

CPC COOPERATIVE PATENT CLASSIFICATION

H ELECTRICITY

(NOTE omitted)

H10 SEMICONDUCTOR DEVICES; ELECTRIC SOLID-STATE DEVICES NOT OTHERWISE PROVIDED FOR

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. 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. 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](#).
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](#).

Building up of layers, structures or materials

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.

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.

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.

10/128	. . {by direct semiconductor to semiconductor bonding}	14/29	. . {characterised by the substrates}
	WARNING		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 .		Group H10P 14/29 is impacted by reclassification into groups H10P 14/2924 - H10P 14/2925 and H10P 14/2926 .
	All groups listed in this Warning should be considered in order to perform a complete search.		Groups H10P 14/29 , H10P 14/2924 - H10P 14/2925 and H10P 14/2926 should be considered in order to perform a complete search.
10/1285	. . . {by bonding laterally separated doped regions to each other}	14/2901	. . . {Materials}
10/14	. {Bonding of semiconductor wafers to insulating substrates}	14/2902	. . . . {being Group IVA materials}
	WARNING	14/2903	. . . . . {Carbon, e.g. diamond-like carbon}
	Group H10P 10/14 is incomplete pending reclassification of documents from groups H10P 90/1914 and H10P 90/1916 .	14/2904	. . . . . {Silicon carbide}
	Groups H10P 90/1914 , H10P 90/1916 and H10P 10/14 should be considered in order to perform a complete search.	14/2905	. . . . . {Silicon, silicon germanium or germanium}
14/00	Formation of materials, e.g. in the shape of layers or pillars	14/2906	. . . . . {including tin}
	WARNING	14/2907	. . . . . {being Group IIIA-VA materials}
	Group H10P 14/00 is incomplete pending reclassification of documents from group H10P 10/00 .	14/2908	. . . . . {Nitrides}
	Groups H10P 10/00 and H10P 14/00 should be considered in order to perform a complete search.	14/2909	. . . . . {Phosphides}
14/20	. of semiconductor materials	14/2911	. . . . . {Arsenides}
14/203	. . {using transformation of metal, e.g. oxidation or nitridation}	14/2912	. . . . . {Antimonides}
14/22	. . using physical deposition, e.g. vacuum deposition or sputtering	14/2913	. . . . . {being Group IIB-VIA materials}
14/24	. . using chemical vapour deposition [CVD]	14/2914	. . . . . {Oxides}
14/26	. . using liquid deposition	14/2915	. . . . . {Sulfides}
14/263	. . . {using melted materials}	14/2916	. . . . . {Selenides}
14/265	. . . {using solutions}	14/2917	. . . . . {Tellurides}
14/27	. . {using selective deposition, e.g. simultaneous growth of monocrystalline and non-monocrystalline semiconductor materials}	14/2918	. . . . . {being semiconductor metal oxides (Group IIB-VIA materials H10P 14/2913)}
14/271	. . . {characterised by the preparation of substrate for selective deposition}	14/2919	. . . . . {being chalcogenide semiconducting materials not being oxides, e.g. ternary compounds}
14/272	. . . . {using mask materials other than SiO ₂ or SiN}	14/2921	. . . . . {being crystalline insulating materials}
14/274	. . . . {using seed materials}	14/2922	. . . . . {being non-crystalline insulating materials, e.g. glass or polymers}
14/276	. . . {Lateral overgrowth}	14/2923	. . . . . {being conductive materials, e.g. metallic silicides}
14/278	. . . . {Pendeoepitaxy}	14/2924	. . . {Structures}
14/279	. . . {Vapour-liquid-solid growth}		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.
		14/2925	. . . . . {Surface structures}
		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.
		14/32	. . {characterised by intermediate layers between substrates and deposited layers}
		14/3202	. . . {Materials thereof}
		14/3204	. . . . {being Group IVA semiconducting materials}

14/3206	. . . . . {Carbon, e.g. diamond-like carbon}	14/3448	. . . . . {Delta-doping}
14/3208	. . . . . {Silicon carbide}	14/3451	. . . . {Structure}
14/3211	. . . . . {Silicon, silicon germanium or germanium}	14/3452	. . . . . {Microstructure}
14/3212	. . . . . {including tin}	14/3454	. . . . . {Amorphous}
14/3214	. . . . . {being Group IIIA-VA semiconductors}	14/3456	. . . . . {Polycrystalline}
14/3216	. . . . . {Nitrides}	14/3458	. . . . . {Monocrystalline}
14/3218	. . . . . {Phosphides}	14/3461	. . . . . {Nanoparticles}
14/3221	. . . . . {Arsenides}	14/3462	. . . . . {Nanowires}
14/3222	. . . . . {Antimonides}	14/3464	. . . . . {Nanotubes}
14/3224	. . . . . {being Group IIB-VIA semiconductors}	14/3466	. . . . {Crystal orientation}
14/3226	. . . . . {Oxides}	14/36	. . {characterised by treatments done before the formation of the materials}
14/3228	. . . . . {Sulfides}	14/3602	. . . {In-situ cleaning}
14/3231	. . . . . {Selenides}	14/38	. . {characterised by treatments done after the formation of the materials}
14/3232	. . . . . {Tellurides}	14/3802	. . . {Crystallisation or recrystallisation of non-monocrystalline semiconductor materials, e.g. regrowth}
14/3234	. . . . . {being oxide semiconducting materials (Group IIB-VIA semiconductors H10P 14/3224)}	14/3804	. . . . . {using crystallisation-inhibiting elements}
14/3236	. . . . . {being chalcogenide semiconducting materials not being oxides, e.g. ternary compounds}	14/3806	. . . . . {using crystallisation-enhancing elements}
14/3238	. . . . . {being insulating materials}	14/3808	. . . . . {using laser beams}
14/3241	. . . . . {being conductive materials}	14/381	. . . . . {Beam shaping, e.g. using a mask}
14/3242	. . . {Structure}	14/3812	. . . . . {Shape of mask}
14/3244	. . . . . {Layer structure}	14/3814	. . . . . {Continuous wave laser beam}
14/3246	. . . . . {Monolayers}	14/3816	. . . . . {Pulsed laser beam}
14/3248	. . . . . {consisting of two layers}	14/3818	. . . . . {using particle beams}
14/3251	. . . . . {consisting of three or more layers}	14/382	. . . . . {Scanning of a beam}
14/3252	. . . . . {Alternating layers, e.g. superlattice}	14/3822	. . . {Controlling the interface between substrate and epitaxial layer, e.g. by ion implantation followed by annealing}
14/3254	. . . . . {Graded layers}	14/3824	. . . {Intermixing, interdiffusion or disordering of III-V heterostructures, e.g. IILD}
14/3256	. . . . . {Microstructure}	14/40	. . of conductive or resistive materials
14/3258	. . . {Crystal orientation}	14/412	. . {Deposition of metallic or metal-silicide materials}
14/34	. . {Deposited materials, e.g. layers}	14/414	. . . {of metal-silicide materials}
14/3402	. . . {characterised by the chemical composition}	14/416	. . {of highly doped semiconductor materials, e.g. polysilicon layers or amorphous silicon layers}
14/3404	. . . . . {being Group IVA materials}	14/418	. . {the conductive layers comprising transition metals}
14/3406	. . . . . {Carbon, e.g. diamond-like carbon}	14/42	. . using a gas or vapour
14/3408	. . . . . {Silicon carbide}		WARNING
14/3411	. . . . . {Silicon, silicon germanium or germanium}		Group H10P 14/42 is impacted by reclassification into group H10P 14/43 .
14/3412	. . . . . {including tin}		Groups H10P 14/42 and H10P 14/43 should be considered in order to perform a complete search.
14/3414	. . . . . {being group IIIA-VIA materials}	14/43	. . . Chemical deposition, e.g. chemical vapour deposition [CVD]
14/3416	. . . . . {Nitrides}		WARNING
14/3418	. . . . . {Phosphides}		Group H10P 14/43 is incomplete pending reclassification of documents from group H10P 14/42 .
14/3421	. . . . . {Arsenides}		Groups H10P 14/42 and H10P 14/43 should be considered in order to perform a complete search.
14/3422	. . . . . {Antimonides}	14/432	. . . . . {using selective deposition}
14/3424	. . . . . {being Group IIB-VIA materials}		
14/3426	. . . . . {Oxides}		
14/3428	. . . . . {Sulfides}		
14/3431	. . . . . {Selenides}		
14/3432	. . . . . {Tellurides}		
14/3434	. . . . . {being oxide semiconductor materials (Group IIB-VIA semiconductor materials H10P 14/3424)}		
14/3436	. . . . . {being chalcogenide semiconductor materials not being oxides, e.g. ternary compounds}		
14/3438	. . . {Doping during depositing}		
14/3441	. . . . . {Conductivity type}		
14/3442	. . . . . {N-type}		
14/3444	. . . . . {P-type}		
14/3446	. . . . . {Transition metal elements; Rare earth elements}		

- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 14/61 . . using masks
 14/63 . . {characterised by the formation processes}
 14/6302 . . . {Non-deposition formation processes}
- 14/6304 {Formation by oxidation, e.g. oxidation of the substrate}
 14/6306 {of the semiconductor materials}
 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.
- 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.
- 14/6312 {of Group III-V semiconductors}
 14/6314 {of a metallic layer}
 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.
- 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.
- 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.

- 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.
- 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.
- 14/6326 {Deposition processes}
- 14/6328 {Deposition from the gas or vapour phase}
- 14/6329 {using physical ablation of a target, e.g. physical vapour deposition or pulsed laser deposition}
- 14/6332 {using thermal evaporation (formation of epitaxial layers by a deposition process [H10P 14/6349](#))}
- 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](#))}
- 14/6336 {in the presence of a plasma [PECVD]}
- 14/6338 {the reactions being activated by other means than plasma or thermal, e.g. photo-CVD}
- 14/6339 {deposition by cyclic CVD, e.g. ALD, ALE or pulsed CVD}
- 14/6342 {Liquid deposition, e.g. spin-coating, sol-gel techniques or spray coating}
- 14/6344 {using Langmuir-Blodgett techniques}
- 14/6346 {using printing, e.g. ink-jet printing}
- 14/6348 {Liquid ALD}
- 14/6349 {Deposition of epitaxial materials}
- 14/65 {characterised by treatments performed before or after the formation of the materials}
- 14/6502 {of treatments performed before formation of the materials}
- 14/6504 {In-situ cleaning}
- 14/6506 {Formation of intermediate materials}
- 14/6508 {by exposure to a liquid}
- 14/6509 {by exposure to electromagnetic radiation, e.g. UV light}
- 14/6512 {by exposure to a gas or vapour}
- 14/6514 {by exposure to a plasma}
- 14/6516 {of treatments performed after formation of the materials}
- 14/6518 {by introduction of substances into an already-existing insulating layer}
- 14/6519 {the substance being oxygen}
- 14/6522 {introduced into a nitride material, e.g. changing SiN to SiON}
- 14/6524 {the substance being nitrogen}
- 14/6526 {introduced into an oxide material, e.g. changing SiO to SiON}
- 14/6528 {In-situ cleaning after layer formation, e.g. removing process residues}
- 14/6529 {by exposure to a gas or vapour}
- 14/6532 {by exposure to a plasma}
- 14/6534 {by exposure to a liquid}
- 14/6536 {by exposure to radiation, e.g. visible light}
- 14/6538 {by exposure to UV light}
- 14/6539 {by exposure to corpuscular radiation, e.g. exposure to electrons, alpha-particles, protons or ions}
- 14/6542 {by using coherent radiation, e.g. using a laser}
- 14/6544 {to change the morphology of the insulating materials, e.g. transformation of an amorphous layer into a crystalline layer}
- 14/6546 {to change the surface groups of the insulating materials}
- 14/6548 {by forming intermediate materials, e.g. capping layers or diffusion barriers}
- 14/66 {characterised by the type of materials}
- 14/662 {Laminate layers, e.g. stacks of alternating high-k metal oxides (adhesion layers or buffer layers [H10P 14/6508](#), [H10P 14/6548](#))}
- 14/665 {Porous materials}
- 14/668 {the materials being characterised by the deposition precursor materials}
- 14/6681 {the precursor containing a compound comprising Si}
- 14/6682 {the compound being a silane, e.g. disilane, methylsilane or chlorosilane}
- 14/6684 {the compound comprising silicon and oxygen}
- 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}
- 14/6687 {the compound comprising silicon and nitrogen}
- 14/6689 {the compound being a silazane}
- 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.
- 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.

- 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.
- 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.
- 14/6902 . . . {composed of carbon, e.g. alpha-C, diamond or hydrogen doped carbon}
- 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.
- 14/6905 {being a silicon carbide or silicon carbonitride and not containing oxygen, e.g. SiC or SiC:H}
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.

- 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.
- 14/692 . . . composed of oxides, glassy oxides or oxide-based glasses
- 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.
- 14/69215 {the material being a silicon oxide, e.g. SiO₂}
- 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}
- 14/6923 {the material being boron or phosphorus doped silicon oxides, e.g. BPSG, BSG or PSG}
- 14/6924 {the material being halogen doped silicon oxides, e.g. FSG}
- 14/6925 {the material comprising hydrogen silsesquioxane, e.g. HSQ}
- 14/6926 {the material comprising alkyl silsesquioxane, e.g. MSQ}
- 14/6927 {the material being a silicon oxynitride, e.g. SiON or SiON:H}
- 14/6928 {the material containing silicon and at least one metal element, e.g. metal silicate based insulators or metal silicon oxynitrides}
- 14/6929 {the material containing aluminium, e.g. AlSiO_x}
- 14/693 {the material containing hafnium, e.g. HfSiO_x or HfSiON}
- 14/6931 {the material containing tantalum, e.g. TaSiO_x}
- 14/6932 {the material containing titanium, e.g. TiSiO_x}
- 14/6933 {the material containing at least one rare earth element, e.g. silicate of scandium or silicate of yttrium}
- 14/6934 {the material containing zirconium, e.g. ZrSiO_x}
- 14/6936 {the material containing two or more metal elements}
- 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.
- 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.
- 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.
- 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.
- 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.

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.

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.

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.

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.

14/69398 {the material having a perovskite structure, e.g. BaTiO₃}

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.

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.

14/69433 {the material being a silicon nitride not containing oxygen, e.g. SixNy or SixByNz}

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.

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.

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.

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.

- 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.

- 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.

- 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.

- 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.

- 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.

Modification of layers, structures or materials

- 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.

- 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.

- 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.

- 30/204 . . . {into Group IV semiconductors}
- 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.

- 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.

- 30/206 . . . {into Group III-V semiconductors}

- 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.
- 30/209 . . . {in silicon to make buried insulating layers}
- 30/21 . . {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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 30/224 . . {of a cluster, e.g. using a gas cluster ion beam}
- 30/225 . . {of a molecular ion, e.g. decaborane}
- 30/226 . . {at a temperature lower than room temperature}
- 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.
- 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.

- 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.
- 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.
- 32/12 • • between a solid phase and a gaseous phase
- 32/1204 • • • {from a plasma phase}
- 32/14 • • within a single semiconductor body or layer in a solid phase; between different semiconductor bodies or layers, both in a solid phase
- 32/1404 • • • {using predeposition followed by drive-in of impurities into the semiconductor surface, e.g. predeposition from a gaseous phase}
- 32/1406 • • • • {by ion implantation}
- 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}
- 32/141 • • • • {the applied layer comprising oxides only}
- 32/1412 • • • • • {through the applied layer}
- 32/1414 • • • • {the applied layer being silicon, silicide or SIPOS, e.g. polysilicon or porous silicon}
- 32/15 • • {from the substrate during epitaxy, e.g. autodoping; Preventing or using autodoping}
- 32/16 • • between a solid phase and a liquid phase
- 32/17 • • {characterised by the semiconductor material}
- 32/171 • • • {being group IV material}
- 32/172 • • • • {being crystalline silicon carbide}
- 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.
- 32/174 • • • {being Group III-V material}
- 32/18 • • {Diffusion lifetime killers}
- 32/185 • • {Lithium-drift diffusion}
- 32/19 • • {Diffusion sources}
- 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.
- 32/30 • Diffusion for doping of conductive or resistive layers
- 32/302 • • {Doping polycrystalline silicon or amorphous silicon layers}
- 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.
- 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.
- 34/20 • for inducing a nuclear reaction transmuted 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.
- 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.
- 34/42 • • with electromagnetic radiation, e.g. laser annealing (laser cutting [H10P 54/20](#))
- 34/422 • • • {using incoherent radiation}

- 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.
- 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.
- 50/61 . . Electrolytic etching
- 50/613 . . . {of Group IV materials}
- 50/617 . . . {of Group III-V materials}
- 50/64 . . of semiconductor materials
- 50/642 . . . {Chemical etching}
- 50/644 {Anisotropic liquid etching ([H10P 50/61](#) takes precedence)}
- 50/646 {of Group III-V materials}
- 50/648 {Anisotropic liquid etching}
- 50/66 . . of conductive or resistive materials
- 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.
- 50/667 {by liquid etching only}
- 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.
- 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.
- 50/69 . . {using masks for semiconductor materials}
- 50/691 . . {for Group IV materials or Group III-V materials}
- 50/692 . . . {characterised by their composition, e.g. multilayer masks or materials}
- 50/693 . . . {characterised by their size, orientation, disposition, behaviour or shape, in horizontal or vertical plane}
- 50/694 {characterised by their behaviour during the process, e.g. soluble masks or redeposited masks}
- 50/695 {characterised by the process involved to create the mask, e.g. lift-off masks or sidewalls or to modify the mask}
- 50/696 {Process specially adapted to improve the resolution of the mask}
- 50/71 . {using masks for conductive or resistive materials}
- 50/73 . {using masks for insulating materials}
- 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.
- 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.
- 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.
- 52/203 . . {of conductive or resistive materials}
- 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.

- 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.

- 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.

- 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.

- 52/403 . . {of conductive or resistive materials}

- 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.

- 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.

- 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.

- 54/20 . by laser cutting
54/30 . by forming weakened zones for subsequent cutting or separating, e.g. by laser treatment or by ion implantation
54/40 . by sawing, e.g. using revolving or reciprocating blades
54/50 . by scoring, breaking or cleaving
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.

- 54/90 . Auxiliary processes or arrangements
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.

- 54/922 . . . {Arrangements for stress mitigation, e.g. crack stops}
54/924 . . . {using expanding wafer tapes}
54/94 . . After-treatments, e.g. removal of adhesive tapes or supports

- 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.

- 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

H10P 58/00
(continued)

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.

- 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.

- 58/22 . . {characterised by the singulation processes being performed on multiple sides of the wafer or substrate}

Other manufacture or treatment

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](#).

- 70/10 . {Cleaning before device manufacture, i.e. Begin-Of-Line process}
- 70/12 . . {by dry cleaning only ([H10P 70/52](#) takes precedence)}
- 70/125 . . . {with gaseous HF}
- 70/15 . . {by wet cleaning only ([H10P 70/52](#) takes precedence)}
- 70/18 . . {by combined dry cleaning and wet cleaning ([H10P 70/52](#) takes precedence)}
- 70/20 . {Cleaning during device manufacture}
- 70/23 . . {during, before or after processing of insulating materials}
- 70/234 . . . {the processing being the formation of vias or contact holes}
- 70/237 . . . {the processing being a planarisation of insulating layers}
- 70/27 . . {during, before or after processing of conductive materials, e.g. polysilicon or amorphous silicon layers}
- 70/273 . . . {the processing being a delineation of conductive layers, e.g. by RIE}
- 70/277 . . . {the processing being a planarisation of conductive layers}
- 70/30 . {Cleaning after the substrates have been singulated}
- 70/40 . {Cleaning for reclaiming}
- 70/50 . {characterised by the part to be cleaned}

- 70/52 . . {Cleaning of diamond}
- 70/54 . . {Cleaning of wafer edges}
- 70/56 . . {Cleaning of wafer backside}
- 70/58 . . {Cleaning of porous materials}
- 70/60 . {Cleaning only by mechanical processes}
- 70/70 . {Cleaning only by lasers processes, e.g. laser ablation}
- 70/80 . {Cleaning only by supercritical fluids}
- 72/00 Handling or holding of wafers, substrates or devices during manufacture or treatment thereof**
- 72/04 . {Apparatus for manufacture or treatment}
- 72/0402 . . {Apparatus for fluid treatment ([H10P 72/0441](#), [H10P 72/0448](#) take precedence)}
- 72/0404 . . . {for general liquid treatment, e.g. etching followed by cleaning}
- 72/0406 . . . {for cleaning followed by drying, rinsing, stripping, blasting or the like}
- 72/0408 {for drying}
- 72/0411 {for wet cleaning or washing}
- 72/0412 {using mainly scrubbing means, e.g. brushes}
- 72/0414 {using mainly spraying means, e.g. nozzles}
- 72/0416 {with the semiconductor substrates being dipped in baths or vessels}
- 72/0418 . . . {for etching}
- 72/0421 {for drying etching}
- 72/0422 {for wet etching}
- 72/0424 {using mainly spraying means, e.g. nozzles}
- 72/0426 {with the semiconductor substrates being dipped in baths or vessels}
- 72/0428 . . {Apparatus for mechanical treatment or grinding or cutting}
- 72/0431 . . {Apparatus for thermal treatment}
- 72/0432 . . . {mainly by conduction}
- 72/0434 . . . {mainly by convection}
- 72/0436 . . . {mainly by radiation}
- 72/0438 . . {Apparatus for making assemblies not otherwise provided for, e.g. package constructions}
- 72/0441 . . {Apparatus for sealing, encapsulating, glassing, decapsulating or the like}
- 72/0442 . . {Apparatus for placing on an insulating substrate, e.g. tape}
- 72/0444 . . {Apparatus for wiring semiconductor or solid-state device}
- 72/0446 . . {Apparatus for mounting on conductive members, e.g. leadframes or conductors on insulating substrates}
- 72/0448 . . {Apparatus for applying a liquid, a resin, an ink or the like}
- 72/0451 . . {Apparatus for manufacturing or treating in a plurality of work-stations}
- 72/0452 . . . {characterised by the layout of the process chambers}
- 72/0454 {surrounding a central transfer chamber}
- 72/0456 {in-line arrangement}
- 72/0458 {vertical arrangement}
- 72/0461 . . . {characterised by the presence of two or more transfer chambers}
- 72/0462 . . . {characterised by the construction of the processing chambers, e.g. modular processing chambers}

72/0464	. . . {characterised by the construction of the transfer chamber}	72/19	. . . {closed carriers}
72/0466	. . . {characterised by the construction of the load-lock chamber}	72/1902	. . . {specially adapted for a single substrate}
72/0468	. . . {comprising a chamber adapted to a particular process}	72/1904	. . . {specially adapted for containing chips, dies or ICs}
72/0471	. . . . {comprising at least one ion or electron beam chamber}	72/1906	. . . {specially adapted for containing masks, reticles or pellicles}
72/0472	. . . . {comprising at least one polishing chamber}	72/1908	. . . {specially adapted for containing substrates other than wafers}
72/0474	. . . . {comprising at least one lithography chamber}	72/1911	. . . {characterised by materials, roughness, coatings or the like}
72/0476	. . . . {comprising at least one plating chamber}	72/1912	. . . . {characterised by shock absorbing elements, e.g. retainers or cushions}
72/0478	. . {the substrates being processed being not semiconductor wafers, e.g. leadframes or chips}	72/1914	. . . {characterised by locking systems}
72/06	. {Apparatus for monitoring, sorting, marking, testing or measuring}	72/1916	. . . {characterised by sealing arrangements}
72/0602	. . {Temperature monitoring}	72/1918	. . . {characterised by coupling elements, kinematic members, handles or elements to be externally gripped}
72/0604	. . {Process monitoring, e.g. flow or thickness monitoring}	72/1921	. . . {characterised by substrate supports}
72/0606	. . {Position monitoring, e.g. misposition detection or presence detection}	72/1922	. . . {characterised by the construction of the closed carrier}
72/0608	. . . {of substrates stored in a container, a magazine, a carrier, a boat or the like}	72/1924	. . . {characterised by atmosphere control}
72/0611	. . {Sorting devices}	72/1926	. . . . {characterised by the presence of atmosphere modifying elements inside or attached to the closed carrier}
72/0612	. . {Production flow monitoring, e.g. for increasing throughput}	72/1928	. . . . . {characterised by the presence of antistatic elements}
72/0614	. . {Marking devices}	72/30	. for conveying, e.g. between different workstations
72/0616	. . {Monitoring of warpages, curvatures, damages, defects or the like}	72/32	. . {between different workstations}
72/0618	. . {using identification means, e.g. labels on substrates or labels on containers}	72/3202	. . . {Mechanical details, e.g. rollers or belts}
72/10	. using carriers specially adapted therefor, e.g. front opening unified pods [FOUP]	72/3204	. . . {using magnetic elements}
72/12	. . {Vertical boat type carrier whereby the substrates are horizontally supported, e.g. comprising rod-shaped elements}	72/3206	. . . {the substrate being handled substantially vertically}
72/123	. . . {characterised by a material, a roughness, a coating or the like}	72/3208	. . . {Changing the direction of the conveying path}
72/127	. . . {characterised by the substrate support}	72/3211	. . . {Changing orientation of the substrate, e.g. from a horizontal position to a vertical position}
72/13	. . {Horizontal boat type carrier whereby the substrates are vertically supported, e.g. comprising rod-shaped elements}	72/3212	. . . {the substrates to be conveyed not being semiconductor wafers or large planar substrates, e.g. chips or lead frames}
72/135	. . . {characterised by a material, a roughness, a coating or the like}	72/3214	. . . {by means of a cart or a vehicle}
72/14	. . {Vertical carrier comprising wall type elements whereby the substrates are horizontally supported, e.g. comprising sidewalls}	72/3216	. . . {using a general scheme of a conveying path within a factory}
72/145	. . . {characterised by a material, a roughness, a coating or the like}	72/3218	. . . {Conveying cassettes, containers or carriers}
72/15	. . {Horizontal carrier comprising wall type elements whereby the substrates are vertically supported, e.g. comprising sidewalls}	72/3221	. . . {Overhead conveying}
72/155	. . . {characterised by a material, a roughness, a coating or the like}	72/3222	. . . {Loading to or unloading from a conveyor}
72/16	. . {Trays for chips}	72/33	. . {into and out of processing chamber}
72/165	. . . {characterised by a material, a roughness, a coating or the like}	72/3302	. . . {Mechanical parts of transfer devices}
72/17	. . {specially adapted for supporting large square shaped substrates}	72/3304	. . . {characterised by movements or sequence of movements of transfer devices}
72/175	. . . {characterised by a material, a roughness, a coating or the like}	72/3306	. . . {Horizontal transfer of a single workpiece}
72/18	. . {characterised by being specially adapted for supporting a single substrate or by comprising a stack of such individual supports}	72/3308	. . . {Vertical transfer of a single workpiece}
		72/3311	. . . {Horizontal transfer of a batch of workpieces}
		72/3312	. . . {Vertical transfer of a batch of workpieces}
		72/3314	. . . {Continuous loading and unloading into and out of a processing chamber, e.g. transporting belts within processing chambers}
		72/34	. . {the wafers being stored in a carrier, involving loading and unloading}
		72/3402	. . . {Mechanical parts of transfer devices}
		72/3404	. . . {Storage means}
		72/3406	. . . {involving removal of lid, door or cover}
		72/3408	. . . {Docking arrangements}
		72/3411	. . . {involving loading and unloading of wafers}

72/3412	. . . . {Batch transfer of wafers}	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}
72/36	. . {using air tracks}		
72/3602	. . . {with angular orientation of the workpieces}		
72/3604	. . . {the workpieces being stored in a carrier, involving loading and unloading}		
72/37	. . {with orientating and positioning by means of a vibratory bowl or track}		
72/38	. . {with angular orientation of workpieces}		
72/50	. for positioning, orientation or alignment		
72/53	. . {using optical controlling means}		
72/57	. . {Mask-wafer alignment}		
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.		
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.		
72/722	. . . {Details of electrostatic chucks}		
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.		
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.		
		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}
		72/7408	. . . {the auxiliary support including alignment aids}
		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}
		72/7412	. . . {the auxiliary support including means facilitating the separation of a device or wafer from the auxiliary support}
		72/7414	. . . . {the auxiliary support including means facilitating the selective separation of some of a plurality of devices from the auxiliary support}
		72/7416	. . . {used during dicing or grinding}
		72/7418	. . . . {of passive members, e.g. a chip mounting substrate}
		72/742	. . . . {involving stretching of the auxiliary support post dicing}
		72/7422	. . . {used to protect an active side of a device or wafer}
		72/7424	. . . {used as a support during the manufacture of self-supporting substrates}
		72/7426	. . . {used as a support during build up manufacturing of active devices}
		72/7428	. . . {used to support diced chips prior to mounting}
		72/743	. . . {used as a support during manufacture of interconnect decals or build up layers}
		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}
		72/7434	. . . {used in a transfer process involving at least two transfer steps, i.e. including an intermediate handle substrate}
		72/7436	. . . {used to support a device or a wafer when forming electrical connections thereto}
		72/7438	. . . {with parts of the auxiliary support remaining in the finished device}
		72/744	. . . {Details of chemical or physical process used for separating the auxiliary support from a device or a wafer}
		72/7442	. . . . {Separation by peeling}
		72/7444	. . . . . {using a peeling wedge, a knife or a bar}
		72/7446	. . . . . {using a peeling wheel}
		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}

- 72/745 {the bond interface between the auxiliary support and the wafer comprises three or more layers}
- 72/76 . . using mechanical means, e.g. clamps or pinches
- 72/7602 . . . {the wafers being placed on a robot blade or gripped by a gripper for conveyance}
- 72/7604 . . . {the wafers being placed on a susceptor, stage or support}
- 72/7606 {characterised by edge clamping, e.g. clamping ring}
- 72/7608 {characterised by a plurality of separate clamping members, e.g. clamping fingers}
- 72/7611 {characterised by edge profile or support profile}
- 72/7612 {characterised by lifting arrangements, e.g. lift pins}
- 72/7614 {characterised by a plurality of individual support members, e.g. support posts or protrusions}
- 72/7616 {characterised by a coating, a hardness or a material}
- 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 carousel}
- 72/7621 {characterised by supporting two or more semiconductor substrates}
- 72/7622 {characterised by supporting substrates others than wafers, e.g. chips}
- 72/7624 {characterised by the mechanical construction of the susceptor, stage or support}
- 72/7626 {characterised by the construction of the shaft}
- 72/78 . . using vacuum or suction, e.g. Bernoulli chucks
- 74/00 Testing or measuring during manufacture or treatment of wafers, substrates or devices**
- 74/20 . . characterised by the properties tested or measured, e.g. structural or electrical properties
- 74/203 . . {Structural properties, e.g. testing or measuring thicknesses, line widths, warpage, bond strengths or physical defects}
- 74/207 . . {Electrical properties, e.g. testing or measuring of resistance, deep levels or capacitance-voltage characteristics}
- 74/23 . . {characterised by multiple measurements, corrections, marking or sorting processes}
- 74/232 . . {comprising connection or disconnection of parts of a device in response to a measurement}
- 74/235 . . {comprising optical enhancement of defects or not-directly-visible states}
- 74/238 . . {comprising acting in response to an ongoing measurement without interruption of processing, e.g. endpoint detection or in-situ thickness measurement}
- 74/27 . . {Structural arrangements therefor}
- 74/273 . . {Interconnections for measuring or testing, e.g. probe pads}
- 74/277 . . {Circuits for electrically characterising or monitoring manufacturing processes, e.g. circuits in tested chips or circuits in testing wafers}

- 76/00 Manufacture or treatment of masks on semiconductor bodies, e.g. by lithography or photolithography**
- 76/20 . . of masks comprising organic materials
- 76/202 . . {for lift-off processes}
- 76/204 . . {of organic photoresist masks}
- 76/2041 {Photolithographic processes}
- 76/2042 {using lasers}
- 76/2043 {using an anti-reflective coating}
- 76/2045 . . . {Electron beam lithography processes}
- 76/2047 . . . {X-ray beam lithography processes}
- 76/2049 . . . {Ion beam lithography processes}
- 76/40 . . of masks comprising inorganic materials
- 76/403 . . {for lift-off processes}
- 76/405 . . {characterised by their composition, e.g. multilayer masks}
- 76/408 . . {characterised by their sizes, orientations, dispositions, behaviours or shapes}
- 76/4083 . . . {characterised by their behaviours during the lithography processes, e.g. soluble masks or redeposited masks}
- 76/4085 . . . {characterised by the processes involved to create the masks}
- 76/4088 . . . {Processes for improving the resolution of the masks}

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.

- 90/12 . . {Preparing bulk and homogeneous wafers}
- 90/123 . . {by grinding or lapping}
- 90/124 . . {by processing the backside of the wafers}
- 90/126 . . {by chemical etching}
- 90/128 . . {by edge treatment, e.g. chamfering}
- 90/129 . . {by polishing}
- 90/14 . . {by setting crystal orientation}
- 90/15 . . {by making porous regions on the surface}
- 90/16 . . {by reclaiming or re-processing}
- 90/18 . . {by shaping}

- 90/190 . . . {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.

- 90/1902 . . . {Preparing horizontally inhomogeneous wafers}
- 90/1904 . . . {Preparing vertically inhomogeneous wafers}
- 90/1906 . . . {Preparing SOI wafers}
- 90/1908 {using silicon implanted buried insulating layers, e.g. oxide layers [SIMOX]}
- 90/191 {using full isolation by porous oxide silicon [FIPOS]}
- 90/1912 {using selective deposition, e.g. epitaxial lateral overgrowth [ELO] or selective deposition of single crystal silicon}
- 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.

- 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.

- 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.

- 90/192 {irregularly shaped charge trapping layers}
- 90/1922 {using silicon etch back techniques, e.g. BESOI or ELTRAN}
- 90/1924 {with separation/delamination along a porous layer}
- 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.

- 90/212 . . . {by transferring of graphene}
- 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.

- 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.

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.

- 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.
- 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.
- 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.
- 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.
- 95/064 . . . {the removal being chemical etching}
 95/066 {the removal being a selective chemical etching step, e.g. selective dry etching through a mask}
- 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.
- 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.
- 95/112 . . {leaving a reusable substrate, e.g. epitaxial lift off}
- 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.
- 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.
- 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.
- 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.
- 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.

- 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.

- 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.

- 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.

- 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.

- 95/902 . . {for the formation of PN junctions without addition of impurities }

- 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.

- 95/906 . . {for altering the shape of semiconductors, e.g. smoothing the surface }

- 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.

- 95/94 . {Hydrogenation or deuteration, e.g. using atomic hydrogen from a plasma }