

**CPC****COOPERATIVE PATENT CLASSIFICATION****C25D****PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING** (decorating textiles by metallising [D06Q 1/04](#); manufacturing printed circuits by metal deposition [H05K 3/18](#)); **APPARATUS THEREFOR****WARNING**

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups : [C25D 5/24](#) covered by [C25D 5/34](#) [C25D 5/26](#) covered by [C25D 5/36](#) [C25D 5/28](#) covered by [C25D 5/38](#) [C25D 5/30](#) covered by [C25D 5/42](#), [C25D 5/44](#) [C25D 5/32](#) covered by [C25D 5/46](#) [C25D 13/06](#) covered by [C09D 5/44](#) [C25D 13/08](#) covered by [C09D 5/4476](#) [C25D 13/10](#) covered by [C09D 5/448](#) [C25D 19/00](#) covered by [C25D 17/00](#)

**C25D 1/00****Electroforming**

- [C25D 1/003](#) . { 3D structures, e.g. superposed patterned layers}
- [C25D 1/006](#) . { Nanostructures, e.g. aluminum anodic oxidation templates [AAO]}
- [C25D 1/02](#) . Tubes; Rings; Hollow bodies
- [C25D 1/04](#) . Wires; Strips; Foils
- [C25D 1/06](#) . Wholly-metallic mirrors
- [C25D 1/08](#) . Perforated or foraminous objects, e.g. sieves ([C25D 1/10](#) takes precedence)
- [C25D 1/10](#) . Moulds; Masks; Masterforms {, e.g. mandrels, stampers}
- [C25D 1/12](#) . by electrophoresis {(electrophoretic coating [C25D 13/00](#))}
- [C25D 1/14](#) . . of inorganic material
- [C25D 1/16](#) . . . Metals
- [C25D 1/18](#) . . of organic material
- [C25D 1/20](#) . Separation of the formed objects from the electrodes { with no destruction of said electrodes}
- [C25D 1/22](#) . . Separating compounds

**C25D 3/00****Electroplating: Baths therefor**

- [C25D 3/02](#) . from solutions ([C25D5/24](#) to [C25D5/32](#) take precedence)
- [C25D 3/04](#) . . of chromium
- [C25D 3/06](#) . . . from solutions of trivalent chromium
- [C25D 3/08](#) . . . Deposition of black chromium {, e.g. hexavalent chromium, CrVI}
- [C25D 3/10](#) . . . characterised by the organic bath constituents used
- [C25D 3/12](#) . . of nickel or cobalt {([C25D 3/56](#) takes precedence)}
- [C25D 3/14](#) . . . from baths containing acetylenic or heterocyclic compounds
- [C25D 3/16](#) . . . . Acetylenic compounds
- [C25D 3/18](#) . . . . Heterocyclic compounds
- [C25D 3/20](#) . . of iron

C25D 3/22	.. of zinc
C25D 3/24	... from cyanide baths
C25D 3/26	.. of cadmium
C25D 3/28	... from cyanide baths
C25D 3/30	.. of tin
C25D 3/32	... characterised by the organic bath constituents used
C25D 3/34	.. of lead
C25D 3/36	... characterised by the organic bath constituents used
C25D 3/38	.. of copper
C25D 3/40	... from cyanide baths { , e.g. with Cu+}
C25D 3/42	.. of light metals
C25D 3/44	... Aluminium
C25D 3/46	.. of silver
C25D 3/48	.. of gold
C25D 3/50	.. of platinum group metals
C25D 3/52	... characterised by the organic bath constituents used
C25D 3/54	.. of metals not provided for in groups <a href="#">C25D 3/04</a> to <a href="#">C25D 3/50</a>
C25D 3/56	.. of alloys
C25D 3/562	... { containing more than 50% by weight of iron or nickel or cobalt { ; NiP, FeP, CoP (Phosphatising <a href="#">C25D 11/36</a> ) }}
C25D 3/565	... {containing more than 50% by weight of zinc}
C25D 3/567	... {containing more than 50% by weight of platinum group metals}
C25D 3/58	... containing more than 50% by weight of copper
C25D 3/60	... containing more than 50% by weight of of tin { ; SnP}
C25D 3/62	... containing more than 50% by weight of gold
C25D 3/64	... containing more than 50% by weight of silver
C25D 3/66	. from melts
C25D 3/665	.. { from ionic liquids}

**WARNING**

Group [C25D 3/665](#) is not complete, pending reorganization, see also [C25D 3/66](#)]

**C25D 5/00**      **Electroplating characterised by the process; Pretreatment or after-treatment of work-pieces**

C25D 5/003	. { Electroplating characterised by the use of gases, e.g. pressure influence (removal or gases or vapours, <a href="#">C25D 21/04</a> ) }
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**WARNING**

Groups [C25D 5/003](#), [C25D 5/006](#) are not complete, pending reorganization, see also [C25D 5/00](#)

- C25D 5/006 . { Electroplating with applied electromagnetic field, not locally , e.g. for plating magnetic layers}
- C25D 5/02 . Electroplating of selected surface areas
- C25D 5/022 . . { using masking means {(C25D 11/022 takes precedence)}}}
- C25D 5/024 . . {using locally applied electromagnetic radiation e.g. lasers}
- C25D 5/026 . . {using locally applied jets of electrolyte}
- C25D 5/028 . . { one side electroplating {, e.g. substrate conveyed in a bath with inhibited background plating}}
- C25D 5/04 . Electroplating with moving electrodes
- C25D 5/06 . . Brush or pad plating {(electrodes for pad plating C25D 17/14)}
- C25D 5/08 . Electroplating with moving electrolyte {, characterised by electrolyte flow}, e.g. jet electroplating {(spraying of electrolyte on wires strip or foils C25D 7/0642, means or devices for moving the electrolyte C25D 21/10, C25D 5/026 takes precedence)}
- C25D 5/10 . Electroplating with more than one layer of the same or of different metals (for bearings C25D 7/10)
- C25D 5/12 . . at least one layer being of nickel or chromium
- C25D 5/14 . . . two or more layers being of nickel or chromium, e.g. duplex or triplex layers
- C25D 5/16 . Electroplating with layers of varying thickness {, e.g. rough surfaces}{ ; Hull cells}
- C25D 5/18 . Electroplating using modulated, pulsed or reversing current
- C25D 5/20 . Electroplating using ultrasonics { , vibrations}
- C25D 5/22 . Electroplating combined with mechanical treatment during the deposition
- C25D 5/34 . Pretreatment of metallic surfaces to be electroplated
- C25D 5/36 . . of iron or steel
- C25D 5/38 . . of refractory metals or nickel
- C25D 5/40 . . . Nickel; Chromium
- C25D 5/42 . . of light metals
- C25D 5/44 . . . Aluminium
- C25D 5/46 . . of actinides
- C25D 5/48 . After-treatment of electroplated surfaces
- C25D 5/50 . . by heat-treatment
- C25D 5/505 . . . {of electroplated tin coatings, e.g. by melting}
- C25D 5/52 . . by brightening or burnishing
- C25D 5/54 . Electroplating {on } non-metallic surfaces { ,e.g. on carbon or carbon composites}(C25D 7/12 takes precedence)
- C25D 5/56 . . on { thin or conductive} plastics {(coating metallic material C23C)}
- C25D 7/00 Electroplating characterised by the article coated**
- C25D 7/001 . { Magnets}

**WARNING**

Groups [C25D 7/001-C25D 7/008](#) are not complete, pending reorganization, see also [C25D 7/00](#)

- C25D 7/003 . { Threaded pieces, e.g. bolts, nuts}
- C25D 7/005 . { Jewels or clockworks}
- C25D 7/006 . { Nanoparticles}
- C25D 7/008 . { Thermal barrier coatings}
- C25D 7/02 . Slide fasteners
- C25D 7/04 . Tubes; Rings; Hollow bodies
- C25D 7/06 . Wires; Strips; Foils
- C25D 7/0607 .. {Wires}
- C25D 7/0614 .. {Strips or foils}
- C25D 7/0621 ... {In horizontal cells}
- C25D 7/0628 ... {In vertical cells}
- C25D 7/0635 ... {In radial cells}
- C25D 7/0642 ... {Anodes}
- C25D 7/065 ... {Diaphragms}
- C25D 7/0657 ... {Conducting rolls}
- C25D 7/0664 ... {Isolating rolls}
- C25D 7/0671 ... {Selective plating}
- C25D 7/0678 .... {using masks}
- C25D 7/0685 ... {Spraying of electrolyte}
- C25D 7/0692 ... {Regulating the thickness of the coating}
- C25D 7/08 . Mirrors; Reflectors
- C25D 7/10 . Bearings
- C25D 7/12 . Semiconductors { without seed layer}
- C25D 7/123 .. { Semiconductors first coated with a seed layer for filling vias}

### **WARNING**

Groups [C25D 7/123-C25D 7/126](#) are not complete, pending reorganization, see also [C25D 7/12](#)

- C25D 7/126 .. { Semiconductors first coated with a seed layer for solar cells}

**C25D 9/00** **Electrolytic coating other than with metals** ([C25D 11/00](#), [C25D 15/00](#) take precedence; electrophoretic coating [C25D 13/00](#))

- C25D 9/02 . with organic materials
- C25D 9/04 . with inorganic materials
- C25D 9/06 .. by anodic processes
- C25D 9/08 .. by cathodic processes
- C25D 9/10 ... on iron or steel
- C25D 9/12 ... on light metals

**C25D 11/00** **Electrolytic coating by surface reaction, i.e. forming conversion layers**

- C25D 11/005 . { Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating [C25D 17/00](#))}

### **WARNING**

Groups [C25D 11/005](#), [C25D 11/022-C25D 11/028](#), [C25D 11/045](#) are not complete, pending reorganization, see also [C25D 11/00](#)

- C25D 11/02 . Anodisation
- C25D 11/022 . . { Anodisation on selected surface areas}
- C25D 11/024 . . {Anodisation under pulsed or modulated current or potential}
- C25D 11/026 . . { Anodisation with spark discharge [ANOF]}
- C25D 11/028 . . { Borodising,, i.e. borides formed electrochemically}
- C25D 11/04 . . of aluminium or alloys based thereon
- C25D 11/045 . . . { for forming AAO templates}
- C25D 11/06 . . . characterised by the electrolytes used
- C25D 11/08 . . . . containing inorganic acids
- C25D 11/10 . . . . containing organic acids
- C25D 11/12 . . . Anodising more than once, e.g. in different baths
- C25D 11/14 . . . Producing integrally coloured layers
- C25D 11/16 . . . Pretreatment {, e.g. desmutting}
- C25D 11/18 . . . After-treatment, e.g. pore sealing ([lacquering B44D](#))
- C25D 11/20 . . . . Electrolytic after-treatment
- C25D 11/22 . . . . . for colouring layers
- C25D 11/24 . . . . Chemical after-treatment
- C25D 11/243 . . . . . {using organic dyestuffs}
- C25D 11/246 . . . . . {for sealing layers}
- C25D 11/26 . . of refractory metals or alloys based thereon
- C25D 11/28 . . of actinides or alloys based thereon
- C25D 11/30 . . of magnesium or alloys based thereon
- C25D 11/32 . . of semiconducting materials
- C25D 11/34 . . of metals or alloys not provided for in groups [C25D 11/04](#) to [C25D 11/32](#)
- C25D 11/36 . Phosphatising {, e.g. NiP, CoP, FeP (bath solutions of NiP, CoP, FeP [C25D 3/562](#))}
- C25D 11/38 . Chromatising
- C25D 13/00** **Electrophoretic coating** ([C25D 15/00](#) takes precedence; apparatus for continuously conveying articles into baths [B65G](#), e.g. [B65G 49/00](#))
- C25D 13/02 . with inorganic material
- C25D 13/04 . with organic material
- C25D 13/06 . . with polymers {not used, see [C09D 5/44](#)}
- C25D 13/08 . . . by polymerisation in situ of monomeric materials {not used, see [C09D 5/4476](#)}
- C25D 13/10 . characterised by the additives used{not used, see [C09D 5/448](#)}
- C25D 13/12 . characterised by the article coated

- C25D 13/14 . . Tubes; Rings; Hollow bodies
- C25D 13/16 . . Wires; Strips; Foils
- C25D 13/18 . using modulated, pulsed, or reversing current
- C25D 13/20 . Pre-treatment
- C25D 13/22 . Servicing or operating { [apparatus or multistep processes](#)}
- C25D 13/24 . . Regeneration of process liquids
  
- C25D 15/00** **Electrolytic or electrophoretic production of coatings containing { [uncharged](#)}**  
**embedded materials, e.g. particles, whiskers, wires**
- C25D 15/02 . Combined electrolytic and electrophoretic processes { [with charged materials](#)}
  
- C25D 17/00** **Constructional parts, or assemblies thereof, of cells for electrolytic coating**  
([apparatus for continuously conveying articles into baths B65G](#), e.g. [B65G 49/00](#);  
[electric devices see the relevant classes](#), e.g. [H01B](#), [H02G](#)){([C25D 7/06](#), [C25D 11/005](#),  
[C25D 13/22](#), [C25](#) takes precedence)}
- C25D 17/001 . { [Apparatus specially adapted for plating wafers, e.g. semiconductors, solar cells](#)}
  
- WARNING**
- [Groups C25D 17/005-C25D 17/008](#) are not complete, pending reorganization,  
see also [C25D 17/00](#)
  
- C25D 17/002 . { [Cell separation, e.g. membranes, diaphragms](#)}
- C25D 17/004 . { [Sealing devices](#)}
- C25D 17/005 . { [Contacting devices](#)}
- C25D 17/007 . { [Current conducting devices](#)}
- C25D 17/008 . { [Current insulating devices](#)}
- C25D 17/02 . Tanks; Installations therefor
- C25D 17/04 . . External supporting frames or structures
- C25D 17/06 . Suspending or supporting devices for articles to be coated
- C25D 17/08 . . { [Supporting](#)} racks{ [i.e. not for suspending](#)}
- C25D 17/10 . Electrodes { [e.g. composition, counter electrode](#)}
- C25D 17/12 . . Shape or form ([C25D 17/14](#) takes precedence)
- C25D 17/14 . . for pad-plating
- C25D 17/16 . Apparatus for electrolytic coating of small objects in bulk
- C25D 17/18 . . having closed containers
- C25D 17/20 . . . Horizontal barrels
- C25D 17/22 . . having open containers
- C25D 17/24 . . . Oblique barrels
- C25D 17/26 . . . Oscillating baskets
- C25D 17/28 . . with means for moving the objects individually through the apparatus during  
treatment
  
- C25D 21/00** **Processes for servicing or operating cells for electrolytic coating**

- C25D 21/02
  - . Heating or cooling
- C25D 21/04
  - . Removal of gases or vapours {; gas or pressure control (electroplating characterized by the use of gases [C25D 5/003](#))}
- C25D 21/06
  - . Filtering { particles other than ions (filtering ions [C25D 21/22](#))}
- C25D 21/08
  - . Rinsing
- C25D 21/10
  - . Agitating of electrolytes; Moving of racks
- C25D 21/11
  - . Use of protective surface layers on electrolytic baths
- C25D 21/12
  - . Process control or regulation (controlling or regulating in general [G05](#))
- C25D 21/14
  - . . Controlled addition of electrolyte components
- C25D 21/16
  - . Regeneration of process solutions {([C25D 13/24](#) takes precedence)}
- C25D 21/18
  - . . of electrolytes ([C25D 21/22](#) takes precedence)
- C25D 21/20
  - . . of rinse-solutions ([C25D 21/22](#) takes precedence)
- C25D 21/22
  - . . by ion-exchange