

**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 ( [C25D 5/24](#) to [C25D 5/32](#) 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 [C25D 3/04](#) to [C25D 3/50](#)
- C25D 3/56 . . of alloys
- C25D 3/562 . . . { containing more than 50% by weight of iron or nickel or cobalt { ; NiP, FeP, CoP ( Phosphatising [C25D 11/36](#) ) } }
- 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, [C25D 21/04](#) ) }

### **WARNING**

Groups [C25D 5/00B](#), [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 7/00B-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 7/12B-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 [C25B 11/00B](#), [C25D 11/022-C25D 11/02F](#), [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 11/42](#), [C25D 13/22](#), [C25](#) takes precedence ) }
  
- C25D 17/001 . { Apparatus specially adapted for plating wafers, e.g. semiconductors, solar cells }

**WARNING**

Groups [C25B 17/00B](#)-[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
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- [C25D 21/00](#)** **Processes for servicing or operating cells for electrolytic coating**
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- [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