

**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. using aluminium 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 5/34](#) - [C25D 5/46](#) 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 - 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 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 5/003](#), [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

C25D 7/123

- • {coated first with a seed layer, e.g. 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}
- 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
- 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](#) - [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 characterised by the process ([C25D 15/00](#) takes precedence; compositions for electrophoretic coating [C09D 5/44](#))**

- C25D 13/02 . with inorganic material

C25D 13/04	<ul style="list-style-type: none"> <li>with organic material</li> </ul>
C25D 13/06	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with polymers {(not used, see <a href="#">C09D 5/44</a>)}</li> </ul> </li> </ul>
C25D 13/08	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>by polymerisation in situ of monomeric materials {(not used, see <a href="#">C09D 5/4476</a>)}</li> </ul> </li> </ul>
C25D 13/10	<ul style="list-style-type: none"> <li>characterised by the additives used {(not used, see <a href="#">C09D 5/448</a>)}</li> </ul>
C25D 13/12	<ul style="list-style-type: none"> <li>characterised by the article coated</li> </ul>
C25D 13/14	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Tubes; Rings; Hollow bodies</li> </ul> </li> </ul>
C25D 13/16	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Wires; Strips; Foils</li> </ul> </li> </ul>
C25D 13/18	<ul style="list-style-type: none"> <li>using modulated, pulsed, or reversing current</li> </ul>
C25D 13/20	<ul style="list-style-type: none"> <li>Pre-treatment</li> </ul>
C25D 13/22	<ul style="list-style-type: none"> <li>Servicing or operating {apparatus or multistep processes}</li> </ul>
C25D 13/24	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Regeneration of process liquids</li> </ul> </li> </ul>
<b>C25D 15/00</b>	<b>Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires</b>
C25D 15/02	<ul style="list-style-type: none"> <li>Combined electrolytic and electrophoretic processes {with charged materials}</li> </ul>
<b>C25D 17/00</b>	<b>Constructional parts, or assemblies thereof, of cells for electrolytic coating</b> (apparatus for continuously conveying articles into baths <a href="#">B65G</a> , e.g. <a href="#">B65G 49/00</a> ; electric devices see the relevant classes, e.g. <a href="#">H01B</a> , <a href="#">H02G</a> ) {( <a href="#">C25D 7/06</a> , <a href="#">C25D 11/005</a> , <a href="#">C25D 13/22</a> , <a href="#">C25</a> takes precedence)}
C25D 17/001	<ul style="list-style-type: none"> <li>{Apparatus specially adapted for plating wafers, e.g. semiconductors, solar cells}</li> </ul> <p><b><u>WARNING</u></b></p> <p>Groups <a href="#">C25D 17/005</a>-<a href="#">C25D 17/008</a> are not complete, pending reorganization, see also <a href="#">C25D 17/00</a></p>
C25D 17/002	<ul style="list-style-type: none"> <li>{Cell separation, e.g. membranes, diaphragms}</li> </ul>
C25D 17/004	<ul style="list-style-type: none"> <li>{Sealing devices}</li> </ul>
C25D 17/005	<ul style="list-style-type: none"> <li>{Contacting devices}</li> </ul>
C25D 17/007	<ul style="list-style-type: none"> <li>{Current conducting devices}</li> </ul>
C25D 17/008	<ul style="list-style-type: none"> <li>{Current insulating devices}</li> </ul>
C25D 17/02	<ul style="list-style-type: none"> <li>Tanks; Installations therefor</li> </ul>
C25D 17/04	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>External supporting frames or structures</li> </ul> </li> </ul>
C25D 17/06	<ul style="list-style-type: none"> <li>Suspending or supporting devices for articles to be coated</li> </ul>
C25D 17/08	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Supporting} racks {i.e. not for suspending}</li> </ul> </li> </ul>
C25D 17/10	<ul style="list-style-type: none"> <li>Electrodes {e.g. composition, counter electrode}</li> </ul>
C25D 17/12	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Shape or form (<a href="#">C25D 17/14</a> takes precedence)</li> </ul> </li> </ul>
C25D 17/14	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>for pad-plating</li> </ul> </li> </ul>
C25D 17/16	<ul style="list-style-type: none"> <li>Apparatus for electrolytic coating of small objects in bulk</li> </ul>
C25D 17/18	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>having closed containers</li> </ul> </li> </ul>
C25D 17/20	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>Horizontal barrels</li> </ul> </li> </ul> </li> </ul>
C25D 17/22	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>having open containers</li> </ul> </li> </ul>

- 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