulating materials}

WARNING

Group [H10P 52/407](#) is incomplete pending reclassification of documents from group [H10P 95/062](#).

Groups [H10P 95/062](#) and [H10P 52/407](#) should be considered in order to perform a complete search.

N H10P 52/409

- {of organic insulating materials}

WARNING

Group [H10P 52/409](#) is incomplete pending reclassification of documents from group [H10P 95/08](#).

Groups [H10P 95/08](#) and [H10P 52/409](#) should be considered in order to perform a complete search.

N H10P 54/00

Cutting or separating of wafers, substrates or parts of devices

NOTE

This group covers cutting or separating of wafers or substrates having semiconductor or solid-state devices formed, or to be formed, therein or thereon. The cutting may be partial, e.g. for making a groove.

WARNING

Groups [H10P 54/00](#), [H10P 54/20](#), [H10P 54/30](#), [H10P 54/40](#), [H10P 54/50](#), [H10P 54/90](#), [H10P 54/922](#), [H10P 54/924](#) and [H10P 54/94](#) are incomplete pending reclassification of documents from groups [H10P 52/00](#) and [H10P 58/00](#). All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 54/20

- by laser cutting

N H10P 54/30

- by forming weakened zones for subsequent cutting or separating, e.g. by laser treatment or by ion implantation

- N H10P 54/40 • by sawing, e.g. using revolving or reciprocating blades
- N H10P 54/50 • by scoring, breaking or cleaving
- N H10P 54/52 • {by cleaving}

WARNING

Group [H10P 54/52](#) is incomplete pending reclassification of documents from groups [H10P 10/12](#), [H10P 52/00](#), [H10P 58/00](#), [H10P 90/1914](#) and [H10P 90/1916](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10P 54/90 • Auxiliary processes or arrangements
- N H10P 54/92 • • for protecting or reinforcing the surface of wafers or substrates during cutting or separating, e.g. using adhesive tapes

WARNING

Group [H10P 54/92](#) is incomplete pending reclassification of documents from group [H10P 52/00](#).

Groups [H10P 52/00](#) and [H10P 54/92](#) should be considered in order to perform a complete search.

- N H10P 54/922 • • {Arrangements for stress mitigation, e.g. crack stops}
- N H10P 54/924 • • {using expanding wafer tapes}
- N H10P 54/94 • • After-treatments, e.g. removal of adhesive tapes or supports

N H10P 56/00 Debonding of wafers, substrates or parts of devices**NOTE**

{debonding means separation at the bonding interface following a previous bonding step}

WARNING

Group [H10P 56/00](#) is incomplete pending reclassification of documents from groups [H10P 10/12](#) and [H10P 90/00](#).

Groups [H10P 10/12](#), [H10P 90/00](#) and [H10P 56/00](#) should be considered in order to perform a complete search.

Q H10P 58/00 Singulating wafers or substrates into multiple chips, i.e. dicing**NOTE**

When classifying in this group, any process step involving cutting or separating, which is considered to represent information of interest for search, may also be classified in group [H10P 54/00](#).

WARNING

Group [H10P 58/00](#) is impacted by reclassification into groups [H10P 58/20](#) - [H10P 58/22](#), [H10P 54/00](#), [H10P 54/20](#), [H10P 54/30](#), [H10P 54/40](#), [H10P 54/50](#) - [H10P 54/52](#), [H10P 54/90](#), [H10P 54/922](#), [H10P 54/924](#) and [H10P 54/94](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10P 58/20 • {comprising two or more processes, e.g. etching and cutting}

WARNING

Groups [H10P 58/20](#) and [H10P 58/22](#) are incomplete pending reclassification of documents from group [H10P 58/00](#).

Groups [H10P 58/00](#), [H10P 58/20](#) and [H10P 58/22](#) should be considered in order to perform a complete search.

- N H10P 58/22 • • {characterised by the singulation processes being performed on multiple sides of the wafer or substrate}

N H10P 70/00 - H10P 95/00 **Other manufacture or treatment**

N H10P 70/00 **Cleaning of wafers, substrates or parts of devices**

NOTE

This group does not cover the cleaning of package elements, package parts or other constructional details, e.g. cleaning of packages after moulding, which are covered by the related groups of subclass [H10W](#).

- N H10P 70/10 • {Cleaning before device manufacture, i.e. Begin-Of-Line process}
- N H10P 70/12 • • {by dry cleaning only ([H10P 70/52](#) takes precedence)}
- N H10P 70/125 • • • {with gaseous HF}
- N H10P 70/15 • • {by wet cleaning only ([H10P 70/52](#) takes precedence)}
- N H10P 70/18 • • {by combined dry cleaning and wet cleaning ([H10P 70/52](#) takes precedence)}
- N H10P 70/20 • {Cleaning during device manufacture}
- N H10P 70/23 • • {during, before or after processing of insulating materials}
- N H10P 70/234 • • • {the processing being the formation of vias or contact holes}
- N H10P 70/237 • • • {the processing being a planarisation of insulating layers}
- N H10P 70/27 • • {during, before or after processing of conductive materials, e.g. polysilicon or amorphous silicon layers}
- N H10P 70/273 • • • {the processing being a delineation of conductive layers, e.g. by RIE}
- N H10P 70/277 • • • {the processing being a planarisation of conductive layers}
- N H10P 70/30 • {Cleaning after the substrates have been singulated}
- N H10P 70/40 • {Cleaning for reclaiming}
- N H10P 70/50 • {characterised by the part to be cleaned}
- N H10P 70/52 • • {Cleaning of diamond}
- N H10P 70/54 • • {Cleaning of wafer edges}
- N H10P 70/56 • • {Cleaning of wafer backside}
- N H10P 70/58 • • {Cleaning of porous materials}
- N H10P 70/60 • {Cleaning only by mechanical processes}
- N H10P 70/70 • {Cleaning only by lasers processes, e.g. laser ablation}
- N H10P 70/80 • {Cleaning only by supercritical fluids}
- N H10P 72/00** **Handling or holding of wafers, substrates or devices during manufacture or treatment thereof**
- N H10P 72/04 • {Apparatus for manufacture or treatment}
- N H10P 72/0402 • • {Apparatus for fluid treatment ([H10P 72/0441](#), [H10P 72/0448](#) take precedence)}
- N H10P 72/0404 • • • {for general liquid treatment, e.g. etching followed by cleaning}
- N H10P 72/0406 • • • {for cleaning followed by drying, rinsing, stripping, blasting or the like}
- N H10P 72/0408 • • • • {for drying}
- N H10P 72/0411 • • • • {for wet cleaning or washing}
- N H10P 72/0412 • • • • • {using mainly scrubbing means, e.g. brushes}
- N H10P 72/0414 • • • • • {using mainly spraying means, e.g. nozzles}
- N H10P 72/0416 • • • • • {with the semiconductor substrates being dipped in baths or vessels}
- N H10P 72/0418 • • • {for etching}

- N H10P 72/0421 {for drying etching}
- N H10P 72/0422 {for wet etching}
- N H10P 72/0424 {using mainly spraying means, e.g. nozzles}
- N H10P 72/0426 {with the semiconductor substrates being dipped in baths or vessels}
- N H10P 72/0428 . . {Apparatus for mechanical treatment or grinding or cutting}
- N H10P 72/0431 . . {Apparatus for thermal treatment}
- N H10P 72/0432 . . . {mainly by conduction}
- N H10P 72/0434 . . . {mainly by convection}
- N H10P 72/0436 . . . {mainly by radiation}
- N H10P 72/0438 . . {Apparatus for making assemblies not otherwise provided for, e.g. package constructions}
- N H10P 72/0441 . . {Apparatus for sealing, encapsulating, glassing, decapsulating or the like}
- N H10P 72/0442 . . {Apparatus for placing on an insulating substrate, e.g. tape}
- N H10P 72/0444 . . {Apparatus for wiring semiconductor or solid-state device}
- N H10P 72/0446 . . {Apparatus for mounting on conductive members, e.g. leadframes or conductors on insulating substrates}
- N H10P 72/0448 . . {Apparatus for applying a liquid, a resin, an ink or the like}
- N H10P 72/0451 . . {Apparatus for manufacturing or treating in a plurality of work-stations}
- N H10P 72/0452 . . . {characterised by the layout of the process chambers}
- N H10P 72/0454 {surrounding a central transfer chamber}
- N H10P 72/0456 {in-line arrangement}
- N H10P 72/0458 {vertical arrangement}
- N H10P 72/0461 . . . {characterised by the presence of two or more transfer chambers}
- N H10P 72/0462 . . . {characterised by the construction of the processing chambers, e.g. modular processing chambers}
- N H10P 72/0464 . . . {characterised by the construction of the transfer chamber}
- N H10P 72/0466 . . . {characterised by the construction of the load-lock chamber}
- N H10P 72/0468 . . . {comprising a chamber adapted to a particular process}
- N H10P 72/0471 {comprising at least one ion or electron beam chamber}
- N H10P 72/0472 {comprising at least one polishing chamber}
- N H10P 72/0474 {comprising at least one lithography chamber}
- N H10P 72/0476 {comprising at least one plating chamber}
- N H10P 72/0478 . . {the substrates being processed being not semiconductor wafers, e.g. leadframes or chips}
- N H10P 72/06 . . {Apparatus for monitoring, sorting, marking, testing or measuring}
- N H10P 72/0602 . . {Temperature monitoring}
- N H10P 72/0604 . . {Process monitoring, e.g. flow or thickness monitoring}
- N H10P 72/0606 . . {Position monitoring, e.g. misposition detection or presence detection}
- N H10P 72/0608 . . . {of substrates stored in a container, a magazine, a carrier, a boat or the like}
- N H10P 72/0611 . . {Sorting devices}
- N H10P 72/0612 . . {Production flow monitoring, e.g. for increasing throughput}
- N H10P 72/0614 . . {Marking devices}
- N H10P 72/0616 . . {Monitoring of warpages, curvatures, damages, defects or the like}
- N H10P 72/0618 . . {using identification means, e.g. labels on substrates or labels on containers}

N	H10P 72/10	• using carriers specially adapted therefor, e.g. front opening unified pods [FOUP]
N	H10P 72/12	• • {Vertical boat type carrier whereby the substrates are horizontally supported, e.g. comprising rod-shaped elements}
N	H10P 72/123	• • • {characterised by a material, a roughness, a coating or the like}
N	H10P 72/127	• • • {characterised by the substrate support}
N	H10P 72/13	• • {Horizontal boat type carrier whereby the substrates are vertically supported, e.g. comprising rod-shaped elements}
N	H10P 72/135	• • • {characterised by a material, a roughness, a coating or the like}
N	H10P 72/14	• • {Vertical carrier comprising wall type elements whereby the substrates are horizontally supported, e.g. comprising sidewalls}
N	H10P 72/145	• • • {characterised by a material, a roughness, a coating or the like}
N	H10P 72/15	• • {Horizontal carrier comprising wall type elements whereby the substrates are vertically supported, e.g. comprising sidewalls}
N	H10P 72/155	• • • {characterised by a material, a roughness, a coating or the like}
N	H10P 72/16	• • {Trays for chips}
N	H10P 72/165	• • • {characterised by a material, a roughness, a coating or the like}
N	H10P 72/17	• • {specially adapted for supporting large square shaped substrates}
N	H10P 72/175	• • • {characterised by a material, a roughness, a coating or the like}
N	H10P 72/18	• • {characterised by being specially adapted for supporting a single substrate or by comprising a stack of such individual supports}
N	H10P 72/19	• • {closed carriers}
N	H10P 72/1902	• • • {specially adapted for a single substrate}
N	H10P 72/1904	• • • {specially adapted for containing chips, dies or ICs}
N	H10P 72/1906	• • • {specially adapted for containing masks, reticles or pellicles}
N	H10P 72/1908	• • • {specially adapted for containing substrates other than wafers}
N	H10P 72/1911	• • • {characterised by materials, roughness, coatings or the like}
N	H10P 72/1912	• • • • {characterised by shock absorbing elements, e.g. retainers or cushions}
N	H10P 72/1914	• • • {characterised by locking systems}
N	H10P 72/1916	• • • {characterised by sealing arrangements}
N	H10P 72/1918	• • • {characterised by coupling elements, kinematic members, handles or elements to be externally gripped}
N	H10P 72/1921	• • • {characterised by substrate supports}
N	H10P 72/1922	• • • {characterised by the construction of the closed carrier}
N	H10P 72/1924	• • • {characterised by atmosphere control}
N	H10P 72/1926	• • • • {characterised by the presence of atmosphere modifying elements inside or attached to the closed carrier}
N	H10P 72/1928	• • • • • {characterised by the presence of antistatic elements}
N	H10P 72/30	• for conveying, e.g. between different workstations
N	H10P 72/32	• • {between different workstations}
N	H10P 72/3202	• • • {Mechanical details, e.g. rollers or belts}
N	H10P 72/3204	• • • {using magnetic elements}
N	H10P 72/3206	• • • {the substrate being handled substantially vertically}
N	H10P 72/3208	• • • {Changing the direction of the conveying path}
N	H10P 72/3211	• • • {Changing orientation of the substrate, e.g. from a horizontal position to a vertical position}

- N H10P 72/3212 . . . {the substrates to be conveyed not being semiconductor wafers or large planar substrates, e.g. chips or lead frames}
- N H10P 72/3214 . . . {by means of a cart or a vehicle}
- N H10P 72/3216 . . . {using a general scheme of a conveying path within a factory}
- N H10P 72/3218 . . . {Conveying cassettes, containers or carriers}
- N H10P 72/3221 . . . {Overhead conveying}
- N H10P 72/3222 . . . {Loading to or unloading from a conveyor}
- N H10P 72/33 . . {into and out of processing chamber}
- N H10P 72/3302 . . . {Mechanical parts of transfer devices}
- N H10P 72/3304 . . . {characterised by movements or sequence of movements of transfer devices}
- N H10P 72/3306 . . . {Horizontal transfer of a single workpiece}
- N H10P 72/3308 . . . {Vertical transfer of a single workpiece}
- N H10P 72/3311 . . . {Horizontal transfer of a batch of workpieces}
- N H10P 72/3312 . . . {Vertical transfer of a batch of workpieces}
- N H10P 72/3314 . . . {Continuous loading and unloading into and out of a processing chamber, e.g. transporting belts within processing chambers}
- N H10P 72/34 . . {the wafers being stored in a carrier, involving loading and unloading}
- N H10P 72/3402 . . . {Mechanical parts of transfer devices}
- N H10P 72/3404 . . . {Storage means}
- N H10P 72/3406 . . . {involving removal of lid, door or cover}
- N H10P 72/3408 . . . {Docking arrangements}
- N H10P 72/3411 . . . {involving loading and unloading of wafers}
- N H10P 72/3412 {Batch transfer of wafers}
- N H10P 72/36 . . {using air tracks}
- N H10P 72/3602 . . . {with angular orientation of the workpieces}
- N H10P 72/3604 . . . {the workpieces being stored in a carrier, involving loading and unloading}
- N H10P 72/37 . . {with orientating and positioning by means of a vibratory bowl or track}
- N H10P 72/38 . . {with angular orientation of workpieces}
- N H10P 72/50 . . for positioning, orientation or alignment
- N H10P 72/53 . . {using optical controlling means}
- N H10P 72/57 . . {Mask-wafer alignment}
- Q H10P 72/70 . . for supporting or gripping

WARNING

Group [H10P 72/70](#) is impacted by reclassification into groups [H10P 72/72](#), [H10P 72/74](#) and [H10P 72/7448 - H10P 72/745](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10P 72/72 . . using electrostatic chucks

WARNING

Group [H10P 72/72](#) is incomplete pending reclassification of documents from group [H10P 72/70](#).

Groups [H10P 72/70](#) and [H10P 72/72](#) should be considered in order to perform a complete search.

- N H10P 72/722 . . . {Details of electrostatic chucks}

- N H10P 72/74
- • {using temporarily an auxiliary support}
- WARNING
Groups [H10P 72/74](#), [H10P 72/7448](#) and [H10P 72/745](#) are incomplete pending reclassification of documents from group [H10P 72/70](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- Q H10P 72/7402
- • • {Wafer tapes, e.g. grinding or dicing support tapes}
- WARNING
Group [H10P 72/7402](#) is impacted by reclassification into groups [H10P 72/7404](#) and [H10P 72/7406](#).
Groups [H10P 72/7402](#), [H10P 72/7404](#) and [H10P 72/7406](#) should be considered in order to perform a complete search.
- N H10P 72/7404
- • • • {the wafer tape being a laminate of three or more layers, e.g. including additional layers beyond a base layer and an uppermost adhesive layer}
- WARNING
Groups [H10P 72/7404](#) and [H10P 72/7406](#) are incomplete pending reclassification of documents from group [H10P 72/7402](#).
Groups [H10P 72/7402](#), [H10P 72/7404](#) and [H10P 72/7406](#) should be considered in order to perform a complete search.
- N H10P 72/7406
- • • • • {the wafer tape being a laminate of four or more layers, e.g. including two or more additional layers beyond a base layer and an uppermost adhesive layer}
- N H10P 72/7408
- • • {the auxiliary support including alignment aids}
- N H10P 72/741
- • • {the auxiliary support including a cavity for storing a finished or partly finished device during manufacturing or mounting, e.g. for an IC package or for a chip}
- N H10P 72/7412
- • • {the auxiliary support including means facilitating the separation of a device or wafer from the auxiliary support}
- N H10P 72/7414
- • • • {the auxiliary support including means facilitating the selective separation of some of a plurality of devices from the auxiliary support}
- N H10P 72/7416
- • • {used during dicing or grinding}
- N H10P 72/7418
- • • • {of passive members, e.g. a chip mounting substrate}
- N H10P 72/742
- • • • {involving stretching of the auxiliary support post dicing}
- N H10P 72/7422
- • • {used to protect an active side of a device or wafer}
- N H10P 72/7424
- • • {used as a support during the manufacture of self-supporting substrates}
- N H10P 72/7426
- • • {used as a support during build up manufacturing of active devices}
- N H10P 72/7428
- • • {used to support diced chips prior to mounting}
- N H10P 72/743
- • • {used as a support during manufacture of interconnect decals or build up layers}
- N H10P 72/7432
- • • {used in a transfer process involving transfer directly from an origin substrate to a target substrate without use of an intermediate handle substrate}
- N H10P 72/7434
- • • {used in a transfer process involving at least two transfer steps, i.e. including an intermediate handle substrate}
- N H10P 72/7436
- • • {used to support a device or a wafer when forming electrical connections thereto}
- N H10P 72/7438
- • • {with parts of the auxiliary support remaining in the finished device}
- N H10P 72/744
- • • {Details of chemical or physical process used for separating the auxiliary support from a device or a wafer}

N	H10P 72/7442	. . . . {Separation by peeling}
N	H10P 72/7444	. . . . . {using a peeling wedge, a knife or a bar}
N	H10P 72/7446	. . . . . {using a peeling wheel}
N	H10P 72/7448	. . . {the bond interface between the auxiliary support and the wafer comprising two or more, e.g. multilayer adhesive or adhesive and release layer}
N	H10P 72/745	. . . . {the bond interface between the auxiliary support and the wafer comprises three or more layers}
N	H10P 72/76	. . using mechanical means, e.g. clamps or pinches
N	H10P 72/7602	. . . {the wafers being placed on a robot blade or gripped by a gripper for conveyance}
N	H10P 72/7604	. . . {the wafers being placed on a susceptor, stage or support}
N	H10P 72/7606	. . . . {characterised by edge clamping, e.g. clamping ring}
N	H10P 72/7608	. . . . {characterised by a plurality of separate clamping members, e.g. clamping fingers}
N	H10P 72/7611	. . . . {characterised by edge profile or support profile}
N	H10P 72/7612	. . . . {characterised by lifting arrangements, e.g. lift pins}
N	H10P 72/7614	. . . . {characterised by a plurality of individual support members, e.g. support posts or protrusions}
N	H10P 72/7616	. . . . {characterised by a coating, a hardness or a material}
N	H10P 72/7618	. . . . {characterised by a movable susceptor, stage or support, others than those only rotating on their own vertical axis, e.g. susceptors on a rotating carrousel}
N	H10P 72/7621	. . . . {characterised by supporting two or more semiconductor substrates}
N	H10P 72/7622	. . . . {characterised by supporting substrates others than wafers, e.g. chips}
N	H10P 72/7624	. . . . {characterised by the mechanical construction of the susceptor, stage or support}
N	H10P 72/7626	. . . . {characterised by the construction of the shaft}
N	H10P 72/78	. . using vacuum or suction, e.g. Bernoulli chucks
N	H10P 74/00	Testing or measuring during manufacture or treatment of wafers, substrates or devices
N	H10P 74/20	. characterised by the properties tested or measured, e.g. structural or electrical properties
N	H10P 74/203	. . {Structural properties, e.g. testing or measuring thicknesses, line widths, warpage, bond strengths or physical defects}
N	H10P 74/207	. . {Electrical properties, e.g. testing or measuring of resistance, deep levels or capacitance-voltage characteristics}
N	H10P 74/23	. {characterised by multiple measurements, corrections, marking or sorting processes}
N	H10P 74/232	. . {comprising connection or disconnection of parts of a device in response to a measurement}
N	H10P 74/235	. . {comprising optical enhancement of defects or not-directly-visible states}
N	H10P 74/238	. . {comprising acting in response to an ongoing measurement without interruption of processing, e.g. endpoint detection or in-situ thickness measurement}
N	H10P 74/27	. {Structural arrangements therefor}
N	H10P 74/273	. . {Interconnections for measuring or testing, e.g. probe pads}
N	H10P 74/277	. . {Circuits for electrically characterising or monitoring manufacturing processes, e.g. circuits in tested chips or circuits in testing wafers}

N	H10P 76/00	Manufacture or treatment of masks on semiconductor bodies, e.g. by lithography or photolithography
N	H10P 76/20	• of masks comprising organic materials
N	H10P 76/202	• • {for lift-off processes}
N	H10P 76/204	• • {of organic photoresist masks}
N	H10P 76/2041	• • • {Photolithographic processes}
N	H10P 76/2042	• • • • {using lasers}
N	H10P 76/2043	• • • • {using an anti-reflective coating}
N	H10P 76/2045	• • • {Electron beam lithography processes}
N	H10P 76/2047	• • • {X-ray beam lithography processes}
N	H10P 76/2049	• • • {Ion beam lithography processes}
N	H10P 76/40	• of masks comprising inorganic materials
N	H10P 76/403	• • {for lift-off processes}
N	H10P 76/405	• • {characterised by their composition, e.g. multilayer masks}
N	H10P 76/408	• • {characterised by their sizes, orientations, dispositions, behaviours or shapes}
N	H10P 76/4083	• • • {characterised by their behaviours during the lithography processes, e.g. soluble masks or redeposited masks}
N	H10P 76/4085	• • • {characterised by the processes involved to create the masks}
N	H10P 76/4088	• • • {Processes for improving the resolution of the masks}

Q H10P 90/00 **Preparation of wafers not covered by a single main group of this subclass, e.g. wafer reinforcement**

NOTES

1. This group covers multistep processes for the preparation of wafers before the subsequent manufacture of semiconductor devices or solid-state devices therein or thereon.
2. This group does not cover the single-crystal growth of semiconductor ingots, which is covered by subclass [C30B](#).

WARNING

Group [H10P 90/00](#) is impacted by reclassification into groups [H10P 90/19](#), [H10P 90/1902](#), [H10P 90/1904](#), [H10P 90/1906](#), [H10P 90/21 - H10P 90/212](#), [H10P 90/22](#), [H10P 90/24](#), [H10P 56/00](#) and [H10P 10/12](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N	H10P 90/12	• {Preparing bulk and homogeneous wafers}
N	H10P 90/123	• • {by grinding or lapping}
N	H10P 90/124	• • {by processing the backside of the wafers}
N	H10P 90/126	• • {by chemical etching}
N	H10P 90/128	• • {by edge treatment, e.g. chamfering}
N	H10P 90/129	• • {by polishing}
N	H10P 90/14	• • {by setting crystal orientation}
N	H10P 90/15	• • {by making porous regions on the surface}
N	H10P 90/16	• • {by reclaiming or re-processing}
N	H10P 90/18	• • {by shaping}

- N H10P 90/19 • {Preparing inhomogeneous wafers}
- WARNING
Groups [H10P 90/19](#), [H10P 90/1902](#), [H10P 90/1904](#) and [H10P 90/1906](#) are incomplete pending reclassification of documents from group [H10P 90/00](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 90/1902 • • {Preparing horizontally inhomogeneous wafers}
- N H10P 90/1904 • • {Preparing vertically inhomogeneous wafers}
- N H10P 90/1906 • • • {Preparing SOI wafers}
- N H10P 90/1908 • • • • {using silicon implanted buried insulating layers, e.g. oxide layers [SIMOX]}
- N H10P 90/191 • • • • {using full isolation by porous oxide silicon [FIPOS]}
- N H10P 90/1912 • • • • {using selective deposition, e.g. epitaxial lateral overgrowth [ELO] or selective deposition of single crystal silicon}
- Q H10P 90/1914 • • • • {using bonding}
- WARNING
Group [H10P 90/1914](#) is incomplete pending reclassification of documents from group [H10P 10/12](#). Group [H10P 90/1914](#) is also impacted by reclassification into groups [H10P 10/126](#), [H10P 10/128](#) - [H10P 10/1285](#), [H10P 10/14](#), [H10P 54/52](#) and [H10P 90/1918](#) - [H10P 90/192](#). All groups listed in this Warning should be considered in order to perform a complete search.
- Q H10P 90/1916 • • • • • {with separation or delamination along an ion implanted layer, e.g. Smart-cut}
- WARNING
Group [H10P 90/1916](#) is incomplete pending reclassification of documents from group [H10P 10/12](#). Group [H10P 90/1916](#) is also impacted by reclassification into groups [H10P 10/126](#), [H10P 10/128](#) - [H10P 10/1285](#), [H10P 10/14](#), [H10P 54/52](#) and [H10P 90/1918](#) - [H10P 90/192](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 90/1918 • • • • • {including charge trapping layers, e.g. polycrystalline materials}
- WARNING
Groups [H10P 90/1918](#) and [H10P 90/192](#) are incomplete pending reclassification of documents from groups [H10P 90/1914](#) and [H10P 90/1916](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 90/192 • • • • • • {irregularly shaped charge trapping layers}
- N H10P 90/1922 • • • • {using silicon etch back techniques, e.g. BESOI or ELTRAN}
- N H10P 90/1924 • • • • {with separation/delamination along a porous layer}
- N H10P 90/21 • {by transferring two-dimensional materials}
- WARNING
Groups [H10P 90/21](#) and [H10P 90/212](#) are incomplete pending reclassification of documents from group [H10P 90/00](#). Groups [H10P 90/00](#), [H10P 90/21](#) and [H10P 90/212](#) should be considered in order to perform a complete search.

- N H10P 90/212 • {by transferring of graphene}
- N H10P 90/22 • {by transferring layers from a donor substrate to a final substrate utilising a temporary handle substrate as an intermediary}
- WARNING
Group [H10P 90/22](#) is incomplete pending reclassification of documents from group [H10P 90/00](#).
Groups [H10P 90/00](#) and [H10P 90/22](#) should be considered in order to perform a complete search.
- N H10P 90/24 • {by concurrent transfer of multiple parts}
- WARNING
Group [H10P 90/24](#) is incomplete pending reclassification of documents from group [H10P 90/00](#).
Groups [H10P 90/00](#) and [H10P 90/24](#) should be considered in order to perform a complete search.
- Q H10P 95/00 *Generic processes or apparatus for manufacture or treatments not covered by the other groups of this subclass***
- WARNING
Group [H10P 95/00](#) is incomplete pending reclassification of documents from groups [H10P 10/00](#) and [H10P 50/00](#). Group [H10P 95/00](#) is also impacted by reclassification into groups [H10P 95/02](#), [H10P 95/04](#), [H10P 95/06](#) - [H10P 95/066](#), [H10P 95/08](#), [H10P 95/11](#) - [H10P 95/112](#), [H10P 95/40](#) - [H10P 95/408](#), [H10P 95/50](#), [H10P 95/60](#), [H10P 95/70](#), [H10P 95/80](#) and [H10P 95/90](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 95/02 • {Planarisation of semiconductor materials}
- WARNING
Group [H10P 95/02](#) is incomplete pending reclassification of documents from groups [H10P 50/00](#), [H10P 95/00](#), [H10P 95/60](#) and [H10P 95/70](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10P 95/04 • {Planarisation of conductive or resistive materials}
- WARNING
Group [H10P 95/04](#) is incomplete pending reclassification of documents from group [H10P 95/00](#).
Groups [H10P 95/00](#) and [H10P 95/04](#) should be considered in order to perform a complete search.
- N H10P 95/06 • {Planarisation of inorganic insulating materials}
- WARNING
Groups [H10P 95/06](#), [H10P 95/064](#) and [H10P 95/066](#) are incomplete pending reclassification of documents from group [H10P 95/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- Q H10P 95/062 • {involving a dielectric removal step}
- WARNING
Group [H10P 95/062](#) is incomplete pending reclassification of documents from group [H10P 95/00](#). Group [H10P 95/062](#) is also impacted by reclassification into groups [H10P 52/407](#) and [H10P 52/207](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10P 95/064
 - • {the removal being chemical etching}
- N H10P 95/066
 - • • {the removal being a selective chemical etching step, e.g. selective dry etching through a mask}
- Q H10P 95/08
 - {Planarisation of organic insulating materials}

WARNING

Group [H10P 95/08](#) is incomplete pending reclassification of documents from group [H10P 95/00](#). Group [H10P 95/08](#) is also impacted by reclassification into groups [H10P 52/209](#) and [H10P 52/409](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10P 95/11
 - {Separation of active layers from substrates}

WARNING

Groups [H10P 95/11](#) and [H10P 95/112](#) are incomplete pending reclassification of documents from group [H10P 95/00](#).

Groups [H10P 95/00](#), [H10P 95/11](#) and [H10P 95/112](#) should be considered in order to perform a complete search.

- N H10P 95/112
 - • {leaving a reusable substrate, e.g. epitaxial lift off}
- N H10P 95/40
 - Treatments of semiconductor bodies to modify their internal properties, e.g. to produce internal imperfections

WARNING

Group [H10P 95/40](#) is incomplete pending reclassification of documents from groups [H10P 36/00](#) and [H10P 95/00](#).

Groups [H10P 36/00](#), [H10P 95/00](#) and [H10P 95/40](#) should be considered in order to perform a complete search.

- N H10P 95/402
 - • {of silicon bodies}

WARNING

Group [H10P 95/402](#) is incomplete pending reclassification of documents from groups [H10P 36/03](#) and [H10P 95/00](#).

Groups [H10P 36/03](#), [H10P 95/00](#) and [H10P 95/402](#) should be considered in order to perform a complete search.

- N H10P 95/405
 - • {using cavities formed by hydrogen or noble gas ion implantation}

WARNING

Group [H10P 95/405](#) is incomplete pending reclassification of documents from group [H10P 95/00](#).

Groups [H10P 95/00](#) and [H10P 95/405](#) should be considered in order to perform a complete search.

- N H10P 95/408
 - • {of Group III-V semiconductors, e.g. to render them semi-insulating}

WARNING

Group [H10P 95/408](#) is incomplete pending reclassification of documents from group [H10P 95/00](#).

Groups [H10P 95/00](#) and [H10P 95/408](#) should be considered in order to perform a complete search.

- N H10P 95/50
 - {Alloying conductive materials with semiconductor bodies}

WARNING

Group [H10P 95/50](#) is incomplete pending reclassification of documents from group [H10P 95/00](#).

Groups [H10P 95/00](#) and [H10P 95/50](#) should be considered in order to perform a complete search.

Q H10P 95/60

- Mechanical treatments, e.g. by ultrasounds

WARNING

Group [H10P 95/60](#) is incomplete pending reclassification of documents from groups [H10P 52/00](#) and [H10P 95/00](#). Group [H10P 95/60](#) is also impacted by reclassification into group [H10P 95/02](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Q H10P 95/70

- Chemical treatments

WARNING

Group [H10P 95/70](#) is incomplete pending reclassification of documents from groups [H10P 14/60](#), [H10P 50/00](#) and [H10P 95/00](#). Group [H10P 95/70](#) is also impacted by reclassification into groups [H10P 95/80](#) and [H10P 95/02](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10P 95/80

- Electrical treatments, e.g. for electroforming

WARNING

Group [H10P 95/80](#) is incomplete pending reclassification of documents from groups [H10P 14/60](#), [H10P 95/00](#) and [H10P 95/70](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Q H10P 95/90

- Thermal treatments, e.g. annealing or sintering

WARNING

Group [H10P 95/90](#) is incomplete pending reclassification of documents from group [H10P 95/00](#). Group [H10P 95/90](#) is also impacted by reclassification into group [H10P 30/28](#).

Groups [H10P 95/00](#), [H10P 95/90](#) and [H10P 30/28](#) should be considered in order to perform a complete search.

N H10P 95/902

- • {for the formation of PN junctions without addition of impurities}

Q H10P 95/904

- • {of Group III-V semiconductors}

WARNING

Group [H10P 95/904](#) is impacted by reclassification into group [H10P 30/28](#).

Groups [H10P 95/904](#) and [H10P 30/28](#) should be considered in order to perform a complete search.

N H10P 95/906

- • {for altering the shape of semiconductors, e.g. smoothing the surface}

Q H10P 95/92

- {Formation of n- or p-type semiconductors, e.g. doping of graphene}

WARNING

Group [H10P 95/92](#) is impacted by reclassification into group [H10P 32/173](#).

Groups [H10P 95/92](#) and [H10P 32/173](#) should be considered in order to perform a complete search.

N H10P 95/94

- {Hydrogenation or deuteration, e.g. using atomic hydrogen from a plasma}

Project: RP12819 (H10W)**N H10W****GENERIC PACKAGES, INTERCONNECTIONS, CONNECTORS OR OTHER CONSTRUCTIONAL DETAILS OF DEVICES COVERED BY CLASS [H10](#)****NOTES**

1. This subclass covers:

- a. packages of devices and parts of such packages;
- b. interconnections of devices in chips, wafers, substrates or packages;
- c. connectors of devices in packages;
- d. other constructional details of devices in chips, wafers, substrates or packages, e.g. isolation regions between components of integrated devices;
- e. detachable holders for supporting packaged chips in operation;
- f. the manufacture or treatment of aspects (a)-(e);

when aspects (a)-(e) are

- (1) applicable to devices covered by subclass [H10B](#);
- (2) applicable to devices covered by subclass [H10D](#), except for semiconductor bodies or electrodes thereof, which are covered by subgroups [H10D 62/00](#) or [H10D 64/00](#); or
- (3) generically applicable to devices covered by subclasses [H10B](#), [H10D](#), [H10F](#), [H10H](#), [H10K](#) or [H10N](#).

2. {In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).}**N H10W 10/00 -
H10W 29/00****Constructional details of integrated devices in chips, wafers or substrates****N H10W 10/00****Isolation regions in semiconductor bodies between components of integrated devices**

- N H10W 10/01 • {Manufacture or treatment}
- N H10W 10/011 • • {of isolation regions comprising dielectric materials}
- N H10W 10/012 • • • {using local oxidation of silicon [LOCOS]}
- N H10W 10/0121 • • • • {in regions recessed from the surface, e.g. in trenches or grooves}
- N H10W 10/0123 • • • • • {using auxiliary pillars in the regions}
- N H10W 10/0124 • • • • • {the regions having non-rectangular shapes, e.g. rounded
([H10W 10/0123](#) takes precedence)}
- N H10W 10/0125 • • • • • {comprising introducing electrical impurities in local oxidation regions, e.g.
to alter LOCOS oxide growth characteristics}
- N H10W 10/0126 • • • • • {introducing electrical active impurities in local oxidation regions to
create channel stoppers}
- N H10W 10/0127 • • • • • • {using both n-type and p-type impurities, e.g. for isolation of
complementary doped regions}
- N H10W 10/0128 • • • • • {comprising multiple local oxidation process steps}
- N H10W 10/014 • • • {using trench refilling with dielectric materials, e.g. shallow trench isolations}
- N H10W 10/0142 • • • • {the dielectric materials being chemical transformed from non-dielectric
materials}
- N H10W 10/0143 • • • • • {comprising concurrently refilling multiple trenches having different
shapes or dimensions}
- N H10W 10/0145 • • • • • {of trenches having shapes other than rectangular or V-shape
([H10W 10/0143](#) takes precedence)}
- N H10W 10/0147 • • • • • • {the shapes being altered by a local oxidation of silicon process, e.g.
trench corner rounding by LOCOS}

N	H10W 10/0148	• • • {comprising introducing impurities in side walls or bottom walls of trenches, e.g. for forming channel stoppers}
N	H10W 10/018	• • • {using selective deposition of crystalline silicon, e.g. using epitaxial growth of silicon}
N	H10W 10/019	• • • {using epitaxial passivated integrated circuit [EPIC] processes}
N	H10W 10/021	• • {of air gaps}
N	H10W 10/031	• • {of isolation regions comprising PN junctions}
N	H10W 10/041	• • {of isolation regions comprising polycrystalline semiconductor materials}
N	H10W 10/051	• • {of isolation region based on field-effect}
N	H10W 10/061	• • {using SOI processes together with lateral isolation, e.g. combinations of SOI and shallow trench isolations}
N	H10W 10/10	• Isolation regions comprising dielectric materials
N	H10W 10/13	• • formed using local oxidation of silicon [LOCOS], e.g. sealed interface localised oxidation [SILO] or side-wall mask isolation [SWAMI]
N	H10W 10/17	• • formed using trench refilling with dielectric materials, e.g. shallow trench isolations
N	H10W 10/181	• • {Semiconductor-on-insulator [SOI] isolation regions, e.g. buried oxide regions of SOI wafers}
N	H10W 10/20	• Air gaps
N	H10W 10/30	• Isolation regions comprising PN junctions
N	H10W 10/40	• Isolation regions comprising polycrystalline semiconductor materials
N	H10W 10/50	• Isolation regions based on field-effect
N	H10W 15/00	Highly-doped buried regions of integrated devices
N	H10W 15/01	• {Manufacture or treatment}
N	H10W 20/00	Interconnections in chips, wafers or substrates

NOTES

1. This group covers:

- interconnections in chips;
- interconnections in or on wafers;
- interconnections in or on substrates.

2. This group does not cover interconnections in packages, such as in or on package substrates, which are covered by subgroups [H10W 70/00](#) or [H10W 72/00](#).

N	H10W 20/01	• {Manufacture or treatment}
N	H10W 20/021	• • {of interconnections within wafers or substrates}
Q	H10W 20/023	• • • {the interconnections being through-semiconductor vias}

WARNING

Group [H10W 20/023](#) is impacted by reclassification into groups [H10W 20/0234](#), [H10W 20/0238](#), [H10W 20/0242](#), [H10W 20/0245](#), [H10W 20/0249](#), [H10W 20/0253](#), [H10W 20/0257](#), [H10W 20/0261](#) and [H10W 20/0265](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N	H10W 20/0234	• • • {comprising etching via holes that stop on pads or on electrodes}
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WARNING

Groups [H10W 20/0234](#) - [H10W 20/0265](#) are incomplete pending reclassification of documents from group [H10W 20/023](#).

Groups [H10W 20/023](#) and [H10W 20/0234](#) - [H10W 20/0265](#) should be considered in order to perform a complete search.

- N H10W 20/0238 {comprising etching via holes through pads or through electrodes}
- N H10W 20/0242 {comprising etching via holes from the back sides of the chips, wafers or substrates}
- N H10W 20/0245 {comprising use of blind vias during the manufacture}
- N H10W 20/0249 {wherein the through-semiconductor via protrudes from backsides of the chips, wafers or substrates during the manufacture}
- N H10W 20/0253 {comprising forming the through-semiconductor vias after stacking of the chips, wafers or substrates}
- N H10W 20/0257 {comprising using a sacrificial placeholder, e.g. using a sacrificial plug}
- N H10W 20/0261 {characterised by the filling method or the material of the conductive fill}
- N H10W 20/0265 {characterised by the sidewall insulation}
- N H10W 20/031 . . {of conductive parts of the interconnections}
- N H10W 20/032 . . . {of conductive barrier, adhesion or liner layers}
- N H10W 20/033 {in openings in dielectrics}
- N H10W 20/034 {bottomless barrier, adhesion or liner layers}
- N H10W 20/035 {combinations of barrier, adhesion or liner layers, e.g. multi-layered barrier layers}
- N H10W 20/036 {the barrier, adhesion or liner layers being within a main fill metal}
- Q H10W 20/037 {the barrier, adhesion or liner layers being on top of a main fill metal}

WARNING

Group [H10W 20/037](#) is impacted by reclassification into group [H10W 20/0372](#).

Groups [H10W 20/037](#) and [H10W 20/0372](#) should be considered in order to perform a complete search.

- N H10W 20/0372 {comprising multiple barrier, adhesion or liner layers}

WARNING

Group [H10W 20/0372](#) is incomplete pending reclassification of documents from group [H10W 20/037](#).

Groups [H10W 20/037](#) and [H10W 20/0372](#) should be considered in order to perform a complete search.

- N H10W 20/0375 {comprising multiple stacked thin barrier, adhesion or liner layers not being formed in openings in dielectrics}
- N H10W 20/038 {covering conductive structures ([H10W 20/037](#) takes precedence)}
- N H10W 20/039 {also covering sidewalls of the conductive structures}
- N H10W 20/041 {the barrier, adhesion or liner layers being discontinuous}
- N H10W 20/042 {the barrier, adhesion or liner layers being seed or nucleation layers}
- N H10W 20/0425 {comprising multiple stacked seed or nucleation layers}
- N H10W 20/043 {for electroplating}
- N H10W 20/044 {for electroless plating}
- N H10W 20/045 {for deposition from the gaseous phase, e.g. for chemical vapour deposition [CVD]}
- N H10W 20/046 {the barrier, adhesion or liner layers being associated with interconnections of capacitors}
- N H10W 20/047 {by introducing additional elements therein}
- N H10W 20/048 {by using plasmas or gaseous environments, e.g. by nitriding}

- N H10W 20/049 {by diffusing alloying elements}
- N H10W 20/051 {by ion implantation}
- N H10W 20/052 {by treatments not introducing additional elements therein}
- N H10W 20/0523 {by irradiating with ultraviolet or particle radiation}
- N H10W 20/0526 {by thermal treatment thereof}
- N H10W 20/054 {by selectively removing parts thereof ([H10W 20/034](#) takes precedence)}
- N H10W 20/055 {by formation methods other than physical vapour deposition [PVD], chemical vapour deposition [CVD] or liquid deposition}
- N H10W 20/0552 {by diffusing metallic dopants to react with dielectrics}
- N H10W 20/0554 . . . {of nanotubes or nanowires}
- Q H10W 20/056 . . . {by filling conductive material into holes, grooves or trenches}
- WARNING
Group [H10W 20/056](#) is impacted by reclassification into group [H10W 20/0595](#).
Groups [H10W 20/056](#) and [H10W 20/0595](#) should be considered in order to perform a complete search.
- N H10W 20/057 {by selectively depositing, e.g. by using selective CVD or plating}
- N H10W 20/058 {by depositing on sacrificial masks, e.g. using lift-off}
- N H10W 20/059 {by reflowing or applying pressure}
- N H10W 20/0595 {by using multiple deposition steps separated by etching steps}
- WARNING
Group [H10W 20/0595](#) is incomplete pending reclassification of documents from group [H10W 20/056](#).
Groups [H10W 20/056](#) and [H10W 20/0595](#) should be considered in order to perform a complete search.
- N H10W 20/062 . . . {by smoothing of conductive parts, e.g. by planarisation}
- Q H10W 20/063 . . . {by forming conductive members before forming protective insulating material}
- WARNING
Group [H10W 20/063](#) is impacted by reclassification into groups [H10W 20/0633](#) and [H10W 20/0636](#).
Groups [H10W 20/063](#), [H10W 20/0633](#) and [H10W 20/0636](#) should be considered in order to perform a complete search.
- N H10W 20/0633 {using subtractive patterning of the conductive members}
- WARNING
Groups [H10W 20/0633](#) - [H10W 20/0636](#) are incomplete pending reclassification of documents from group [H10W 20/063](#).
Groups [H10W 20/063](#) and [H10W 20/0633](#) - [H10W 20/0636](#) should be considered in order to perform a complete search.
- N H10W 20/0636 {the conductive members being on sidewalls}
- N H10W 20/064 . . . {by modifying the conductivity of conductive parts, e.g. by alloying}
- N H10W 20/065 {by making at least a portion of the conductive part non-conductive, e.g. by oxidation}
- N H10W 20/066 {by forming silicides of refractory metals}
- N H10W 20/067 . . . {by modifying the pattern of conductive parts}
- N H10W 20/068 {by using a laser, e.g. laser cutting or laser direct writing}

- Q H10W 20/069 . . . {by forming self-aligned vias or self-aligned contact plugs}
- WARNING
Group [H10W 20/069](#) is impacted by reclassification into groups [H10W 20/0693](#) and [H10W 20/0696](#).
Groups [H10W 20/069](#), [H10W 20/0693](#) and [H10W 20/0696](#) should be considered in order to perform a complete search.
- N H10W 20/0693 {by forming self-aligned vias}
- WARNING
Groups [H10W 20/0693](#) - [H10W 20/0696](#) are incomplete pending reclassification of documents from group [H10W 20/069](#).
Groups [H10W 20/069](#) and [H10W 20/0693](#) - [H10W 20/0696](#) should be considered in order to perform a complete search.
- N H10W 20/0696 {by using sacrificial placeholders, e.g. using sacrificial plugs}
- N H10W 20/0698 . . . {Local interconnections}
- N H10W 20/071 . . {of dielectric parts thereof}
- N H10W 20/072 . . . {of dielectric parts comprising air gaps}
- N H10W 20/074 . . . {of dielectric parts comprising thin functional dielectric layers, e.g. dielectric etch-stop, barrier, capping or liner layers}
- N H10W 20/075 {of multilayered thin functional dielectric layers}
- N H10W 20/076 {in via holes or trenches}
- N H10W 20/0765 {the thin functional dielectric layers being temporary, e.g. sacrificial layers}
- N H10W 20/077 {on sidewalls or on top surfaces of conductors ([H10W 20/076](#) takes precedence)}
- N H10W 20/081 . . . {by forming openings in the dielectric parts}
- N H10W 20/082 {the openings being tapered via holes}
- N H10W 20/083 {the openings being via holes penetrating underlying conductors}
- N H10W 20/084 {for dual-damascene structures}
- N H10W 20/085 {involving intermediate temporary filling with material}
- N H10W 20/086 {involving buried masks}
- N H10W 20/087 {involving multiple stacked pre-patterned masks}
- N H10W 20/088 {involving partial etching of via holes}
- N H10W 20/0882 {wherein the dual damascene structure is in a photoresist layer}
- N H10W 20/0884 {involving forming vias by burying sacrificial pillars in the dielectric parts and removing the pillars}
- N H10W 20/0886 {involving forming a via in a via-level dielectric prior to deposition of a trench-level dielectric}
- N H10W 20/0888 {wherein via-level dielectrics are compositionally different than trench-level dielectrics}
- N H10W 20/089 {using processes for implementing desired shapes or dispositions of the openings, e.g. double patterning}
- N H10W 20/091 {by printing or stamping}
- N H10W 20/092 . . . {by smoothing the dielectric parts}
- N H10W 20/093 . . . {by modifying materials of the dielectric parts}
- N H10W 20/094 {by transforming insulators into conductors}
- N H10W 20/095 {by irradiating with electromagnetic or particle radiation (plasma treatment [H10W 20/096](#))}

- N H10W 20/096 . . . {by contacting with gases, liquids or plasmas}
- N H10W 20/097 . . . {by thermally treating}
- N H10W 20/098 . . . {by filling between adjacent conductive parts}
- Q H10W 20/20 . Interconnections within wafers or substrates, e.g. through-silicon vias [TSV]

WARNING

Group [H10W 20/20](#) is incomplete pending reclassification of documents from group [H10W 72/823](#). Group [H10W 20/20](#) is also impacted by reclassification into groups [H10W 20/211](#), [H10W 20/212](#), [H10W 20/2125](#), [H10W 20/2128](#), [H10W 20/213](#), [H10W 20/2134](#), [H10W 20/215](#), [H10W 20/216](#), [H10W 20/217](#), [H10W 20/218](#), [H10W 20/222](#) and [H10W 20/233](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 20/211 . . {Through-semiconductor vias, e.g. TSVs}

WARNING

Groups [H10W 20/211](#) and [H10W 20/215](#) are incomplete pending reclassification of documents from groups [H10W 20/20](#) and [H10W 72/823](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 20/212 . . . {Top-view shapes or dispositions, e.g. top-view layouts of the vias}

WARNING

Groups [H10W 20/212](#), [H10W 20/2125](#) and [H10W 20/2128](#) are incomplete pending reclassification of documents from group [H10W 20/20](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 20/2125 {Top-view shapes}
- N H10W 20/2128 {Coaxial through-semiconductor vias}
- N H10W 20/213 . . . {Cross-sectional shapes or dispositions}

WARNING

Groups [H10W 20/213](#) and [H10W 20/2134](#) are incomplete pending reclassification of documents from group [H10W 20/20](#). Groups [H10W 20/20](#), [H10W 20/213](#) and [H10W 20/2134](#) should be considered in order to perform a complete search.

- N H10W 20/2134 {TSVs extending from the semiconductor wafer into back-end-of-line layers}
- N H10W 20/215 . . . {characterised by thin functional layers between the through-semiconductor vias and sidewalls of the via holes, e.g. barrier layers or adhesion layers}
- N H10W 20/216 . . . {characterised by dielectric material at least partially filling the via holes, e.g. covering the through-semiconductor vias in the via holes}

WARNING

Groups [H10W 20/216](#) - [H10W 20/218](#) are incomplete pending reclassification of documents from group [H10W 20/20](#). Groups [H10W 20/20](#) and [H10W 20/216](#) - [H10W 20/218](#) should be considered in order to perform a complete search.

- N H10W 20/217 . . . {comprising ring-shaped isolation structures outside of the via holes}
- N H10W 20/218 . . . {in silicon-on-insulator [SOI] wafers}

- N H10W 20/222
- • {Vias through non-semiconductor substrates, e.g. through-glass vias}
- WARNING
Group [H10W 20/222](#) is incomplete pending reclassification of documents from groups [H10W 20/20](#) and [H10W 72/823](#).
Groups [H10W 20/20](#), [H10W 72/823](#) and [H10W 20/222](#) should be considered in order to perform a complete search.
- N H10W 20/233
- • {parallel to the active surface, e.g. horizontal traces in trenches in the surface of the wafer}
- WARNING
Group [H10W 20/233](#) is incomplete pending reclassification of documents from group [H10W 20/20](#).
Groups [H10W 20/20](#) and [H10W 20/233](#) should be considered in order to perform a complete search.
- Q H10W 20/40
- Interconnections external to wafers or substrates, e.g. back-end-of-line [BEOL] metallisations or vias connecting to gate electrodes
- WARNING
Group [H10W 20/40](#) is impacted by reclassification into groups [H10W 20/41](#), [H10W 20/42](#), [H10W 20/421](#), [H10W 20/422](#), [H10W 20/423](#), [H10W 20/425](#), [H10W 20/427](#), [H10W 20/43](#), [H10W 20/432](#), [H10W 20/435](#), [H10W 20/438](#), [H10W 20/44](#), [H10W 20/4403](#), [H10W 20/4405](#), [H10W 20/4407](#), [H10W 20/4421](#), [H10W 20/4424](#), [H10W 20/4432](#), [H10W 20/4435](#), [H10W 20/4441](#), [H10W 20/4446](#), [H10W 20/4451](#), [H10W 20/4462](#), [H10W 20/4473](#), [H10W 20/4484](#), [H10W 20/45](#), [H10W 20/455](#), [H10W 20/46](#), [H10W 20/47](#), [H10W 20/48](#), [H10W 20/481](#), [H10W 20/482](#), [H10W 70/60](#), [H10W 70/611](#), [H10W 70/614](#), [H10W 70/616](#), [H10W 70/62](#), [H10W 70/63](#), [H10W 70/635](#), [H10W 70/641](#), [H10W 70/644](#), [H10W 70/65](#), [H10W 70/652](#), [H10W 70/6523](#), [H10W 70/6525](#), [H10W 70/6528](#), [H10W 70/654](#), [H10W 70/655](#), [H10W 70/656](#), [H10W 70/657](#), [H10W 70/658](#), [H10W 70/66](#), [H10W 70/662](#), [H10W 70/664](#), [H10W 70/666](#), [H10W 70/668](#), [H10W 70/67](#), [H10W 70/68](#), [H10W 70/681](#), [H10W 70/682](#), [H10W 70/685](#), [H10W 70/688](#), [H10W 70/69](#), [H10W 70/692](#), [H10W 70/695](#), [H10W 70/698](#) and [H10W 72/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 20/41
- • characterised by their conductive parts
- WARNING
Groups [H10W 20/41](#), [H10W 20/423](#), [H10W 20/427](#), [H10W 20/43](#), [H10W 20/432](#), [H10W 20/435](#), [H10W 20/438](#), [H10W 20/44](#), [H10W 20/4405](#), [H10W 20/4407](#), [H10W 20/4421](#), [H10W 20/4424](#), [H10W 20/4432](#), [H10W 20/4435](#), [H10W 20/4441](#), [H10W 20/4446](#), [H10W 20/4451](#), [H10W 20/4462](#), [H10W 20/4473](#) and [H10W 20/4484](#) are incomplete pending reclassification of documents from group [H10W 20/40](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- Q H10W 20/42
- • • Vias, e.g. via plugs
- WARNING
Group [H10W 20/42](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 20/482](#). Group [H10W 20/42](#) is also impacted by reclassification into groups [H10W 20/421](#) and [H10W 20/422](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 20/421 . . . {Skip vias, i.e. vias that do not connect all metallization layers that they pass through}
- WARNING
Group [H10W 20/421](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 20/42](#).
Groups [H10W 20/40](#), [H10W 20/42](#) and [H10W 20/421](#) should be considered in order to perform a complete search.
- N H10W 20/422 . . . {Vias connecting to electrodes, e.g. contact plugs}
- WARNING
Group [H10W 20/422](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 20/42](#).
Groups [H10W 20/40](#), [H10W 20/42](#) and [H10W 20/422](#) should be considered in order to perform a complete search.
- N H10W 20/423 . . . {Shielding layers}
- Q H10W 20/425 . . . {Barrier, adhesion or liner layers}
- WARNING
Group [H10W 20/425](#) is incomplete pending reclassification of documents from group [H10W 20/40](#). Group [H10W 20/425](#) is also impacted by reclassification into group [H10W 20/455](#).
Groups [H10W 20/40](#), [H10W 20/425](#) and [H10W 20/455](#) should be considered in order to perform a complete search.
- N H10W 20/427 . . . {Power or ground buses}
- N H10W 20/43 . . . Layouts of interconnections
- N H10W 20/432 . . . {comprising crossing interconnections}
- N H10W 20/435 . . . {Cross-sectional shapes or dispositions of interconnections}
- N H10W 20/438 . . . {Interconnections with multiple fill metals, e.g. having different metals in wide and narrow interconnections, or having different metals in vias and in trenches}
- N H10W 20/44 . . . Conductive materials thereof
- Q H10W 20/4403 . . . {based on metals, e.g. alloys, metal silicides ([H10W 20/4484](#) takes precedence)}
- WARNING
Group [H10W 20/4403](#) is incomplete pending reclassification of documents from group [H10W 20/40](#). Group [H10W 20/4403](#) is also impacted by reclassification into group [H10W 20/4437](#).
Groups [H10W 20/40](#), [H10W 20/4403](#) and [H10W 20/4437](#) should be considered in order to perform a complete search.
- N H10W 20/4405 {the principal metal being aluminium}
- N H10W 20/4407 {Aluminium alloys}
- N H10W 20/4421 {the principal metal being copper}
- N H10W 20/4424 {Copper alloys}
- N H10W 20/4432 {the principal metal being a noble metal, e.g. gold}
- N H10W 20/4435 {Noble-metal alloys}
- N H10W 20/4437 {the principal metal being a transition metal}
- WARNING
Group [H10W 20/4437](#) is incomplete pending reclassification of documents from group [H10W 20/4403](#).

Groups [H10W 20/4403](#) and [H10W 20/4437](#) should be considered in order to perform a complete search.

- N H10W 20/4441 {the principal metal being a refractory metal}
- N H10W 20/4446 {Refractory-metal alloys}
- N H10W 20/4451 {Semiconductor materials, e.g. polysilicon}
- N H10W 20/4462 {Carbon or carbon-containing materials, e.g. graphene}
- N H10W 20/4473 {Conductive organic materials, e.g. conductive adhesives or conductive inks}
- N H10W 20/4484 {Superconducting materials}
- N H10W 20/45 . . characterised by their insulating parts

WARNING

Groups [H10W 20/45](#), [H10W 20/46](#), [H10W 20/47](#) and [H10W 20/48](#) are incomplete pending reclassification of documents from group [H10W 20/40](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 20/455 . . . {Thin functional dielectric layers}

WARNING

Group [H10W 20/455](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 20/425](#). Groups [H10W 20/40](#), [H10W 20/425](#) and [H10W 20/455](#) should be considered in order to perform a complete search.

- N H10W 20/46 . . . comprising air gaps
- N H10W 20/47 . . . comprising two or more dielectric layers having different properties, e.g. different dielectric constants
- N H10W 20/48 . . . Insulating materials thereof
- N H10W 20/481 . . {on the rear surfaces of the wafers or substrates}

WARNING

Group [H10W 20/481](#) is incomplete pending reclassification of documents from group [H10W 20/40](#). Groups [H10W 20/40](#) and [H10W 20/481](#) should be considered in order to perform a complete search.

- N H10W 20/482 . . {for individual devices provided for in groups [H10D 8/00](#) - [H10D 48/00](#), e.g. for power transistors}

WARNING

Group [H10W 20/482](#) is incomplete pending reclassification of documents from group [H10W 20/40](#). Groups [H10W 20/40](#) and [H10W 20/482](#) should be considered in order to perform a complete search.

- N H10W 20/483 . . . {Interconnections over air gaps, e.g. air bridges}
- N H10W 20/484 . . . {Interconnections having extended contours, e.g. pads having mesh shape or interconnections comprising connected parallel stripes}
- N H10W 20/49 . . . Adaptable interconnections, e.g. fuses or antifuses
- N H10W 20/491 . . . {Antifuses, i.e. interconnections changeable from non-conductive to conductive}
- N H10W 20/492 {changeable by the use of an external beam, e.g. laser beam or ion beam}

- N H10W 20/493 • • {Fuses, i.e. interconnections changeable from conductive to non-conductive}
- N H10W 20/494 • • • {changeable by the use of an external beam, e.g. laser beam or ion beam}
- N H10W 20/495 • • {Capacitive arrangements or effects of, or between wiring layers}
- N H10W 20/496 • • • {Capacitor integral with wiring layers}
- N H10W 20/497 • • {Inductive arrangements or effects of, or between, wiring layers}
- N H10W 20/498 • • {Resistive arrangements or effects of, or between, wiring layers}
- N H10W 29/00 **Generic parts of integrated devices, not otherwise provided for****
- N H10W 29/01 • {Manufacture or treatment}
- N H10W 40/00 - H10W 46/00 Constructional details related to chips, wafers, substrates or packages**
- Q H10W 40/00 **Arrangements for thermal protection or thermal control (integrated devices comprising arrangements for thermal protection [H10D 89/60](#))****
- WARNING
Group [H10W 40/00](#) is incomplete pending reclassification of documents from group [H10W 99/00](#). Group [H10W 40/00](#) is also impacted by reclassification into groups [H10W 40/20](#) and [H10W 40/50](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 40/01 • {Manufacture or treatment}
- WARNING
Group [H10W 40/01](#) is incomplete pending reclassification of documents from group [H10W 99/00](#).
Groups [H10W 99/00](#) and [H10W 40/01](#) should be considered in order to perform a complete search.
- N H10W 40/03 • • {of arrangements for cooling}
- WARNING
Group [H10W 40/03](#) is incomplete pending reclassification of documents from group [H10W 70/02](#).
Groups [H10W 70/02](#) and [H10W 40/03](#) should be considered in order to perform a complete search.
- N H10W 40/033 • • • {using mechanical treatments, e.g. deforming, punching or cutting}
- WARNING
Group [H10W 40/033](#) is incomplete pending reclassification of documents from group [H10W 70/027](#).
Groups [H10W 70/027](#) and [H10W 40/033](#) should be considered in order to perform a complete search.
- N H10W 40/037 • • • {Assembling together parts thereof}
- N H10W 40/10 • Arrangements for heating
- N H10W 40/20 • Arrangements for cooling
- WARNING
Group [H10W 40/20](#) is incomplete pending reclassification of documents from group [H10W 40/00](#).
Groups [H10W 40/00](#) and [H10W 40/20](#) should be considered in order to perform a complete search.

- Q H10W 40/22
- • characterised by their shape, e.g. having conical or cylindrical projections
- WARNING
Group [H10W 40/22](#) is impacted by reclassification into groups [H10W 40/226](#), [H10W 40/228](#), [H10W 40/231](#), [H10W 40/233](#), [H10W 40/235](#), [H10W 40/237](#) and [H10W 40/242](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 40/226
- • • {characterised by projecting parts, e.g. fins to increase surface area (leadframes for cooling [H10W 70/461](#))}
- WARNING
Groups [H10W 40/226](#) and [H10W 40/228](#) are incomplete pending reclassification of documents from group [H10W 40/22](#).
Groups [H10W 40/22](#), [H10W 40/226](#) and [H10W 40/228](#) should be considered in order to perform a complete search.
- N H10W 40/228
- • • • {the projecting parts being wire-shaped or pin-shaped}
- N H10W 40/231
- • {characterised by their places of attachment or cooling paths}
- WARNING
Groups [H10W 40/231](#), [H10W 40/233](#), [H10W 40/235](#), [H10W 40/237](#) and [H10W 40/242](#) are incomplete pending reclassification of documents from group [H10W 40/22](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 40/233
- • • {attached to chips}
- N H10W 40/235
- • • {attached to package parts}
- N H10W 40/237
- • • {attached to additional arrangements for cooling}
- N H10W 40/242
- • • {comprising thermal conductors between chips and the and the arrangements for cooling, e.g. compliant heat-spreaders}
- N H10W 40/25
- • characterised by their materials
- N H10W 40/251
- • • {Organics}
- N H10W 40/253
- • • {Semiconductors}
- N H10W 40/254
- • • {Diamond}
- N H10W 40/255
- • • {having a laminate or multilayered structure, e.g. direct bond copper [DBC] ceramic substrates}
- N H10W 40/257
- • • {having a heterogeneous or anisotropic structure, e.g. powder or fibres in a matrix, wire mesh or porous structures ([H10W 40/254](#), [H10W 40/251](#) take precedence)}
- N H10W 40/258
- • • {Metallic materials ([H10W 40/254](#), [H10W 40/257](#), [H10W 40/255](#), [H10W 40/251](#), [H10W 40/253](#) take precedence)}
- N H10W 40/259
- • • {Ceramics or glasses ([H10W 40/254](#), [H10W 40/257](#), [H10W 40/255](#), [H10W 40/251](#), [H10W 40/253](#) take precedence)}
- N H10W 40/28
- • comprising Peltier coolers
- N H10W 40/30
- wherein the packaged device is completely immersed in a fluid other than air, e.g. immersed in a cryogenic fluid
- N H10W 40/305
- • {the fluid being a liquefied gas, e.g. liquid nitrogen}
- N H10W 40/40
- involving heat exchange by flowing fluids
- N H10W 40/43
- • by flowing gases, e.g. forced air cooling
- N H10W 40/47
- • by flowing liquids, e.g. forced water cooling
- N H10W 40/475
- • • {using jet impingement ([H10W 40/776](#) takes precedence)}

- N H10W 40/50
- Arrangements for sensing temperature
- WARNING
 Group [H10W 40/50](#) is incomplete pending reclassification of documents from group [H10W 40/00](#).
 Groups [H10W 40/00](#) and [H10W 40/50](#) should be considered in order to perform a complete search.
- N H10W 40/60
- Securing means for detachable heating or cooling arrangements, e.g. clamps
- N H10W 40/611
- • {Bolts or screws}
- N H10W 40/613
- • • {for stacked arrangements of a plurality of semiconductor devices}
- N H10W 40/625
- • {Clamping parts not primarily conducting heat}
- N H10W 40/641
- • {Snap-on arrangements, e.g. clips}
- N H10W 40/70
- Fillings or auxiliary members in containers or in encapsulations for thermal protection or control
- N H10W 40/73
- • for cooling by change of state
- N H10W 40/735
- • • {by melting or evaporation of solids}
- N H10W 40/77
- • Auxiliary members characterised by their shape
- N H10W 40/772
- • • {Bellows}
- N H10W 40/774
- • • {Pistons, e.g. spring-loaded members}
- N H10W 40/776
- • • {Arrangements for jet impingement, e.g. for spraying}
- N H10W 40/778
- • • {in encapsulations}
- N H10W 40/80
- Circuit arrangements for thermal protection or control of packages
- WARNING
 Group [H10W 40/80](#) is incomplete pending reclassification of documents from group [H10W 42/00](#).
 Groups [H10W 42/00](#) and [H10W 40/80](#) should be considered in order to perform a complete search.
- Q H10W 42/00**
- Arrangements for protection of devices (arrangements for thermal protection [H10W 40/00](#))**
- WARNING
 Group [H10W 42/00](#) is incomplete pending reclassification of documents from group [H10W 99/00](#). Group [H10W 42/00](#) is also impacted by reclassification into groups [H10W 42/101](#), [H10W 40/80](#) and [H10W 99/00](#).
 All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 42/101
- {protecting against moisture, e.g. getters (fillers in containers for absorbing or reacting with moisture or other undesired substances [H10W 76/48](#))}
- WARNING
 Group [H10W 42/101](#) is incomplete pending reclassification of documents from group [H10W 42/00](#).
 Groups [H10W 42/00](#) and [H10W 42/101](#) should be considered in order to perform a complete search.
- N H10W 42/121
- {protecting against mechanical damage ([H10W 76/00](#), [H10W 74/00](#) take precedence)}

- Q H10W 42/20
- protecting against electromagnetic or particle radiation, e.g. light, X-rays, gamma-rays or electrons
- WARNING**
- Group [H10W 42/20](#) is impacted by reclassification into groups [H10W 42/40](#), [H10W 42/261](#), [H10W 42/263](#), [H10W 42/265](#), [H10W 42/267](#), [H10W 42/271](#), [H10W 42/273](#), [H10W 42/276](#), [H10W 42/281](#), [H10W 42/284](#) and [H10W 42/287](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 42/25
- against alpha rays, e.g. for outer space applications
- N H10W 42/261
- {characterised by their shapes or dispositions}
- WARNING**
- Groups [H10W 42/261](#), [H10W 42/263](#), [H10W 42/265](#), [H10W 42/267](#), [H10W 42/271](#), [H10W 42/273](#) and [H10W 42/276](#) are incomplete pending reclassification of documents from group [H10W 42/20](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 42/263
- • {Shielding bumps}
- N H10W 42/265
- • {Shielding wires, e.g. constant potential wires}
- N H10W 42/267
- • {Patterned shielding planes}
- N H10W 42/271
- • {the arrangements being between stacked chips}
- N H10W 42/273
- • {the arrangements being between laterally adjacent chips, e.g. walls between chips}
- N H10W 42/276
- • {the arrangements being on an external surface of the package, e.g. on the outer surface of an encapsulation}
- N H10W 42/281
- {characterised by their materials}
- WARNING**
- Groups [H10W 42/281](#), [H10W 42/284](#) and [H10W 42/287](#) are incomplete pending reclassification of documents from group [H10W 42/20](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 42/284
- • {shielding resins}
- N H10W 42/287
- • {materials for magnetic shielding, e.g. ferromagnetic materials}
- N H10W 42/40
- protecting against tampering, e.g. unauthorised inspection or reverse engineering
- WARNING**
- Group [H10W 42/40](#) is incomplete pending reclassification of documents from group [H10W 42/20](#). Groups [H10W 42/20](#) and [H10W 42/40](#) should be considered in order to perform a complete search.
- N H10W 42/405
- {using active circuits}
- N H10W 42/60
- protecting against electrostatic charges or discharges, e.g. Faraday shields (integrated devices comprising arrangements for electrical protection [H10D 89/60](#))
- N H10W 42/80
- protecting against overcurrent or overload, e.g. fuses or shunts (integrated devices comprising arrangements for electrical protection [H10D 89/60](#))
- N H10W 44/00**
- Electrical arrangements for controlling or matching impedance**
- N H10W 44/20
- at high-frequency [HF] or radio frequency [RF]
- N H10W 44/203
- {Electrical connections}

- N H10W 44/206 . . . {Wires}
- N H10W 44/209 . . . {Vertical interconnections, e.g. vias}
- N H10W 44/212 {Coaxial feed-throughs in substrates}
- N H10W 44/216 . . . {Waveguides, e.g. strip lines}
- N H10W 44/219 {characterised by transitions between different types of waveguides}
- N H10W 44/223 . . . {Differential pair signal lines}
- N H10W 44/226 . . {for HF amplifiers}
- N H10W 44/231 . . . {Arrangements for applying bias}
- N H10W 44/234 . . . {Arrangements for impedance matching}
- N H10W 44/241 . . {for passive devices or passive elements}
- N H10W 44/243 . . . {for decoupling, e.g. bypass capacitors}
- N H10W 44/248 . . . {for antennas}
- N H10W 44/251 . . {for monolithic microwave integrated circuits [MMIC]}
- N H10W 44/255 . . {for operation at multiple different frequencies}
- N H10W 44/259 . . {Optical signal interface}
- N H10W 44/401 . {Resistive arrangements ([H10W 44/20](#), [H10W 42/80](#) take precedence)}
- N H10W 44/501 . {Inductive arrangements ([H10W 44/20](#) takes precedence)}
- N H10W 44/601 . {Capacitive arrangements ([H10W 44/20](#) takes precedence)}

N H10W 46/00**Marks applied to devices, e.g. for alignment or identification**NOTE

This group covers marks in or on chips, wafers, substrates or packages.

- N H10W 46/101 . {characterised by the type of information, e.g. logos or symbols}
- N H10W 46/103 . . {alphanumeric information, e.g. words, letters or serial numbers}
- N H10W 46/106 . . {digital information, e.g. bar codes}
- N H10W 46/201 . {located on the periphery of wafers, e.g. orientation notches or lot numbers}
- N H10W 46/301 . {for alignment}
- N H10W 46/401 . {for identification or tracking}
- N H10W 46/403 . . {for non-wireless electrical read out}
- N H10W 46/407 . . {for wireless electrical read out}
- N H10W 46/501 . {for use before dicing}
- N H10W 46/503 . . {Located in scribe lines}
- N H10W 46/507 . . {Located in dummy chips or in reference chips}
- N H10W 46/601 . {for use after dicing}
- N H10W 46/603 . . {Formed on wafers or substrates before dicing and remaining on chips after dicing}
- N H10W 46/607 . . {Located on parts of packages, e.g. on encapsulations or on package substrates}

**N H10W 70/00 -
H10W 99/00****Aspects of packages****N H10W 70/00****Package substrates; Interposers; Redistribution layers [RDL]**WARNING

Groups [H10W 70/00](#), [H10W 70/01](#) and [H10W 70/04](#) are incomplete pending reclassification of documents from group [H10W 99/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/01
 - Manufacture or treatment
- Q H10W 70/02
 - • of conductive package substrates serving as an interconnection, e.g. of metal plates (manufacture or treatment of leadframes [H10W 70/04](#))

WARNING

Group [H10W 70/02](#) is incomplete pending reclassification of documents from group [H10W 99/00](#). Group [H10W 70/02](#) is also impacted by reclassification into group [H10W 40/03](#).

Groups [H10W 99/00](#), [H10W 70/02](#) and [H10W 40/03](#) should be considered in order to perform a complete search.

- N H10W 70/023
 - • {Connecting or disconnecting interconnections thereto or therefrom, e.g. connecting bond wires or bumps}
- Q H10W 70/027
 - • {Mechanical treatments, e.g. deforming, punching or cutting}

WARNING

Group [H10W 70/027](#) is impacted by reclassification into group [H10W 40/033](#).

Groups [H10W 70/027](#) and [H10W 40/033](#) should be considered in order to perform a complete search.

- N H10W 70/04
 - • of leadframes
- N H10W 70/041
 - • {Connecting or disconnecting interconnections to or from leadframes, e.g. connecting bond wires or bumps}
- N H10W 70/042
 - • {Etching}
- N H10W 70/045
 - • {Cleaning}
- N H10W 70/047
 - • {Attaching leadframes to insulating supports, e.g. for tape automated bonding [TAB]}
- N H10W 70/048
 - • {Mechanical treatments, e.g. punching, cutting, deforming or cold welding}
- Q H10W 70/05
 - • of insulating or insulated package substrates, or of interposers, or of redistribution layers (manufacture or treatment of leadframes [H10W 70/04](#))

WARNING

Group [H10W 70/05](#) is incomplete pending reclassification of documents from group [H10W 99/00](#). Group [H10W 70/05](#) is also impacted by reclassification into groups [H10W 70/06](#), [H10W 70/08](#), [H10W 70/09](#), [H10W 70/092](#), [H10W 70/093](#), [H10W 70/095](#), [H10W 70/096](#), [H10W 70/097](#) and [H10W 70/098](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/06
 - • using temporary auxiliary supports

WARNING

Group [H10W 70/06](#) is incomplete pending reclassification of documents from groups [H10W 70/05](#) and [H10W 99/00](#).

Groups [H10W 70/05](#), [H10W 99/00](#) and [H10W 70/06](#) should be considered in order to perform a complete search.

- N H10W 70/08
 - • by depositing layers on the chip or wafer, e.g. "chip-first" RDLs

WARNING

Groups [H10W 70/08](#) and [H10W 70/09](#) are incomplete pending reclassification of documents from groups [H10W 70/05](#) and [H10W 99/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/09 . . . extending onto an encapsulation that laterally surrounds the chip or wafer, e.g. fan-out wafer level package [FOWLP] RDLs
 - N H10W 70/092 . . . {Adapting interconnections, e.g. making engineering charges, repairing}
- WARNING
Groups [H10W 70/092](#) - [H10W 70/098](#) are incomplete pending reclassification of documents from group [H10W 70/05](#).
Groups [H10W 70/05](#) and [H10W 70/092](#) - [H10W 70/098](#) should be considered in order to perform a complete search.
- N H10W 70/093 . . . {Connecting or disconnecting other interconnections thereto or therefrom, e.g. connecting bond wires or bumps}
 - N H10W 70/095 . . . {of vias therein}
 - N H10W 70/096 . . . {Cutting or separating}
 - N H10W 70/097 . . . {Cleaning}
 - N H10W 70/098 . . . {Applying pastes or inks, e.g. screen printing ([H10W 70/095](#) takes precedence)}
 - N H10W 70/099 . {Connecting interconnections to insulating or insulated package substrates, interposers or redistribution layers}
 - N H10W 70/20 . Conductive package substrates serving as an interconnection, e.g. metal plates (leadframes [H10W 70/40](#))
 - N H10W 70/22 . . {having an heterogeneous or anisotropic structure}
 - N H10W 70/24 . . {characterised by materials}
 - N H10W 70/26 . . . {Semiconductor materials}
 - N H10W 70/28 . . . {Carbon-containing materials}
 - N H10W 70/40 . Leadframes
 - N H10W 70/411 . . {Chip-supporting parts, e.g. die pads}
 - N H10W 70/413 . . . {Insulating or insulated substrates serving as die pads ([H10W 70/468](#) takes precedence)}
 - N H10W 70/415 . . . {Leadframe inner leads serving as die pads}
 - N H10W 70/417 . . . {Bonding materials between chips and die pads}
 - N H10W 70/421 . . {Shapes or dispositions}
 - N H10W 70/424 . . . {Cross-sectional shapes ([H10W 70/481](#) takes precedence)}
 - N H10W 70/427 {Bent parts}
 - N H10W 70/429 {being the outer leads}
 - N H10W 70/433 . . . {of deformation-absorbing parts, e.g. leads having meandering shapes ([H10W 70/481](#) takes precedence)}
 - N H10W 70/435 . . . {of insulating layers on leadframes, e.g. bridging members}
 - N H10W 70/438 . . . {of side rails, e.g. having holes}
 - N H10W 70/442 . . . {of multiple leadframes in a single chip}
 - N H10W 70/451 . . {Multilayered leadframes}
 - N H10W 70/453 . . {comprising flexible metallic tapes}
 - N H10W 70/456 . . {Materials}
 - N H10W 70/457 . . . {of metallic layers on leadframes}
 - N H10W 70/458 . . . {of insulating layers on leadframes}
 - N H10W 70/461 . . {specially adapted for cooling}

- N H10W 70/464 • • {Additional interconnections in combination with leadframes}
- N H10W 70/465 • • • {Bumps or wires}
- N H10W 70/466 • • • {Tape carriers or flat leads}
- N H10W 70/467 • • • {Multilayered additional interconnections}
- N H10W 70/468 • • • {Circuit boards}
- N H10W 70/474 • • {Batteries in combination with leadframes}
- N H10W 70/475 • • {Capacitors in combination with leadframes}
- N H10W 70/476 • • {Oscillators in combination with leadframes}
- N H10W 70/479 • • {on or in insulating or insulated package substrates, interposers, or redistribution layers}
- N H10W 70/481 • • {for devices being provided for in groups [H10D 8/00](#) - [H10D 48/00](#)}
- Q H10W 70/60 • Insulating or insulated package substrates; Interposers; Redistribution layers (leadframes [H10W 70/40](#))

WARNING

Group [H10W 70/60](#) is incomplete pending reclassification of documents from group [H10W 20/40](#). Group [H10W 70/60](#) is also impacted by reclassification into groups [H10W 70/611](#), [H10W 70/614](#), [H10W 70/616](#), [H10W 70/618](#), [H10W 70/62](#), [H10W 70/63](#), [H10W 70/635](#), [H10W 70/641](#), [H10W 70/644](#), [H10W 70/65](#), [H10W 70/652](#), [H10W 70/6523](#), [H10W 70/6525](#), [H10W 70/6528](#), [H10W 70/654](#), [H10W 70/655](#), [H10W 70/656](#), [H10W 70/6565](#), [H10W 70/657](#), [H10W 70/658](#), [H10W 70/66](#), [H10W 70/662](#), [H10W 70/664](#), [H10W 70/666](#), [H10W 70/668](#), [H10W 70/67](#), [H10W 70/68](#), [H10W 70/681](#), [H10W 70/682](#), [H10W 70/685](#), [H10W 70/686](#), [H10W 70/687](#), [H10W 70/69](#), [H10W 70/692](#), [H10W 70/695](#), [H10W 70/698](#) and [H10W 70/699](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/611 • • {for connecting multiple chips together}

WARNING

Groups [H10W 70/611](#), [H10W 70/614](#) and [H10W 70/616](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/614 • • • {the multiple chips being integrally enclosed}
- N H10W 70/616 • • • {package substrates, interposers or redistribution layers combined with bridge chips}
- N H10W 70/618 • • • • {the bridge chips being embedded in the package substrates, interposers or redistribution layers}

WARNING

Group [H10W 70/618](#) is incomplete pending reclassification of documents from group [H10W 70/60](#).

Groups [H10W 70/60](#) and [H10W 70/618](#) should be considered in order to perform a complete search.

- N H10W 70/62 • • characterised by their interconnections

WARNING

Groups [H10W 70/62](#), [H10W 70/63](#), [H10W 70/635](#), [H10W 70/641](#) and [H10W 70/644](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/63 . . . Vias, e.g. via plugs
- N H10W 70/635 {Through-vias}
- N H10W 70/641 . . . {Adaptable interconnections, e.g. fuses or antifuses}
- N H10W 70/644 . . . {Elastic or compliant interconnections, e.g. springs, cantilevers or elastic pads}
- Q H10W 70/65 . . . Shapes or dispositions of interconnections

WARNING

Group [H10W 70/65](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#). Group [H10W 70/65](#) is also impacted by reclassification into groups [H10W 70/652](#), [H10W 70/6523](#), [H10W 70/6525](#), [H10W 70/6528](#), [H10W 70/654](#), [H10W 70/655](#), [H10W 70/656](#), [H10W 70/6565](#), [H10W 70/657](#) and [H10W 70/658](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/652 Cross-sectional shapes

WARNING

Groups [H10W 70/652](#), [H10W 70/6523](#), [H10W 70/6525](#) and [H10W 70/6528](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#), [H10W 70/60](#) and [H10W 70/65](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/6523 {for connecting to pads at different heights at the same side of the package substrate, interposer or RDL}
- N H10W 70/6525 {for securing the interconnections to the substrate, e.g. to prevent peeling}
- N H10W 70/6528 {of the portions that connect to chips, wafers or package parts}
- N H10W 70/654 Top-view layouts

WARNING

Groups [H10W 70/654](#), [H10W 70/655](#) and [H10W 70/656](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#), [H10W 70/60](#) and [H10W 70/65](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/655 Fan-out layouts
- N H10W 70/656 Fan-in layouts
- N H10W 70/6565 {recessed into the surface of the package substrates, interposers, or redistribution layers}

WARNING

Group [H10W 70/6565](#) is incomplete pending reclassification of documents from groups [H10W 70/60](#) and [H10W 70/65](#).

Groups [H10W 70/60](#), [H10W 70/65](#) and [H10W 70/6565](#) should be considered in order to perform a complete search.

- N H10W 70/657 . . . {on sidewalls or bottom surfaces of the package substrates, interposers or redistribution layers}
- WARNING
Groups [H10W 70/657](#) - [H10W 70/658](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#), [H10W 70/60](#) and [H10W 70/65](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/658 . . . {for devices provided for in groups [H10D 8/00](#) - [H10D 48/00](#)}
- Q H10W 70/66 . . . Conductive materials thereof
- WARNING
Group [H10W 70/66](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#). Group [H10W 70/66](#) is also impacted by reclassification into groups [H10W 70/662](#), [H10W 70/664](#), [H10W 70/666](#) and [H10W 70/668](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/662 . . . {Semiconductor materials}
- WARNING
Groups [H10W 70/662](#) - [H10W 70/668](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#), [H10W 70/60](#) and [H10W 70/66](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/664 . . . {Carbon-based materials, e.g. fullerenes}
- N H10W 70/666 . . . {Organic materials or pastes}
- N H10W 70/668 . . . {Superconducting materials}
- N H10W 70/67 . . characterised by their insulating layers or insulating parts
- WARNING
Groups [H10W 70/67](#), [H10W 70/68](#), [H10W 70/681](#) and [H10W 70/682](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/68 . . . Shapes or dispositions thereof
- N H10W 70/681 . . . {comprising holes not having chips therein, e.g. for outgassing, underfilling or bond wire passage}
- N H10W 70/682 . . . {comprising holes having chips therein}
- Q H10W 70/685 . . . comprising multiple insulating layers
- WARNING
Group [H10W 70/685](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#). Group [H10W 70/685](#) is also impacted by reclassification into groups [H10W 70/686](#) and [H10W 70/687](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 70/686 {the multiple insulating layers having different compositions, e.g. polymer layer on glass substrate}
- WARNING
Group [H10W 70/686](#) is incomplete pending reclassification of documents from groups [H10W 70/60](#), [H10W 70/685](#) and [H10W 70/69](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/687 {characterized by the outer layers being for protection, e.g. solder masks, or for protection against chemical or mechanical damage}
- WARNING
Group [H10W 70/687](#) is incomplete pending reclassification of documents from groups [H10W 70/60](#) and [H10W 70/685](#). Groups [H10W 70/60](#), [H10W 70/685](#) and [H10W 70/687](#) should be considered in order to perform a complete search.
- N H10W 70/6875 {being on a metallic substrate, e.g. insulated metal substrates [IMS]}
- N H10W 70/688 . . . {Flexible insulating substrates}
- WARNING
Group [H10W 70/688](#) is incomplete pending reclassification of documents from group [H10W 20/40](#). Groups [H10W 20/40](#) and [H10W 70/688](#) should be considered in order to perform a complete search.
- Q H10W 70/69 . . . Insulating materials thereof
- WARNING
Group [H10W 70/69](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#) and [H10W 70/60](#). Group [H10W 70/69](#) is also impacted by reclassification into groups [H10W 70/692](#), [H10W 70/695](#), [H10W 70/698](#) and [H10W 70/686](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/692 Ceramics or glasses
- WARNING
Groups [H10W 70/692](#) - [H10W 70/698](#) are incomplete pending reclassification of documents from groups [H10W 20/40](#), [H10W 70/60](#) and [H10W 70/69](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 70/695 Organic materials
- N H10W 70/698 Semiconductor materials that are electrically insulating, e.g. undoped silicon
- N H10W 70/699 . . {for flat cards, e.g. credit cards}
- WARNING
Group [H10W 70/699](#) is incomplete pending reclassification of documents from group [H10W 70/60](#). Groups [H10W 70/60](#) and [H10W 70/699](#) should be considered in order to perform a complete search.

Q H10W 72/00**Interconnections or connectors in packages****NOTE**

In this group, bond pads in general, i.e. where the nature of a related connector is unspecified or generic to multiple types of connectors, are classified in group [H10W 72/90](#). Bond pads specially adapted for a specific type of connector are classified in the group covering the connector type. For example, bond pads specially adapted for wire connectors are classified in group [H10W 72/59](#).

WARNING

Group [H10W 72/00](#) is incomplete pending reclassification of documents from groups [H10W 20/40](#), [H10W 72/07232](#), [H10W 72/07233](#) and [H10W 72/07236](#). Group [H10W 72/00](#) is also impacted by reclassification into groups [H10W 72/20](#), [H10W 72/221](#), [H10W 72/222](#), [H10W 72/223](#), [H10W 72/224](#), [H10W 72/225](#), [H10W 72/227](#), [H10W 72/228](#), [H10W 72/231](#), [H10W 72/232](#), [H10W 72/234](#), [H10W 72/235](#), [H10W 72/237](#), [H10W 72/241](#), [H10W 72/242](#), [H10W 72/244](#), [H10W 72/245](#), [H10W 72/247](#), [H10W 72/248](#), [H10W 72/251](#), [H10W 72/252](#), [H10W 72/253](#), [H10W 72/255](#), [H10W 72/257](#), [H10W 72/2524](#), [H10W 72/2528](#), [H10W 72/261](#), [H10W 72/263](#), [H10W 72/265](#), [H10W 72/267](#), [H10W 72/281](#), [H10W 72/283](#), [H10W 72/285](#), [H10W 72/287](#), [H10W 72/30](#), [H10W 72/321](#), [H10W 72/322](#), [H10W 72/323](#), [H10W 72/324](#), [H10W 72/325](#), [H10W 72/327](#), [H10W 72/328](#), [H10W 72/331](#), [H10W 72/332](#), [H10W 72/334](#), [H10W 72/335](#), [H10W 72/337](#), [H10W 72/341](#), [H10W 72/342](#), [H10W 72/344](#), [H10W 72/345](#), [H10W 72/347](#), [H10W 72/348](#), [H10W 72/351](#), [H10W 72/352](#), [H10W 72/353](#), [H10W 72/354](#), [H10W 72/355](#), [H10W 72/357](#), [H10W 72/3524](#), [H10W 72/3528](#), [H10W 72/361](#), [H10W 72/365](#), [H10W 72/367](#), [H10W 72/381](#), [H10W 72/383](#), [H10W 72/385](#), [H10W 72/387](#), [H10W 72/40](#), [H10W 72/49](#), [H10W 72/50](#), [H10W 72/521](#), [H10W 72/522](#), [H10W 72/523](#), [H10W 72/524](#), [H10W 72/525](#), [H10W 72/527](#), [H10W 72/528](#), [H10W 72/531](#), [H10W 72/533](#), [H10W 72/534](#), [H10W 72/535](#), [H10W 72/537](#), [H10W 72/536](#), [H10W 72/5363](#), [H10W 72/5366](#), [H10W 72/5368](#), [H10W 72/541](#), [H10W 72/543](#), [H10W 72/547](#), [H10W 72/5434](#), [H10W 72/5438](#), [H10W 72/5473](#), [H10W 72/5475](#), [H10W 72/5445](#), [H10W 72/5449](#), [H10W 72/5453](#), [H10W 72/551](#), [H10W 72/552](#), [H10W 72/5522](#), [H10W 72/5524](#), [H10W 72/5525](#), [H10W 72/553](#), [H10W 72/555](#), [H10W 72/557](#), [H10W 72/5528](#), [H10W 72/581](#), [H10W 72/583](#), [H10W 72/585](#), [H10W 72/60](#), [H10W 72/621](#), [H10W 72/622](#), [H10W 72/623](#), [H10W 72/624](#), [H10W 72/625](#), [H10W 72/627](#), [H10W 72/631](#), [H10W 72/634](#), [H10W 72/635](#), [H10W 72/637](#), [H10W 72/641](#), [H10W 72/645](#), [H10W 72/647](#), [H10W 72/646](#), [H10W 72/642](#), [H10W 72/643](#), [H10W 72/6478](#), [H10W 72/651](#), [H10W 72/652](#), [H10W 72/653](#), [H10W 72/6528](#), [H10W 72/655](#), [H10W 72/657](#), [H10W 72/681](#), [H10W 72/683](#), [H10W 72/685](#) and [H10W 72/691](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Q H10W 72/01

- {Manufacture or treatment}

WARNING

Group [H10W 72/01](#) is impacted by reclassification into groups [H10W 72/011](#), [H10W 72/0112](#), [H10W 72/0113](#), [H10W 72/0115](#), [H10W 72/0116](#), [H10W 72/012](#), [H10W 72/01204](#), [H10W 72/01208](#), [H10W 72/01212](#), [H10W 72/01215](#), [H10W 72/01221](#), [H10W 72/01223](#), [H10W 72/01225](#), [H10W 72/01231](#), [H10W 72/01233](#), [H10W 72/01235](#), [H10W 72/01236](#), [H10W 72/01238](#), [H10W 72/01251](#), [H10W 72/01253](#), [H10W 72/01255](#), [H10W 72/01257](#), [H10W 72/01261](#), [H10W 72/01265](#), [H10W 72/01271](#), [H10W 72/013](#), [H10W 72/01304](#), [H10W 72/01308](#), [H10W 72/01315](#), [H10W 72/01321](#), [H10W 72/01323](#), [H10W 72/01325](#), [H10W 72/01331](#), [H10W 72/01333](#), [H10W 72/01335](#), [H10W 72/01336](#), [H10W 72/01338](#), [H10W 72/01351](#), [H10W 72/01353](#), [H10W 72/01355](#), [H10W 72/01357](#), [H10W 72/01359](#), [H10W 72/01361](#), [H10W 72/01365](#), [H10W 72/01371](#), [H10W 72/014](#), [H10W 72/015](#), [H10W 72/01504](#), [H10W 72/01515](#),

[H10W 72/01551](#), [H10W 72/01553](#), [H10W 72/01561](#), [H10W 72/01565](#),
[H10W 72/01571](#), [H10W 72/016](#), [H10W 72/01604](#), [H10W 72/01615](#),
[H10W 72/01651](#), [H10W 72/01653](#), [H10W 72/01661](#), [H10W 72/01665](#),
[H10W 72/01671](#), [H10W 72/019](#), [H10W 72/01904](#), [H10W 72/01908](#),
[H10W 72/01921](#), [H10W 72/01923](#), [H10W 72/01925](#), [H10W 72/01931](#),
[H10W 72/01933](#), [H10W 72/01935](#), [H10W 72/01936](#), [H10W 72/01938](#),
[H10W 72/01951](#), [H10W 72/01953](#), [H10W 72/01955](#), [H10W 72/01961](#),
[H10W 72/01971](#) and [H10W 72/0198](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10W 72/011

- {Apparatus therefor}

WARNING

Groups [H10W 72/011](#), [H10W 72/0112](#), [H10W 72/0113](#), [H10W 72/0115](#) and [H10W 72/0116](#) are incomplete pending reclassification of documents from group [H10W 72/01](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10W 72/0112

- {Apparatus for manufacturing bump connectors}

N H10W 72/0113

- {Apparatus for manufacturing die-attach connectors}

N H10W 72/0115

- {Apparatus for manufacturing bond wires}

N H10W 72/0116

- {Apparatus for manufacturing strap connectors}

Q H10W 72/012

- {of bump connectors, dummy bumps or thermal bumps}

WARNING

Group [H10W 72/012](#) is incomplete pending reclassification of documents from group [H10W 72/01](#). Group [H10W 72/012](#) is also impacted by reclassification into groups [H10W 72/01204](#), [H10W 72/01208](#), [H10W 72/01212](#), [H10W 72/01215](#), [H10W 72/01221](#), [H10W 72/01223](#), [H10W 72/01225](#), [H10W 72/01231](#), [H10W 72/01233](#), [H10W 72/01235](#), [H10W 72/01236](#), [H10W 72/01238](#), [H10W 72/01251](#), [H10W 72/01253](#), [H10W 72/01255](#), [H10W 72/01257](#), [H10W 72/01261](#), [H10W 72/01265](#) and [H10W 72/01271](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10W 72/01204

- {using temporary auxiliary members, e.g. using sacrificial coatings or handle substrates}

WARNING

Groups [H10W 72/01204](#) - [H10W 72/01215](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/012](#). All groups listed in this Warning should be considered in order to perform a complete search.

N H10W 72/01208

- {using permanent auxiliary members, e.g. using solder flow barriers, spacers or alignment marks}

N H10W 72/01212

- {at a different location than on the final device, e.g. forming as prepreg}

N H10W 72/01215

- {forming coatings}

N H10W 72/01221

- {using local deposition}

WARNING

Groups [H10W 72/01221](#), [H10W 72/01223](#) and [H10W 72/01225](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/012](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01223 . . . {in liquid form, e.g. by dispensing droplets or by screen printing}
- N H10W 72/01225 . . . {in solid form, e.g. by using a powder or by stud bumping}
- N H10W 72/01231 . . . {using blanket deposition}

WARNING

Groups [H10W 72/01231](#), [H10W 72/01233](#), [H10W 72/01235](#), [H10W 72/01236](#) and [H10W 72/01238](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/012](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01233 . . . {in liquid form, e.g. spin coating, spray coating or immersion coating}
- N H10W 72/01235 . . . {by plating, e.g. electroless plating or electroplating}
- N H10W 72/01236 . . . {in solid form, e.g. by using a powder or by laminating a foil}
- N H10W 72/01238 . . . {in gaseous form, e.g. by CVD or PVD}
- N H10W 72/01251 . . . {Changing the shapes of bumps}

WARNING

Groups [H10W 72/01251](#), [H10W 72/01253](#), [H10W 72/01255](#) and [H10W 72/01257](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/012](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01253 . . . {by etching}
- N H10W 72/01255 . . . {by using masks}
- N H10W 72/01257 . . . {by reflowing}
- N H10W 72/01261 . . . {Chemical or physical modification, e.g. by sintering or anodisation (patterning [H10W 72/01251](#))}

WARNING

Groups [H10W 72/01261](#) - [H10W 72/01271](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/012](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01265 . . . {Thermally treating (reflowing [H10W 72/01257](#))}
- N H10W 72/01271 . . . {Cleaning, e.g. oxide removal or de-smearing}
- Q H10W 72/013 . . . {of die-attach connectors}

WARNING

Group [H10W 72/013](#) is incomplete pending reclassification of documents from group [H10W 72/01](#). Group [H10W 72/013](#) is also impacted by reclassification into groups [H10W 72/01304](#), [H10W 72/01308](#), [H10W 72/01315](#), [H10W 72/01321](#), [H10W 72/01323](#), [H10W 72/01325](#), [H10W 72/01331](#), [H10W 72/01333](#), [H10W 72/01335](#), [H10W 72/01336](#), [H10W 72/01338](#), [H10W 72/01351](#), [H10W 72/01353](#), [H10W 72/01355](#), [H10W 72/01357](#), [H10W 72/01359](#), [H10W 72/01361](#), [H10W 72/01365](#) and [H10W 72/01371](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01304 . . . {using temporary auxiliary members, e.g. using sacrificial coatings or handle substrates}
- WARNING
Groups [H10W 72/01304](#) - [H10W 72/01315](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/013](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01308 . . . {using permanent auxiliary members, e.g. using alignment marks}
- N H10W 72/01315 . . . {Forming coatings}
- N H10W 72/01321 . . . {using local deposition}
- WARNING
Groups [H10W 72/01321](#), [H10W 72/01323](#) and [H10W 72/01325](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/013](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01323 . . . {in liquid form, e.g. by dispensing droplets or by screen printing}
- N H10W 72/01325 . . . {in solid form}
- N H10W 72/01331 . . . {using blanket deposition}
- WARNING
Groups [H10W 72/01331](#), [H10W 72/01333](#), [H10W 72/01335](#), [H10W 72/01336](#) and [H10W 72/01338](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/013](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01333 . . . {in liquid form, e.g. spin coating, spray coating or immersion coating}
- N H10W 72/01335 . . . {by plating, e.g. electroless plating or electroplating}
- N H10W 72/01336 . . . {in solid form, e.g. by using a powder or by laminating a foil}
- N H10W 72/01338 . . . {in gaseous form, e.g. by CVD or PVD}
- N H10W 72/01351 . . . {Changing the shapes of die-attach connectors}
- WARNING
Groups [H10W 72/01351](#), [H10W 72/01353](#), [H10W 72/01355](#), [H10W 72/01357](#) and [H10W 72/01359](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/013](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01353 . . . {by etching}
- N H10W 72/01355 . . . {by use of masks}
- N H10W 72/01357 . . . {by reflowing or heating}
- N H10W 72/01359 . . . {by planarisation, e.g. chemical-mechanical polishing [CMP]}
- N H10W 72/01361 . . . {Chemical or physical modification, e.g. by sintering or anodisation (patterning [H10W 72/01351](#))}
- WARNING
Groups [H10W 72/01361](#) - [H10W 72/01371](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/013](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01365 . . . {Thermally treating (reflowing [H10W 72/01357](#))}
- N H10W 72/01371 . . . {Cleaning, e.g. oxide removal or de-smearing}
- N H10W 72/014 . . {of anisotropic conductive adhesives}
- WARNING
Group [H10W 72/014](#) is incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/30](#).
Groups [H10W 72/01](#), [H10W 72/30](#) and [H10W 72/014](#) should be considered in order to perform a complete search.
- Q H10W 72/015 . . {of bond wires}
- WARNING
Group [H10W 72/015](#) is incomplete pending reclassification of documents from group [H10W 72/01](#). Group [H10W 72/015](#) is also impacted by reclassification into groups [H10W 72/01504](#), [H10W 72/01515](#), [H10W 72/01551](#), [H10W 72/01553](#), [H10W 72/01561](#), [H10W 72/01565](#) and [H10W 72/01571](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01504 . . . {using temporary auxiliary members, e.g. using sacrificial coatings or handle substrates}
- WARNING
Groups [H10W 72/01504](#) - [H10W 72/01571](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/015](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01515 . . . {Forming coatings}
- N H10W 72/01551 . . . {Changing the shapes of bond wires}
- N H10W 72/01553 . . . {by etching}
- N H10W 72/01561 . . . {Chemical or physical modification, e.g. by sintering or anodisation (patterning [H10W 72/01551](#))}
- N H10W 72/01565 . . . {Thermally treating}
- N H10W 72/01571 . . . {Cleaning, e.g. oxide removal or de-smearing}
- Q H10W 72/016 . . {of strap connectors}
- WARNING
Group [H10W 72/016](#) is incomplete pending reclassification of documents from group [H10W 72/01](#). Group [H10W 72/016](#) is also impacted by reclassification into groups [H10W 72/01604](#), [H10W 72/01615](#), [H10W 72/01651](#), [H10W 72/01653](#), [H10W 72/01661](#), [H10W 72/01665](#) and [H10W 72/01671](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01604 . . . {using temporary auxiliary members, e.g. using sacrificial coatings or handle substrates}
- WARNING
Groups [H10W 72/01604](#) - [H10W 72/01671](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/016](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01615 . . . {Forming coatings}

- N H10W 72/01651 . . . {Changing the shapes of strap connectors}
- N H10W 72/01653 . . . {by etching}
- N H10W 72/01661 . . . {Chemical or physical modification, e.g. by sintering or anodisation (patterning [H10W 72/01651](#))}
- N H10W 72/01665 . . . {Thermally treating}
- N H10W 72/01671 . . . {Cleaning, e.g. oxide removal or de-smearing}
- Q H10W 72/019 . . . {of bond pads}

WARNING

Group [H10W 72/019](#) is incomplete pending reclassification of documents from group [H10W 72/01](#). Group [H10W 72/019](#) is also impacted by reclassification into groups [H10W 72/01904](#), [H10W 72/01908](#), [H10W 72/01921](#), [H10W 72/01923](#), [H10W 72/01925](#), [H10W 72/01931](#), [H10W 72/01933](#), [H10W 72/01935](#), [H10W 72/01936](#), [H10W 72/01938](#), [H10W 72/01951](#), [H10W 72/01953](#), [H10W 72/01955](#), [H10W 72/01961](#) and [H10W 72/01971](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01904 . . . {using temporary auxiliary members, e.g. using sacrificial coatings or handle substrates}

WARNING

Groups [H10W 72/01904](#) - [H10W 72/01908](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/019](#). Groups [H10W 72/01](#), [H10W 72/019](#) and [H10W 72/01904](#) should be considered in order to perform a complete search.

- N H10W 72/01908 . . . {using permanent auxiliary members, e.g. using alignment marks}
- N H10W 72/01921 . . . {using local deposition}

WARNING

Groups [H10W 72/01921](#), [H10W 72/01923](#) and [H10W 72/01925](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/019](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01923 . . . {in liquid form, e.g. by dispensing droplets or by screen printing}
- N H10W 72/01925 . . . {in solid form}
- N H10W 72/01931 . . . {using blanket deposition}

WARNING

Groups [H10W 72/01931](#), [H10W 72/01933](#), [H10W 72/01935](#), [H10W 72/01936](#) and [H10W 72/01938](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/019](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/01933 . . . {in liquid form, e.g. spin coating, spray coating or immersion coating}
- N H10W 72/01935 . . . {by plating, e.g. electroless plating or electroplating}
- N H10W 72/01936 . . . {in solid form, e.g. by using a powder or by laminating a foil}
- N H10W 72/01938 . . . {in gaseous form, e.g. by CVD or PVD}

- N H10W 72/01951 . . . {Changing the shapes of bond pads}
- WARNING
Groups [H10W 72/01951](#), [H10W 72/01953](#) and [H10W 72/01955](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/019](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01953 . . . {by etching}
- N H10W 72/01955 . . . {by using masks}
- N H10W 72/01961 . . . {Chemical or physical modification, e.g. by sintering or anodisation (patterning [H10W 72/01951](#))}
- WARNING
Groups [H10W 72/01961](#) - [H10W 72/01971](#) are incomplete pending reclassification of documents from groups [H10W 72/01](#) and [H10W 72/019](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/01971 . . . {Cleaning, e.g. oxide removal}
- N H10W 72/0198 . . {batch processes}
- WARNING
Group [H10W 72/0198](#) is incomplete pending reclassification of documents from group [H10W 72/01](#).
Groups [H10W 72/01](#) and [H10W 72/0198](#) should be considered in order to perform a complete search.
- N H10W 72/071 . . {Connecting or disconnecting}
- N H10W 72/0711 . . {Apparatus therefor}
- N H10W 72/07113 . . . {Means for calibration}
- N H10W 72/07118 . . . {Means for cleaning, e.g. brushes}
- N H10W 72/07125 . . . {Means for controlling the bonding environment, e.g. valves or vacuum pumps}
- N H10W 72/07131 . . . {Means for applying material, e.g. for deposition or forming coatings}
- N H10W 72/07139 . . . {Means for protection against electrical discharge}
- N H10W 72/07141 . . . {Means for applying energy, e.g. ovens or lasers}
- N H10W 72/07152 . . . {Means for cooling}
- N H10W 72/07163 . . . {Means for mechanical processing, e.g. for planarising, pressing, stamping or drilling}
- N H10W 72/07168 . . . {Means for storing or moving the material for the connector}
- N H10W 72/07173 . . . {Means for moving chips, wafers or other parts, e.g. conveyor belts}
- N H10W 72/07178 . . . {Means for aligning}
- N H10W 72/07183 . . . {Means for monitoring}
- N H10W 72/07188 . . . {Apparatus chuck}
- N H10W 72/072 . . {of bump connectors}
- N H10W 72/07202 . . . {using auxiliary members}
- Q H10W 72/07204 . . . {using temporary auxiliary members, e.g. sacrificial coatings}
- WARNING
Group [H10W 72/07204](#) is impacted by reclassification into group [H10W 72/07207](#).

Groups [H10W 72/07204](#) and [H10W 72/07207](#) should be considered in order to perform a complete search.

N H10W 72/07207 {Temporary substrates, e.g. removable substrates}

WARNING

Group [H10W 72/07207](#) is incomplete pending reclassification of documents from group [H10W 72/07204](#).

Groups [H10W 72/07204](#) and [H10W 72/07207](#) should be considered in order to perform a complete search.

N H10W 72/07211 . . . {Treating the bond pad before connecting, e.g. by applying flux or cleaning}

N H10W 72/07221 . . . {Aligning}

N H10W 72/07223 {Active alignment, e.g. using optical alignment using marks or sensors}

N H10W 72/07227 {involving guiding structures, e.g. spacers or supporting members}

N H10W 72/07231 . . . {Techniques}

Q H10W 72/07232 {Compression bonding, e.g. thermocompression bonding}

WARNING

Group [H10W 72/07232](#) is impacted by reclassification into groups [H10W 72/00](#), [H10W 72/07332](#), [H10W 72/07532](#), [H10W 72/07632](#) and [H10W 95/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Q H10W 72/07233 {Ultrasonic bonding, e.g. thermosonic bonding}

WARNING

Group [H10W 72/07233](#) is impacted by reclassification into groups [H10W 72/00](#), [H10W 72/07333](#), [H10W 72/07533](#), [H10W 72/07633](#) and [H10W 95/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10W 72/07234 {Using a reflow oven}

N H10W 72/07235 {Applying EM radiation, e.g. induction heating or using a laser}

Q H10W 72/07236 {Soldering or alloying}

WARNING

Group [H10W 72/07236](#) is impacted by reclassification into groups [H10W 72/00](#), [H10W 72/07336](#), [H10W 72/07536](#), [H10W 72/07636](#) and [H10W 95/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

N H10W 72/07237 {using a polymer adhesive, e.g. an adhesive based on silicone or epoxy}

N H10W 72/07241 . . . {Controlling the environment, e.g. atmosphere composition or temperature}

N H10W 72/07251 . . . {characterised by changes in properties of the bump connectors during connecting}

N H10W 72/07252 {changes in structures or sizes}

N H10W 72/07253 {changes in shapes}

N H10W 72/07254 {changes in dispositions}

N H10W 72/07255 {changes in materials}

N H10W 72/07261 . . . {with the bump connectors facing upwards, i.e. not in flip-chip orientation}

N H10W 72/073 . . {of die-attach connectors}

N H10W 72/07302 . . . {using an auxiliary member}

- N H10W 72/07304 {the auxiliary member being temporary, e.g. a sacrificial coating}
- N H10W 72/07307 {the auxiliary member being a temporary substrate, e.g. a removable substrate}
- N H10W 72/07311 . . . {Treating the bonding area before connecting, e.g. by applying flux or cleaning}
- N H10W 72/07321 . . . {Aligning}
- N H10W 72/07323 {Active alignment, e.g. using optical alignment using marks or sensors}
- N H10W 72/07327 {involving guiding structures, e.g. spacers or supporting members}
- N H10W 72/07331 . . . {Connecting techniques}
- N H10W 72/07332 {Compression bonding, e.g. thermocompression bonding}

WARNING

Group [H10W 72/07332](#) is incomplete pending reclassification of documents from group [H10W 72/07232](#).

Groups [H10W 72/07232](#) and [H10W 72/07332](#) should be considered in order to perform a complete search.

- N H10W 72/07333 {Ultrasonic bonding, e.g. thermosonic bonding}

WARNING

Group [H10W 72/07333](#) is incomplete pending reclassification of documents from group [H10W 72/07233](#).

Groups [H10W 72/07233](#) and [H10W 72/07333](#) should be considered in order to perform a complete search.

- N H10W 72/07334 {Using a reflow oven}
- N H10W 72/07335 {Applying EM radiation, e.g. induction heating or using a laser}
- N H10W 72/07336 {Soldering or alloying}

WARNING

Group [H10W 72/07336](#) is incomplete pending reclassification of documents from group [H10W 72/07236](#).

Groups [H10W 72/07236](#) and [H10W 72/07336](#) should be considered in order to perform a complete search.

- N H10W 72/07337 {using a polymer adhesive, e.g. an adhesive based on silicone or epoxy}
- N H10W 72/07338 {hardening the adhesive by curing, e.g. thermosetting}
- N H10W 72/07339 {hardening the adhesive by cooling, e.g. thermoplastics}
- N H10W 72/07341 . . . {Controlling the bonding environment, e.g. atmosphere composition or temperature}
- N H10W 72/07351 . . . {characterised by changes in properties of the die-attach connectors during connecting}
- N H10W 72/07352 {changes in structures or sizes}
- N H10W 72/07353 {changes in shapes}
- N H10W 72/07354 {changes in dispositions}
- N H10W 72/07355 {changes in materials}
- N H10W 72/074 . . . {of anisotropic conductive adhesives}

WARNING

Group [H10W 72/074](#) is incomplete pending reclassification of documents from group [H10W 72/30](#).

Groups [H10W 72/30](#) and [H10W 72/074](#) should be considered in order to perform a complete search.

- N H10W 72/075 . . . {of bond wires}

- N H10W 72/07502 . . . {using an auxiliary member}
- N H10W 72/07504 {the auxiliary member being temporary, e.g. a sacrificial coating}
- N H10W 72/07507 {the auxiliary member being a temporary substrate, e.g. a removable substrate}
- N H10W 72/07511 . . . {Treating the bonding area before connecting, e.g. by applying flux or cleaning}
- N H10W 72/07521 . . . {Aligning}
- N H10W 72/07523 {Active alignment, e.g. using optical alignment using marks or sensors}
- N H10W 72/07527 {involving guiding structures, e.g. spacers or supporting members}
- N H10W 72/07531 . . . {Techniques}
- N H10W 72/07532 {Compression bonding, e.g. thermocompression bonding}

WARNING

Group [H10W 72/07532](#) is incomplete pending reclassification of documents from group [H10W 72/07232](#).

Groups [H10W 72/07232](#) and [H10W 72/07532](#) should be considered in order to perform a complete search.

- N H10W 72/07533 {Ultrasonic bonding, e.g. thermosonic bonding}

WARNING

Group [H10W 72/07533](#) is incomplete pending reclassification of documents from group [H10W 72/07233](#).

Groups [H10W 72/07233](#) and [H10W 72/07533](#) should be considered in order to perform a complete search.

- N H10W 72/07535 {Applying EM radiation, e.g. induction heating or using a laser}
- N H10W 72/07536 {Soldering or alloying}

WARNING

Group [H10W 72/07536](#) is incomplete pending reclassification of documents from group [H10W 72/07236](#).

Groups [H10W 72/07236](#) and [H10W 72/07536](#) should be considered in order to perform a complete search.

- N H10W 72/07537 {using a polymer adhesive, e.g. an adhesive based on silicone or epoxy}
- N H10W 72/07541 . . . {Controlling the environment, e.g. atmosphere composition or temperature}
- N H10W 72/07551 {characterised by changes in properties of the bond wires during the connecting}
- N H10W 72/07552 {changes in structures or sizes}
- N H10W 72/07553 {changes in shapes}
- N H10W 72/07554 {changes in dispositions}
- N H10W 72/07555 {changes in materials}
- N H10W 72/076 . . {of strap connectors}
- N H10W 72/07602 . . . {using an auxiliary member}
- N H10W 72/07604 {the auxiliary member being temporary, e.g. a sacrificial coating}
- N H10W 72/07607 {the auxiliary member being a temporary substrate, e.g. a removable substrate}
- N H10W 72/07611 . . . {Treating the bonding area before connecting, e.g. by applying flux or cleaning}
- N H10W 72/07621 . . . {Aligning}
- N H10W 72/07623 {Active alignment, e.g. using optical alignment using marks or sensors}
- N H10W 72/07627 {involving guiding structures, e.g. spacers or supporting members}

- N H10W 72/07631 . . . {Techniques}
- N H10W 72/07632 . . . {Compression bonding, e.g. thermocompression bonding}
- WARNING
Group [H10W 72/07632](#) is incomplete pending reclassification of documents from group [H10W 72/07232](#).
Groups [H10W 72/07232](#) and [H10W 72/07632](#) should be considered in order to perform a complete search.
- N H10W 72/07633 . . . {Ultrasonic bonding, e.g. thermosonic bonding}
- WARNING
Group [H10W 72/07633](#) is incomplete pending reclassification of documents from group [H10W 72/07233](#).
Groups [H10W 72/07233](#) and [H10W 72/07633](#) should be considered in order to perform a complete search.
- N H10W 72/07635 . . . {Applying EM radiation, e.g. induction heating or using a laser}
- N H10W 72/07636 . . . {Soldering or alloying}
- WARNING
Group [H10W 72/07636](#) is incomplete pending reclassification of documents from group [H10W 72/07236](#).
Groups [H10W 72/07236](#) and [H10W 72/07636](#) should be considered in order to perform a complete search.
- N H10W 72/07637 . . . {using a polymer adhesive, e.g. an adhesive based on silicone or epoxy}
- N H10W 72/07641 . . . {Controlling the environment, e.g. atmosphere composition or temperature}
- N H10W 72/07651 . . . {characterised by changes in properties of the strap connectors during connecting}
- N H10W 72/07652 . . . {changes in structures or sizes}
- N H10W 72/07653 . . . {changes in shapes}
- N H10W 72/07654 . . . {changes in dispositions}
- N H10W 72/07655 . . . {changes in materials}
- N H10W 72/077 . . {Connecting of TAB connectors}
- Q H10W 72/20 . Bump connectors, e.g. solder bumps or copper pillars; Dummy bumps; Thermal bumps
- WARNING
Group [H10W 72/20](#) is incomplete pending reclassification of documents from group [H10W 72/00](#). Group [H10W 72/20](#) is also impacted by reclassification into groups [H10W 72/221](#), [H10W 72/222](#), [H10W 72/223](#), [H10W 72/224](#), [H10W 72/225](#), [H10W 72/227](#), [H10W 72/228](#), [H10W 72/231](#), [H10W 72/232](#), [H10W 72/234](#), [H10W 72/235](#), [H10W 72/237](#), [H10W 72/241](#), [H10W 72/242](#), [H10W 72/244](#), [H10W 72/245](#), [H10W 72/247](#), [H10W 72/248](#), [H10W 72/251](#), [H10W 72/252](#), [H10W 72/253](#), [H10W 72/255](#), [H10W 72/257](#), [H10W 72/2524](#), [H10W 72/2528](#), [H10W 72/261](#), [H10W 72/263](#), [H10W 72/265](#), [H10W 72/267](#), [H10W 72/281](#), [H10W 72/283](#), [H10W 72/285](#), [H10W 72/287](#), [H10W 72/60](#), [H10W 72/621](#), [H10W 72/622](#), [H10W 72/623](#), [H10W 72/624](#), [H10W 72/625](#), [H10W 72/627](#), [H10W 72/631](#), [H10W 72/634](#), [H10W 72/635](#), [H10W 72/637](#), [H10W 72/641](#), [H10W 72/645](#), [H10W 72/647](#), [H10W 72/642](#), [H10W 72/643](#), [H10W 72/646](#), [H10W 72/6478](#), [H10W 72/651](#), [H10W 72/652](#), [H10W 72/653](#), [H10W 72/6528](#), [H10W 72/655](#), [H10W 72/657](#), [H10W 72/681](#), [H10W 72/683](#), [H10W 72/685](#) and [H10W 72/691](#).
All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/221
- • {Structures or relative sizes}
- WARNING
Groups [H10W 72/221](#), [H10W 72/222](#), [H10W 72/223](#), [H10W 72/224](#), [H10W 72/225](#), [H10W 72/227](#) and [H10W 72/228](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/222
- • • {Multilayered bumps, e.g. a coating on top and side surfaces of a bump core}
- N H10W 72/223
- • • • {characterised by the structure of the outermost layers, e.g. multilayered coatings}
- N H10W 72/224
- • • {Bumps having multiple side-by-side cores}
- N H10W 72/225
- • • {Bumps having a filler embedded in a matrix}
- N H10W 72/227
- • • {Multiple bumps having different sizes}
- N H10W 72/228
- • • {Multiple bumps having different structures}
- N H10W 72/231
- • {Shapes}
- WARNING
Groups [H10W 72/231](#), [H10W 72/232](#), [H10W 72/234](#), [H10W 72/235](#) and [H10W 72/237](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/232
- • • {Plan-view shape, i.e. in top view}
- N H10W 72/234
- • • {Cross-sectional shape, i.e. in side view}
- N H10W 72/235
- • • {of outermost layers of multilayered bumps, e.g. bump coating not being conformal on a bump core}
- N H10W 72/237
- • • {Multiple bump connectors having different shapes}
- N H10W 72/241
- • {Dispositions, e.g. layouts}
- WARNING
Groups [H10W 72/241](#), [H10W 72/242](#), [H10W 72/244](#), [H10W 72/245](#), [H10W 72/247](#) and [H10W 72/248](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/242
- • • {relative to the surface, e.g. recessed, protruding}
- N H10W 72/244
- • • {relative to underlying supporting features, e.g. bond pads, RDLs or vias}
- N H10W 72/245
- • • {of outermost layers of multilayered bumps, e.g. bump coating being only on a part of a bump core}
- N H10W 72/247
- • • {Dispositions of multiple bumps}
- N H10W 72/248
- • • • {Top-view layouts, e.g. mirror arrays}
- N H10W 72/251
- • {Materials}
- WARNING
Groups [H10W 72/251](#), [H10W 72/252](#), [H10W 72/2524](#), [H10W 72/2528](#), [H10W 72/253](#), [H10W 72/255](#) and [H10W 72/257](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/252
- • • {comprising solid metals or solid metalloids, e.g. PbSn, Ag or Cu}

- N H10W 72/2524 . . . {Eutectic alloys}
- N H10W 72/2528 . . . {Intermetallic compounds}
- N H10W 72/253 . . {not comprising solid metals or solid metalloids, e.g. polymers or ceramics}
- N H10W 72/255 . . {of outermost layers of multilayered bumps, e.g. material of a coating}
- N H10W 72/257 . . {Multiple bump connectors having different materials}
- N H10W 72/261 . {Functions other than electrical connecting}

WARNING

Groups [H10W 72/261](#), [H10W 72/263](#), [H10W 72/265](#) and [H10W 72/267](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/263 . . {Providing mechanical bonding or support, e.g. dummy bumps}
- N H10W 72/265 . . {Providing thermal transfer, e.g. thermal bumps}
- N H10W 72/267 . . {Multiple bump connectors having different functions}
- N H10W 72/281 . {Auxiliary members}

WARNING

Groups [H10W 72/281](#), [H10W 72/283](#), [H10W 72/285](#) and [H10W 72/287](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/283 . . {Reinforcing structures, e.g. bump collars}
- N H10W 72/285 . . {Alignment aids, e.g. alignment marks}
- N H10W 72/287 . . {Flow barriers}
- N H10W 72/29 . . Bond pads specially adapted therefor
- Q H10W 72/30 . Die-attach connectors

WARNING

Group [H10W 72/30](#) is incomplete pending reclassification of documents from group [H10W 72/00](#). Group [H10W 72/30](#) is also impacted by reclassification into groups [H10W 72/014](#), [H10W 72/074](#), [H10W 72/321](#), [H10W 72/322](#), [H10W 72/323](#), [H10W 72/324](#), [H10W 72/325](#), [H10W 72/327](#), [H10W 72/328](#), [H10W 72/331](#), [H10W 72/332](#), [H10W 72/334](#), [H10W 72/335](#), [H10W 72/337](#), [H10W 72/341](#), [H10W 72/342](#), [H10W 72/344](#), [H10W 72/345](#), [H10W 72/347](#), [H10W 72/348](#), [H10W 72/351](#), [H10W 72/352](#), [H10W 72/353](#), [H10W 72/354](#), [H10W 72/355](#), [H10W 72/357](#), [H10W 72/3524](#), [H10W 72/3528](#), [H10W 72/361](#), [H10W 72/365](#), [H10W 72/367](#), [H10W 72/381](#), [H10W 72/383](#), [H10W 72/385](#), [H10W 72/387](#), [H10W 72/40](#) and [H10W 72/49](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/321 . {Structures or relative sizes of die-attach connectors}

WARNING

Groups [H10W 72/321](#), [H10W 72/322](#), [H10W 72/323](#), [H10W 72/324](#), [H10W 72/325](#), [H10W 72/327](#) and [H10W 72/328](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/322 . . {Multilayered die-attach connectors, e.g. a coating on a top surface of a core}

- N H10W 72/323 . . . {characterised by the structures of the outermost layers, e.g. multilayered coatings}
- N H10W 72/324 . . . {Die-attach connectors having multiple side-by-side cores}
- N H10W 72/325 . . . {Die-attach connectors having a filler embedded in a matrix}
- N H10W 72/327 . . . {Multiple die-attach connectors having different sizes}
- N H10W 72/328 . . . {Multiple die-attach connectors having different structures}
- N H10W 72/331 . . {Shapes of die-attach connectors}

WARNING

Groups [H10W 72/331](#), [H10W 72/332](#), [H10W 72/334](#), [H10W 72/335](#) and [H10W 72/337](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/332 . . . {Plan-view shape, i.e. in top view}
- N H10W 72/334 . . . {Cross-sectional shape, i.e. in side view}
- N H10W 72/335 . . . {of outermost layers of multilayered die-attach connectors, e.g. coating not being conformal on a core}
- N H10W 72/337 . . . {Multiple die-attach connectors having different shapes}
- N H10W 72/341 . . {Dispositions of die-attach connectors, e.g. layouts}

WARNING

Groups [H10W 72/341](#), [H10W 72/342](#), [H10W 72/344](#), [H10W 72/345](#), [H10W 72/347](#) and [H10W 72/348](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/342 . . . {relative to the surface, e.g. recessed, protruding}
- N H10W 72/344 . . . {relative to underlying supporting features, e.g. bond pads, RDLs or vias}
- N H10W 72/345 . . . {of outermost layers of multilayered die-attach connectors, e.g. coating being only on a part of a core}
- N H10W 72/347 . . . {Dispositions of multiple die-attach connectors}
- N H10W 72/348 {Top-view layouts, e.g. mirror arrays}
- N H10W 72/351 . . {Materials of die-attach connectors}

WARNING

Groups [H10W 72/351](#), [H10W 72/352](#), [H10W 72/3524](#), [H10W 72/3528](#), [H10W 72/353](#), [H10W 72/354](#), [H10W 72/355](#) and [H10W 72/357](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/352 . . . {comprising metals or metalloids, e.g. solders}
- N H10W 72/3524 {Eutectic alloys}
- N H10W 72/3528 {Intermetallic compounds}
- N H10W 72/353 . . . {not comprising solid metals or solid metalloids, e.g. ceramics}
- N H10W 72/354 {comprising polymers}
- N H10W 72/355 . . . {of outermost layers of multilayered die-attach connectors, e.g. material of a coating}
- N H10W 72/357 . . . {Multiple die-attach connectors having different materials}

- N H10W 72/361
- • {Functions of die-attach connectors, other than mechanically connecting}
- WARNING
Groups [H10W 72/361](#), [H10W 72/365](#) and [H10W 72/367](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/365
- • • {Providing thermal transfer}
- N H10W 72/367
- • • {Multiple die-attach connectors having different functions}
- N H10W 72/381
- • {Auxiliary members}
- WARNING
Groups [H10W 72/381](#), [H10W 72/383](#), [H10W 72/385](#) and [H10W 72/387](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/383
- • • {Reinforcing structures, e.g. collars}
- N H10W 72/385
- • • {Alignment aids, e.g. alignment marks}
- N H10W 72/387
- • • {Flow barriers}
- N H10W 72/40
- Anisotropic conductive adhesives
- WARNING
Groups [H10W 72/40](#) and [H10W 72/49](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/30](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/49
- • Bond pads specially adapted therefor
- Q H10W 72/50
- Bond wires
- WARNING
Group [H10W 72/50](#) is incomplete pending reclassification of documents from group [H10W 72/00](#). Group [H10W 72/50](#) is also impacted by reclassification into groups [H10W 72/521](#), [H10W 72/522](#), [H10W 72/523](#), [H10W 72/524](#), [H10W 72/525](#), [H10W 72/527](#), [H10W 72/528](#), [H10W 72/531](#), [H10W 72/533](#), [H10W 72/534](#), [H10W 72/535](#), [H10W 72/537](#), [H10W 72/536](#), [H10W 72/5363](#), [H10W 72/5366](#), [H10W 72/5368](#), [H10W 72/541](#), [H10W 72/543](#), [H10W 72/547](#), [H10W 72/5434](#), [H10W 72/5438](#), [H10W 72/5473](#), [H10W 72/5475](#), [H10W 72/5445](#), [H10W 72/5449](#), [H10W 72/5453](#), [H10W 72/551](#), [H10W 72/552](#), [H10W 72/5522](#), [H10W 72/5524](#), [H10W 72/5525](#), [H10W 72/553](#), [H10W 72/555](#), [H10W 72/557](#), [H10W 72/5528](#), [H10W 72/581](#), [H10W 72/583](#) and [H10W 72/585](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/521
- • {Structures or relative sizes of bond wires}
- WARNING
Groups [H10W 72/521](#), [H10W 72/522](#), [H10W 72/523](#), [H10W 72/524](#), [H10W 72/525](#), [H10W 72/527](#) and [H10W 72/528](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/50](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/522
- • • {Multilayered bond wires, e.g. having a coating concentric around a core}

- N H10W 72/523 . . . {characterised by the structures of the outermost layers, e.g. multilayered coatings}
- N H10W 72/524 . . . {Bond wires having multiple distinct cores}
- N H10W 72/525 . . . {Bond wires having a filler embedded in a matrix}
- N H10W 72/527 . . . {Multiple bond wires having different sizes}
- N H10W 72/528 . . . {Multiple bond wires having different structures}
- N H10W 72/531 . . {Shapes of wire connectors}

WARNING

Groups [H10W 72/531](#), [H10W 72/533](#), [H10W 72/534](#), [H10W 72/535](#), [H10W 72/536](#), [H10W 72/5363](#), [H10W 72/5366](#), [H10W 72/5368](#) and [H10W 72/537](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/50](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/533 . . . {Cross-sectional shape}
- N H10W 72/534 {being rectangular}
- N H10W 72/535 . . . {Shapes of outermost layers of multilayered bond wires, e.g. coating not being conformal on a core}
- N H10W 72/536 . . . {the connected ends being ball-shaped}
- N H10W 72/5363 . . . {the connected ends being wedge-shaped}
- N H10W 72/5366 . . . {the bond wires having kinks}
- N H10W 72/5368 . . . {the bond wires having helical loops}
- N H10W 72/537 . . . {Multiple bond wires having different shapes}
- N H10W 72/541 . . {Dispositions of bond wires}

WARNING

Groups [H10W 72/541](#), [H10W 72/543](#), [H10W 72/5434](#), [H10W 72/5438](#), [H10W 72/5445](#), [H10W 72/5449](#), [H10W 72/5453](#), [H10W 72/547](#), [H10W 72/5473](#) and [H10W 72/5475](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/50](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/543 . . . {of outermost layers of multilayered bond wires, e.g. coating being only on a part of a core}
- N H10W 72/5434 . . . {the connected ends being on auxiliary connecting means on bond pads, e.g. on other bond wires}
- N H10W 72/5438 . . . {the bond wires having multiple connections on the same bond pad}
- N H10W 72/5445 . . . {being orthogonal to a side surface of the chip, e.g. parallel arrangements}
- N H10W 72/5449 . . . {not being orthogonal to a side surface of the chip, e.g. fan-out arrangements}
- N H10W 72/5453 . . . {connecting between multiple bond pads on a chip, e.g. daisy chain}
- N H10W 72/547 . . . {Dispositions of multiple bond wires}
- N H10W 72/5473 {multiple bond wires connected to a common bond pad}
- N H10W 72/5475 {multiple bond wires connected to common bond pads at both ends of the wires}
- N H10W 72/551 . . {Materials of bond wires}

WARNING

Groups [H10W 72/551](#), [H10W 72/552](#), [H10W 72/5522](#), [H10W 72/5524](#), [H10W 72/5525](#), [H10W 72/5528](#), [H10W 72/553](#), [H10W 72/555](#) and

[H10W 72/557](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/50](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/552 • • • {comprising metals or metalloids, e.g. silver}
- N H10W 72/5522 • • • • {comprising gold [Au]}
- N H10W 72/5524 • • • • {comprising aluminium [Al]}
- N H10W 72/5525 • • • • {comprising copper [Cu]}
- N H10W 72/5527 • • • • {Eutectic alloys}
- N H10W 72/5528 • • • • {Intermetallic compounds}
- N H10W 72/553 • • • {not comprising solid metals or solid metalloids, e.g. polymers, ceramics or liquids}
- N H10W 72/555 • • • {of outermost layers of multilayered bond wires, e.g. material of a coating}
- N H10W 72/557 • • • {Multiple bond wires having different materials}
- N H10W 72/581 • • {Auxiliary members, e.g. flow barriers}

WARNING

Groups [H10W 72/581](#), [H10W 72/583](#) and [H10W 72/585](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/50](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/583 • • • {Reinforcing structures}
- N H10W 72/585 • • • {Alignment aids, e.g. alignment marks}
- N H10W 72/59 • • Bond pads specially adapted therefor
- Q H10W 72/60 • Strap connectors, e.g. thick copper clips for grounding of power devices

WARNING

Group [H10W 72/60](#) is incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#). Group [H10W 72/60](#) is also impacted by reclassification into groups [H10W 72/621](#), [H10W 72/622](#), [H10W 72/623](#), [H10W 72/624](#), [H10W 72/625](#), [H10W 72/627](#), [H10W 72/631](#), [H10W 72/634](#), [H10W 72/635](#), [H10W 72/637](#), [H10W 72/641](#), [H10W 72/645](#), [H10W 72/647](#), [H10W 72/646](#), [H10W 72/642](#), [H10W 72/643](#), [H10W 72/6478](#), [H10W 72/651](#), [H10W 72/652](#), [H10W 72/653](#), [H10W 72/6528](#), [H10W 72/655](#), [H10W 72/657](#), [H10W 72/681](#), [H10W 72/683](#), [H10W 72/685](#) and [H10W 72/701](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/621 • • {Structures or relative sizes of strap connectors}

WARNING

Groups [H10W 72/621](#), [H10W 72/622](#), [H10W 72/623](#), [H10W 72/624](#), [H10W 72/625](#) and [H10W 72/627](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#), [H10W 72/20](#) and [H10W 72/60](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/622 • • • {Multilayered strap connectors, e.g. having a coating on a lowermost surface of a core}
- N H10W 72/623 • • • • {characterised by the structures of the outermost layers, e.g. multilayered coatings}
- N H10W 72/624 • • • {Strap connectors having multiple distinct cores}

- N H10W 72/625 . . . {Strap connectors having a filler embedded in a matrix}
- N H10W 72/627 . . . {Multiple strap connectors having different structures or shapes}
- N H10W 72/631 . . {Shapes of strap connectors}
- WARNING
Groups [H10W 72/631](#), [H10W 72/634](#), [H10W 72/635](#) and [H10W 72/637](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#), [H10W 72/20](#) and [H10W 72/60](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/634 . . . {Cross-sectional shape}
- N H10W 72/635 . . . {of outermost layers of multilayered strap connectors, e.g. coating not being conformal on a core}
- N H10W 72/637 . . . {Multiple strap connectors having different shapes}
- N H10W 72/641 . . {Dispositions of strap connectors}
- WARNING
Groups [H10W 72/641](#), [H10W 72/642](#), [H10W 72/643](#), [H10W 72/645](#), [H10W 72/646](#), [H10W 72/647](#) and [H10W 72/6478](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#), [H10W 72/20](#) and [H10W 72/60](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/642 . . . {being orthogonal to a side surface of the chip, e.g. in parallel arrangements}
- N H10W 72/643 . . . {not being orthogonal to a side surface of the chip, e.g. in fan-out arrangements}
- N H10W 72/644 . . . {connecting directly between multiple pads on a chip}
- N H10W 72/645 . . . {of outermost layers of multilayered strap connectors, e.g. coating being only on a part of a core}
- N H10W 72/646 . . . {the connected ends being on auxiliary connecting means on bond pads, e.g. on a bump connector}
- N H10W 72/647 . . . {Dispositions of multiple strap connectors}
- N H10W 72/6478 {multiple strap connectors connecting to a common bond pad}
- N H10W 72/651 . . {Materials of strap connectors}
- WARNING
Groups [H10W 72/651](#), [H10W 72/652](#), [H10W 72/6528](#), [H10W 72/653](#), [H10W 72/655](#) and [H10W 72/657](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#), [H10W 72/20](#) and [H10W 72/60](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/652 . . . {comprising metals or metalloids, e.g. silver}
- N H10W 72/6524 {Eutectic alloys}
- N H10W 72/6528 {Intermetallic compounds}
- N H10W 72/653 . . . {not comprising solid metals or solid metalloids, e.g. polymers, ceramics or liquids}
- N H10W 72/655 . . . {of outermost layers of multilayered strap connectors, e.g. material of a coating}
- N H10W 72/657 . . . {Multiple strap connectors having different materials}

- N H10W 72/681
- {Auxiliary members, e.g. flow barriers}
- WARNING
Groups [H10W 72/681](#), [H10W 72/683](#) and [H10W 72/685](#) are incomplete pending reclassification of documents from groups [H10W 72/00](#), [H10W 72/20](#) and [H10W 72/60](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/683
- • {Reinforcing structures, e.g. bump collars}
- N H10W 72/685
- • {Alignment aids, e.g. alignment marks}
- N H10W 72/691
- {Bond pads specially adapted therefor}
- WARNING
Group [H10W 72/691](#) is incomplete pending reclassification of documents from groups [H10W 72/00](#) and [H10W 72/20](#).
Groups [H10W 72/00](#), [H10W 72/20](#) and [H10W 72/691](#) should be considered in order to perform a complete search.
- N H10W 72/701
- {Tape-automated bond [TAB] connectors}
- WARNING
Group [H10W 72/701](#) is incomplete pending reclassification of documents from group [H10W 72/60](#).
Groups [H10W 72/60](#) and [H10W 72/701](#) should be considered in order to perform a complete search.
- N H10W 72/709
- {Bond pads specially adapted therefor}
- Q H10W 72/801
- {Interconnections on sidewalls of containers}
- WARNING
Group [H10W 72/801](#) is impacted by reclassification into group [H10W 72/812](#).
Groups [H10W 72/801](#) and [H10W 72/812](#) should be considered in order to perform a complete search.
- N H10W 72/812
- {Interconnections on sidewalls of encapsulations, e.g. conductive traces on molded resins}
- WARNING
Group [H10W 72/812](#) is incomplete pending reclassification of documents from group [H10W 72/801](#).
Groups [H10W 72/801](#) and [H10W 72/812](#) should be considered in order to perform a complete search.
- Q H10W 72/823
- {Interconnections through encapsulations, e.g. pillars through molded resin on a lateral side a chip}
- WARNING
Group [H10W 72/823](#) is impacted by reclassification into groups [H10W 20/20](#), [H10W 20/211](#), [H10W 20/215](#), [H10W 20/222](#), [H10W 76/132](#), [H10W 76/134](#), [H10W 76/153](#), [H10W 76/157](#) and [H10W 76/165](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 72/834
- {Interconnections on sidewalls of chips}
- N H10W 72/851
- {Dispositions of multiple connectors or interconnections}
- N H10W 72/853
- • {On the same surface}
- N H10W 72/856
- • {Bump connectors and die-attach connectors (bumps embedded in underfills [H10W 74/15](#))}

- N H10W 72/859 . . . {Bump connectors and bond wires}
- N H10W 72/862 . . . {Bump connectors and strap connectors}
- N H10W 72/865 . . . {Die-attach connectors and bond wires}
- N H10W 72/868 . . . {Die-attach connectors and strap connectors}
- N H10W 72/871 . . . {Bond wires and strap connectors}
- N H10W 72/874 . . {On different surfaces}
- N H10W 72/877 . . . {Bump connectors and die-attach connectors}
- N H10W 72/879 . . . {Bump connectors and bond wires}
- N H10W 72/881 . . . {Bump connectors and strap connectors}
- N H10W 72/884 . . . {Die-attach connectors and bond wires}
- N H10W 72/886 . . . {Die-attach connectors and strap connectors}
- N H10W 72/889 . . . {Bond wires and strap connectors}
- Q H10W 72/90 . Bond pads, in general

WARNING

Group [H10W 72/90](#) is impacted by reclassification into groups [H10W 72/921](#), [H10W 72/922](#), [H10W 72/9223](#), [H10W 72/9226](#), [H10W 72/923](#), [H10W 72/9232](#), [H10W 72/924](#), [H10W 72/925](#), [H10W 72/926](#), [H10W 72/927](#), [H10W 72/931](#), [H10W 72/932](#), [H10W 72/934](#), [H10W 72/936](#), [H10W 72/941](#), [H10W 72/9413](#), [H10W 72/9415](#), [H10W 72/942](#), [H10W 72/944](#), [H10W 72/9445](#), [H10W 72/951](#), [H10W 72/952](#), [H10W 72/953](#), [H10W 72/957](#), [H10W 72/9524](#), [H10W 72/9528](#), [H10W 72/961](#), [H10W 72/963](#), [H10W 72/965](#), [H10W 72/967](#), [H10W 72/981](#), [H10W 72/983](#), [H10W 72/985](#) and [H10W 72/987](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/921 . . {Structures or relative sizes of bond pads}

WARNING

Groups [H10W 72/921](#), [H10W 72/922](#), [H10W 72/9223](#), [H10W 72/9226](#), [H10W 72/923](#), [H10W 72/9232](#), [H10W 72/924](#), [H10W 72/925](#), [H10W 72/926](#) and [H10W 72/927](#) are incomplete pending reclassification of documents from group [H10W 72/90](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/922 . . . {Bond pads being integral with underlying chip-level interconnections}
- N H10W 72/9223 {with redistribution layers [RDL]}
- N H10W 72/9226 {with via interconnections}
- N H10W 72/923 . . . {Bond pads having multiple stacked layers}
- N H10W 72/9232 {with additional elements interposed between layers}
- N H10W 72/924 . . . {Bond pads having multiple side-by-side cores}
- N H10W 72/925 . . . {Bond pads having a filler embedded in a matrix}
- N H10W 72/926 . . . {Multiple bond pads having different sizes}
- N H10W 72/927 . . . {Multiple bond pads having different structures}
- N H10W 72/931 . {Shapes of bond pads}

WARNING

Groups [H10W 72/931](#), [H10W 72/932](#), [H10W 72/934](#) and [H10W 72/936](#) are incomplete pending reclassification of documents from group [H10W 72/90](#). All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/932 . . . {Plan-view shape, i.e. in top view}
- N H10W 72/934 . . . {Cross-sectional shape, i.e. in side view}
- N H10W 72/936 . . . {Multiple bond pads having different shapes}
- N H10W 72/941 . . {Dispositions of bond pads}

WARNING

Groups [H10W 72/941](#), [H10W 72/9413](#), [H10W 72/9415](#), [H10W 72/942](#), [H10W 72/944](#) and [H10W 72/9445](#) are incomplete pending reclassification of documents from group [H10W 72/90](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/9413 . . . {on encapsulations}
- N H10W 72/9415 . . . {relative to the surface, e.g. recessed, protruding}
- N H10W 72/942 . . . {relative to underlying supporting features, e.g. bond pads, RDLs or vias}
- N H10W 72/944 . . . {Dispositions of multiple bond pads}
- N H10W 72/9445 {Top-view layouts, e.g. mirror arrays}
- N H10W 72/951 . . {Materials of bond pads}

WARNING

Groups [H10W 72/951](#), [H10W 72/952](#), [H10W 72/9524](#), [H10W 72/9528](#), [H10W 72/953](#) and [H10W 72/957](#) are incomplete pending reclassification of documents from group [H10W 72/90](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/952 . . . {comprising metals or metalloids, e.g. PbSn, Ag or Cu}
- N H10W 72/9524 {Eutectic alloys}
- N H10W 72/9528 {Intermetallic compounds}
- N H10W 72/953 . . . {not comprising solid metals or solid metalloids, e.g. polymers, ceramics or liquids}
- N H10W 72/957 . . . {Multiple bond pads having different materials}
- N H10W 72/961 . . {Functions of bonds pads}

WARNING

Groups [H10W 72/961](#), [H10W 72/963](#), [H10W 72/965](#) and [H10W 72/967](#) are incomplete pending reclassification of documents from group [H10W 72/90](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/963 . . . {Providing mechanical bonding or support, e.g. dummy bond pads}
- N H10W 72/965 . . . {Providing thermal transfer}
- N H10W 72/967 . . . {Multiple bond pads having different functions}
- N H10W 72/981 . . {Auxiliary members, e.g. spacers}

WARNING

Groups [H10W 72/981](#), [H10W 72/983](#), [H10W 72/985](#) and [H10W 72/987](#) are incomplete pending reclassification of documents from group [H10W 72/90](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 72/983 . . . {Reinforcing structures, e.g. collars}
- N H10W 72/985 . . . {Alignment aids, e.g. alignment marks}
- N H10W 72/987 . . . {Flow barriers}

N	H10W 74/00	Encapsulations, e.g. protective coatings
N	H10W 74/01	<ul style="list-style-type: none"> • Manufacture or treatment <p><u>WARNING</u> Group H10W 74/01 is incomplete pending reclassification of documents from group H10W 99/00. Groups H10W 99/00 and H10W 74/01 should be considered in order to perform a complete search.</p>
N	H10W 74/012	<ul style="list-style-type: none"> • • {of encapsulations on active surfaces of flip-chip devices, e.g. forming underfills}
N	H10W 74/014	<ul style="list-style-type: none"> • • {using batch processing}
N	H10W 74/016	<ul style="list-style-type: none"> • • {using moulds}
N	H10W 74/017	<ul style="list-style-type: none"> • • • {Auxiliary layers for moulds, e.g. release layers or layers preventing residue}
N	H10W 74/019	<ul style="list-style-type: none"> • • {using temporary auxiliary substrates (H10W 74/017 takes precedence)}
Q	H10W 74/10	<ul style="list-style-type: none"> • characterised by their shape or disposition <p><u>WARNING</u> Group H10W 74/10 is impacted by reclassification into group H10W 74/15. Groups H10W 74/10 and H10W 74/15 should be considered in order to perform a complete search.</p>
N	H10W 74/111	<ul style="list-style-type: none"> • • {the semiconductor body being completely enclosed}
N	H10W 74/114	<ul style="list-style-type: none"> • • • {by a substrate and the encapsulations}
N	H10W 74/117	<ul style="list-style-type: none"> • • • • {the substrate having spherical bumps for external connection}
N	H10W 74/121	<ul style="list-style-type: none"> • • • {by multiple encapsulations, e.g. by a thin protective coating and a thick encapsulation}
N	H10W 74/124	<ul style="list-style-type: none"> • • • {the encapsulations having cavities other than that occupied by chips}
N	H10W 74/127	<ul style="list-style-type: none"> • • • {characterised by arrangements for sealing or adhesion}
N	H10W 74/129	<ul style="list-style-type: none"> • • • {forming a chip-scale package [CSP]}
N	H10W 74/131	<ul style="list-style-type: none"> • • {the semiconductor body being only partially enclosed}
N	H10W 74/134	<ul style="list-style-type: none"> • • • {the encapsulations being in grooves in the semiconductor body}
N	H10W 74/137	<ul style="list-style-type: none"> • • • {the encapsulations being directly on the semiconductor body (H10W 74/134 takes precedence)}
N	H10W 74/141	<ul style="list-style-type: none"> • • • {the encapsulations being on at least the sidewalls of the semiconductor body}
N	H10W 74/142	<ul style="list-style-type: none"> • • • {the encapsulations exposing the passive side of the semiconductor body}
N	H10W 74/144	<ul style="list-style-type: none"> • • • {the encapsulations comprising foils}
N	H10W 74/147	<ul style="list-style-type: none"> • • • {the encapsulations being multilayered}
N	H10W 74/15	<ul style="list-style-type: none"> • • on active surfaces of flip-chip devices, e.g. underfills <p><u>WARNING</u> Group H10W 74/15 is incomplete pending reclassification of documents from group H10W 74/10. Groups H10W 74/10 and H10W 74/15 should be considered in order to perform a complete search.</p>
N	H10W 74/40	<ul style="list-style-type: none"> • characterised by their materials
N	H10W 74/43	<ul style="list-style-type: none"> • • comprising oxides, nitrides or carbides, e.g. ceramics or glasses
N	H10W 74/47	<ul style="list-style-type: none"> • • comprising organic materials, e.g. plastics or resins
N	H10W 74/473	<ul style="list-style-type: none"> • • • {containing a filler}

- N H10W 74/476 · · · {Organic materials comprising silicon}
- N H10W 74/481 · · · {comprising semiconductor materials}

N H10W 76/00**Containers; Fillings or auxiliary members therefor; Seals**

- N H10W 76/01 · Manufacture or treatment

WARNING

Group [H10W 76/01](#) is incomplete pending reclassification of documents from group [H10W 99/00](#).

Groups [H10W 99/00](#) and [H10W 76/01](#) should be considered in order to perform a complete search.

- N H10W 76/05 · · Providing fillings in containers, e.g. gas filling
- N H10W 76/10 · Containers or parts thereof
- N H10W 76/12 · · characterised by their shape
- N H10W 76/13 · · · Containers comprising a conductive base serving as an interconnection
- N H10W 76/132 · · · · having other interconnections through an insulated passage in the conductive base

WARNING

Groups [H10W 76/132](#) - [H10W 76/165](#) are incomplete pending reclassification of documents from group [H10W 72/823](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 76/134 · · · · having other interconnections parallel to the conductive base
- N H10W 76/136 · · · · having other interconnections perpendicular to the conductive base
- N H10W 76/138 · · · · having another interconnection being formed by a cover plate parallel to the conductive base, e.g. sandwich type
- N H10W 76/15 · · · Containers comprising an insulating or insulated base
- N H10W 76/153 · · · · having interconnections in passages through the insulating or insulated base
- N H10W 76/157 · · · · having interconnections parallel to the insulating or insulated base
- N H10W 76/161 · · · {Containers comprising no base}
- N H10W 76/165 · · · {characterised by interconnections through the top surface of the containers, e.g. in a metal cap}
- N H10W 76/167 · · · {the container walls comprising an aperture, e.g. for pressure control}
- N H10W 76/17 · · characterised by their materials
- N H10W 76/18 · · · Insulating materials, e.g. resins, glasses or ceramics
- N H10W 76/40 · Fillings or auxiliary members in containers, e.g. centering rings (fillings or auxiliary members for thermal protection or control in containers or encapsulations [H10W 40/70](#))
- N H10W 76/42 · · Fillings

NOTE

In this group, the phase of the fillings is determined at the operating temperature of the device.

- N H10W 76/43 · · · Gaseous fillings
- N H10W 76/45 · · · Liquid fillings
- N H10W 76/47 · · · Solid or gel fillings
- N H10W 76/48 · · · Fillings including materials for absorbing or reacting with moisture or other undesired substances

- Q H10W 76/60
- Seals
- WARNING
Group [H10W 76/60](#) is impacted by reclassification into groups [H10W 76/63](#) and [H10W 76/67](#).
Groups [H10W 76/60](#), [H10W 76/63](#) and [H10W 76/67](#) should be considered in order to perform a complete search.
- N H10W 76/63
- • characterised by their shape or disposition, e.g. between cap and walls of a container
- WARNING
Groups [H10W 76/63](#) - [H10W 76/67](#) are incomplete pending reclassification of documents from group [H10W 76/60](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 76/67
- • characterised by their materials
- N H10W 78/00** **Detachable holders for supporting packaged chips in operation**
- N H10W 80/00** **Direct bonding of chips, wafers or substrates**
- NOTE
This group covers direct bonding of:
- chips, e.g. chip-to-chip;
 - wafers having devices and interconnections therein or thereon, e.g. wafer-to-wafer;
 - substrates having devices and interconnections therein or thereon;
 - combinations thereof, e.g. chip-to-wafer.
- N H10W 80/011
- {Manufacture or treatment of pads or other interconnections to be direct bonded}
- N H10W 80/016
- • {Cleaning}
- N H10W 80/023
- • {Applying a coating on the bonding area}
- N H10W 80/031
- • {Changing or setting shapes of the pads}
- N H10W 80/033
- • • {by chemical means, e.g. etching}
- N H10W 80/035
- • • {by heating, e.g. melting or causing diffusion}
- N H10W 80/037
- • • {by mechanical treatment, e.g. by cutting, pressing or stamping}
- N H10W 80/041
- • {Thermally treating}
- N H10W 80/102
- {Controlling the environment during the bonding, e.g. the temperature or pressure}
- N H10W 80/161
- {Aligning}
- N H10W 80/163
- • {using active alignment, e.g. detecting marks and correcting position}
- N H10W 80/165
- • {using passive alignment, e.g. using self-alignment}
- N H10W 80/168
- • {using guiding structures}
- N H10W 80/211
- {using auxiliary members, e.g. aids for protecting the bonding area}
- N H10W 80/301
- {Bonding techniques, e.g. hybrid bonding}
- N H10W 80/312
- • {characterised by the direct bonding of electrically conductive pads}
- N H10W 80/314
- • {characterized by direct bonding of pads or other interconnections}
- N H10W 80/327
- • {characterised by the direct bonding of insulating parts, e.g. of silicon oxide layers}
- N H10W 80/331
- • {characterised by the application of energy for connecting}
- N H10W 80/333
- • • {Compression bonding}

- N H10W 80/334 . . . {Thermocompression bonding}
- N H10W 80/335 . . . {Ultrasonic bonding}
- N H10W 80/337 . . . {causing reflow}
- N H10W 80/338 . . . {using EM radiation or electron beams, e.g. using lasers}
- N H10W 80/339 . . . {using integrated means for heating, e.g. embedded heater}
- N H10W 80/341 . . . {Anodic bonding}
- N H10W 80/701 . {characterised by the pads after the direct bonding}
- N H10W 80/721 . . {having structure or size changed during the connecting}
- N H10W 80/732 . . {having shape changed during the connecting}
- N H10W 80/743 . . {having disposition changed during the connecting}
- N H10W 80/754 . . {having material changed during the connecting}

Q H10W 90/00**Package configurations**NOTE

This group covers:

- the relative positions of multiple chips within a single package, e.g. adjacent chips in a single encapsulation;
- the relative positions of multiple chips within multiple packages, e.g. one encapsulated chip on another encapsulated chip in a "package-on-package" configuration.

WARNING

Group [H10W 90/00](#) is impacted by reclassification into groups [H10B 80/00](#), [H10D 80/00](#), [H10D 80/20](#), [H10D 80/211](#), [H10D 80/213](#), [H10D 80/215](#), [H10D 80/231](#), [H10D 80/251](#), [H10D 80/30](#), [H10F 39/90](#), [H10F 39/95](#), [H10H 29/20](#), [H10H 29/24](#), [H10H 29/30](#), [H10H 29/32](#), [H10H 29/34](#), [H10H 29/345](#), [H10H 29/352](#), [H10H 29/362](#), [H10H 29/37](#), [H10H 29/39](#), [H10H 29/41](#), [H10H 29/45](#), [H10H 29/49](#), [H10K 19/00](#), [H10K 19/10](#), [H10K 19/20](#), [H10K 19/201](#), [H10K 19/202](#), [H10K 19/80](#), [H10K 19/901](#), [H10K 39/601](#), [H10K 39/621](#), [H10K 59/90](#), [H10K 59/95](#), [H10K 65/00](#), [H10W 90/10](#), [H10W 90/15](#), [H10W 90/155](#), [H10W 90/20](#), [H10W 90/22](#), [H10W 90/231](#), [H10W 90/24](#), [H10W 90/26](#), [H10W 90/271](#), [H10W 90/275](#), [H10W 90/28](#), [H10W 90/284](#), [H10W 90/288](#), [H10W 90/291](#), [H10W 90/293](#), [H10W 90/295](#), [H10W 90/701](#), [H10W 90/721](#), [H10W 90/722](#), [H10W 90/723](#), [H10W 90/724](#), [H10W 90/725](#), [H10W 90/726](#), [H10W 90/727](#), [H10W 90/728](#), [H10W 90/729](#), [H10W 90/731](#), [H10W 90/732](#), [H10W 90/733](#), [H10W 90/734](#), [H10W 90/735](#), [H10W 90/736](#), [H10W 90/737](#), [H10W 90/738](#), [H10W 90/739](#), [H10W 90/751](#), [H10W 90/752](#), [H10W 90/753](#), [H10W 90/754](#), [H10W 90/755](#), [H10W 90/756](#), [H10W 90/757](#), [H10W 90/758](#), [H10W 90/759](#), [H10W 90/761](#), [H10W 90/762](#), [H10W 90/763](#), [H10W 90/764](#), [H10W 90/765](#), [H10W 90/766](#), [H10W 90/767](#), [H10W 90/768](#), [H10W 90/769](#), [H10W 90/791](#), [H10W 90/792](#), [H10W 90/794](#), [H10W 90/796](#), [H10W 90/798](#) and [H10W 90/811](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 90/10 . Configurations of laterally-adjacent chips

WARNING

Groups [H10W 90/10](#), [H10W 90/15](#) and [H10W 90/155](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 90/15 . . the laterally-adjacent chips having different thicknesses than each other
- N H10W 90/155 . . {the laterally-adjacent chips comprising dummy chips}

- N H10W 90/20
- Configurations of stacked chips
- WARNING
Groups [H10W 90/20](#), [H10W 90/22](#), [H10W 90/231](#), [H10W 90/24](#), [H10W 90/26](#), [H10W 90/271](#), [H10W 90/275](#), [H10W 90/28](#), [H10W 90/284](#), [H10W 90/288](#), [H10W 90/291](#), [H10W 90/293](#) and [H10W 90/295](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 90/22
- the stacked chips being on both top and bottom sides of a package substrate, interposer or RDL
- N H10W 90/231
- {the stacked chips being on both top and bottom sides of an auxiliary carrier having no electrical connection structure}
- N H10W 90/24
- at least one of the stacked chips being laterally offset from a neighbouring stacked chip, e.g. chip stacks having a staircase shape
- N H10W 90/26
- the stacked chips being of the same size without any chips being laterally offset, e.g. chip stacks having a rectangular shape
- N H10W 90/271
- {the chips having passive surfaces facing each other, i.e. in a back-to-back arrangement}
- N H10W 90/275
- {the stacked chips comprising dummy chips}
- N H10W 90/28
- the stacked chips having different sizes, e.g. chip stacks having a pyramidal shape
- N H10W 90/284
- {characterised by structural arrangements for measuring or testing}
- N H10W 90/288
- {characterised by arrangements for thermal management of the stacked chips}
- N H10W 90/291
- {characterised by containers, encapsulations, or other housings for the stacked chips}
- N H10W 90/293
- {characterised by non-galvanic coupling between the chips, e.g. capacitive coupling}
- N H10W 90/295
- {optical coupling}
- N H10W 90/297
- {characterised by the through-semiconductor vias [TSVs] in the stacked chips}
- N H10W 90/401
- {characterised by multiple insulating or insulated package substrates, interposers or RDLs}
- Q H10W 90/701
- {characterised by the relative positions of pads or connectors relative to package parts}
- WARNING
Group [H10W 90/701](#) is incomplete pending reclassification of documents from group [H10W 90/00](#). Group [H10W 90/701](#) is also impacted by reclassification into groups [H10W 90/724](#), [H10W 90/725](#), [H10W 90/7295](#), [H10W 90/754](#), [H10W 90/755](#), [H10W 90/764](#) and [H10W 90/765](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 90/721
- {of bump connectors}
- WARNING
Groups [H10W 90/721](#), [H10W 90/722](#), [H10W 90/723](#), [H10W 90/727](#), [H10W 90/728](#) and [H10W 90/729](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 90/722
- {between stacked chips}

- N H10W 90/723 • • • {between laterally-adjacent chips}
- Q H10W 90/724 • • • {between a chip and a stacked insulating package substrate, interposer or RDL}
- WARNING
Group [H10W 90/724](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/701](#). Group [H10W 90/724](#) is also impacted by reclassification into group [H10W 90/726](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 90/725 • • • {between a chip and a laterally-adjacent insulating package substrate, interposer or RDL}
- WARNING
Group [H10W 90/725](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/701](#). Groups [H10W 90/00](#), [H10W 90/701](#) and [H10W 90/725](#) should be considered in order to perform a complete search.
- N H10W 90/726 • • • {between a chip and a stacked lead frame, conducting package substrate or heat sink}
- WARNING
Group [H10W 90/726](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/724](#). Groups [H10W 90/00](#), [H10W 90/724](#) and [H10W 90/726](#) should be considered in order to perform a complete search.
- N H10W 90/727 • • • {between a chip and a laterally-adjacent lead frame, conducting package substrate or heat sink}
- N H10W 90/728 • • • {between a chip and a stacked discrete passive device, e.g. resistors, capacitors or inductors}
- N H10W 90/729 • • • {between a chip and a laterally-adjacent discrete passive device}
- N H10W 90/7295 • • • {on the rear surface of insulating package substrates, interposers or RDLs, for connection outside of the package, e.g. ball grid array [BGA] bumps}
- WARNING
Group [H10W 90/7295](#) is incomplete pending reclassification of documents from group [H10W 90/701](#). Groups [H10W 90/701](#) and [H10W 90/7295](#) should be considered in order to perform a complete search.
- N H10W 90/731 • • {of die-attach connectors}
- WARNING
Groups [H10W 90/731](#), [H10W 90/732](#), [H10W 90/733](#), [H10W 90/734](#), [H10W 90/735](#), [H10W 90/736](#), [H10W 90/737](#), [H10W 90/738](#) and [H10W 90/739](#) are incomplete pending reclassification of documents from group [H10W 90/00](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 90/732 • • • {between stacked chips}
- N H10W 90/733 • • • {between laterally-adjacent chips}
- N H10W 90/734 • • • {between a chip and a stacked insulating package substrate, interposer or RDL}
- N H10W 90/735 • • • {between a chip and a laterally-adjacent insulating package substrate, interposer or RDL}

- N H10W 90/736 . . . {between a chip and a stacked lead frame, conducting package substrate or heat sink}
- N H10W 90/737 . . . {between a chip and a laterally-adjacent lead frame, conducting package substrate or heat sink}
- N H10W 90/738 . . . {between a chip and a stacked discrete passive device}
- N H10W 90/739 . . . {between a chip and a laterally-adjacent discrete passive devices}
- N H10W 90/751 . . {of bond wires}

WARNING

Groups [H10W 90/751](#), [H10W 90/752](#), [H10W 90/753](#), [H10W 90/757](#), [H10W 90/758](#) and [H10W 90/759](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 90/752 . . . {between stacked chips}
- N H10W 90/753 . . . {between laterally-adjacent chips}
- Q H10W 90/754 . . . {between a chip and a stacked insulating package substrate, interposer or RDL}

WARNING

Group [H10W 90/754](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/701](#). Group [H10W 90/754](#) is also impacted by reclassification into group [H10W 90/756](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 90/755 . . . {between a chip and a laterally-adjacent insulating package substrate, interpose or RDL}

WARNING

Group [H10W 90/755](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/701](#).

Groups [H10W 90/00](#), [H10W 90/701](#) and [H10W 90/755](#) should be considered in order to perform a complete search.

- N H10W 90/756 . . . {between a chip and a stacked lead frame, conducting package substrate or heat sink}

WARNING

Group [H10W 90/756](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/754](#).

Groups [H10W 90/00](#), [H10W 90/754](#) and [H10W 90/756](#) should be considered in order to perform a complete search.

- N H10W 90/757 . . . {between a chip and a laterally-adjacent lead frame, conducting package substrate or heat sink}
- N H10W 90/758 . . . {between a chip and a stacked discrete passive device}
- N H10W 90/759 . . . {between a chip and a laterally-adjacent discrete passive device}
- N H10W 90/761 . . {of strap connectors}

WARNING

Groups [H10W 90/761](#), [H10W 90/762](#), [H10W 90/763](#), [H10W 90/766](#), [H10W 90/767](#), [H10W 90/768](#) and [H10W 90/769](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- N H10W 90/762 . . . {between stacked chips}
- N H10W 90/763 . . . {between laterally-adjacent chips}
- N H10W 90/764 . . . {between a chip and a stacked insulating package substrate, interposer or RDL}
- WARNING
Group [H10W 90/764](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/701](#).
Groups [H10W 90/00](#), [H10W 90/701](#) and [H10W 90/764](#) should be considered in order to perform a complete search.
- N H10W 90/765 . . . {between a chip and a laterally-adjacent insulating package substrate, interposer or RDL}
- WARNING
Group [H10W 90/765](#) is incomplete pending reclassification of documents from groups [H10W 90/00](#) and [H10W 90/701](#).
Groups [H10W 90/00](#), [H10W 90/701](#) and [H10W 90/765](#) should be considered in order to perform a complete search.
- N H10W 90/766 . . . {between a chip and a stacked lead frame, conducting package substrate or heat sink}
- N H10W 90/767 . . . {between a chip and a laterally-adjacent lead frame, conducting package substrate or heat sink}
- N H10W 90/768 . . . {between a chip and a stacked discrete passive device}
- N H10W 90/769 . . . {between a chip and a laterally-adjacent discrete passive device}
- N H10W 90/791 . . . {of direct-bonded pads}
- WARNING
Groups [H10W 90/791](#), [H10W 90/792](#), [H10W 90/794](#), [H10W 90/796](#) and [H10W 90/798](#) are incomplete pending reclassification of documents from group [H10W 90/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.
- N H10W 90/792 . . . {between multiple chips}
- N H10W 90/794 . . . {between a chip and a stacked insulating package substrate, interposer or RDL}
- N H10W 90/796 . . . {between a chip and a stacked lead frame, conducting package substrate or heat sink}
- N H10W 90/798 . . . {between a chip and a stacked discrete passive device}
- N H10W 90/811 . {Multiple chips on leadframes}
- WARNING
Group [H10W 90/811](#) is incomplete pending reclassification of documents from group [H10W 90/00](#).
Groups [H10W 90/00](#) and [H10W 90/811](#) should be considered in order to perform a complete search.
- N H10W 95/00** **Packaging processes not covered by the other groups of this subclass**
- WARNING
Group [H10W 95/00](#) is incomplete pending reclassification of documents from groups [H10W 72/07232](#), [H10W 72/07233](#), [H10W 72/07236](#) and [H10W 99/00](#).
All groups listed in this Warning should be considered in order to perform a complete search.

Q H10W 99/00**Subject matter not provided for in other groups of this subclass****WARNING**

Group [H10W 99/00](#) is incomplete pending reclassification of documents from group [H10W 42/00](#). Group [H10W 99/00](#) is also impacted by reclassification into groups [H10W 40/00](#), [H10W 40/01](#), [H10W 42/00](#), [H10W 70/00](#), [H10W 70/01](#), [H10W 70/02](#), [H10W 70/04](#), [H10W 70/05](#), [H10W 70/06](#), [H10W 70/08](#), [H10W 70/09](#), [H10W 74/01](#), [H10W 76/01](#) and [H10W 95/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Project: MP12828 (Y10S)**U Y10S 40/00****Card, picture, or sign exhibiting****M Y10S 40/901**

- Tv/radio **program****programme** indicator

U Y10S 242/00**Winding, tensioning, or guiding****M Y10S 242/01**

- Tape **program****programme** control means

U Y10S 348/00**Television****M Y10S 348/911**

- Line doubler adapted for reproducing **program****programme** originally from film, e.g. 24 **frame****frames** per second