

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](#)

Guidance heading:**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
- 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