

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### METALLURGY

## C25 ELECTROLYTIC OR ELECTROPHORETIC PROCESSES; APPARATUS THEREFOR

(NOTES omitted)

## 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

### WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
 

<a href="#">C25D 2/00</a>	covered by	<a href="#">B23K 28/006</a>
<a href="#">C25D 5/24</a>	covered by	<a href="#">C25D 5/34</a>
<a href="#">C25D 5/26</a>	covered by	<a href="#">C25D 5/36</a>
<a href="#">C25D 5/28</a>	covered by	<a href="#">C25D 5/38</a>
<a href="#">C25D 5/30</a>	covered by	<a href="#">C25D 5/42</a> , <a href="#">C25D 5/44</a>
<a href="#">C25D 5/32</a>	covered by	<a href="#">C25D 5/46</a>
<a href="#">C25D 19/00</a>	covered by	<a href="#">C25D 17/00</a>
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<b>1/00</b>	<b>Electroforming</b>	3/16	. . . . Acetylenic compounds
1/003	. {3D structures, e.g. superposed patterned layers}	3/18	. . . . Heterocyclic compounds
1/006	. {Nanostructures, e.g. using aluminium anodic oxidation templates [AAO]}	3/20	. . of iron
1/02	. Tubes; Rings; Hollow bodies	3/22	. . of zinc
1/04	. Wires; Strips; Foils	3/24	. . . from cyanide baths
1/06	. Wholly-metallic mirrors	3/26	. . of cadmium
1/08	. Perforated or foraminous objects, e.g. sieves ( <a href="#">C25D 1/10</a> takes precedence)	3/28	. . . from cyanide baths
1/10	. Moulds; Masks; Masterforms {, e.g. mandrels, stampers}	3/30	. . of tin
1/12	. by electrophoresis {(electrophoretic coating <a href="#">C25D 13/00</a> )}	3/32	. . . characterised by the organic bath constituents used
1/14	. . of inorganic material	3/34	. . of lead
1/16	. . . Metals	3/36	. . . characterised by the organic bath constituents used
1/18	. . of organic material	3/38	. . of copper
1/20	. Separation of the formed objects from the electrodes {with no destruction of said electrodes}	3/40	. . . from cyanide baths {, e.g. with Cu+}
1/22	. . Separating compounds	3/42	. . of light metals
<b>3/00</b>	<b>Electroplating; Baths therefor</b>	3/44	. . . Aluminium
3/02	. from solutions ( <a href="#">C25D 5/34</a> - <a href="#">C25D 5/46</a> take precedence)	3/46	. . of silver
3/04	. . of chromium	3/48	. . of gold
3/06	. . . from solutions of trivalent chromium	3/50	. . of platinum group metals
3/08	. . . Deposition of black chromium {, e.g. hexavalent chromium, CrVI}	3/52	. . . characterised by the organic bath constituents used
3/10	. . . characterised by the organic bath constituents used	3/54	. . of metals not provided for in groups <a href="#">C25D 3/04</a> - <a href="#">C25D 3/50</a>
3/12	. . of nickel or cobalt {( <a href="#">C25D 3/56</a> takes precedence)}	3/56	. . of alloys
3/14	. . . from baths containing acetylenic or heterocyclic compounds	3/562	. . . {containing more than 50% by weight of iron or nickel or cobalt; NiP, FeP, CoP (phosphatising <a href="#">C25D 11/36</a> )}
		3/565	. . . {containing more than 50% by weight of zinc}
		3/567	. . . {containing more than 50% by weight of platinum group metals}
		3/58	. . . containing more than 50% by weight of copper

- 3/60 . . . containing more than 50% by weight of tin {; SnP}
- 3/62 . . . containing more than 50% by weight of gold
- 3/64 . . . containing more than 50% by weight of silver
- 3/66 . from melts
- 3/665 . . {from ionic liquids}
- 5/00 Electroplating characterised by the process; Pretreatment or after-treatment of workpieces**
- 5/003 . {Electroplating characterised by the use of gases, e.g. pressure influence (removal or gases or vapours, C25D 21/04)}
- 5/006 . {Electroplating with applied electromagnetic field, not locally, e.g. for plating magnetic layers}
- 5/02 . Electroplating of selected surface areas
- 5/022 . . {using masking means (C25D 11/022 takes precedence)}
- 5/024 . . {using locally applied electromagnetic radiation, e.g. lasers}
- 5/026 . . {using locally applied jets of electrolyte}
- 5/028 . . {one side electroplating, e.g. substrate conveyed in a bath with inhibited background plating}
- 5/04 . Electroplating with moving electrodes
- 5/06 . . Brush or pad plating {(electrodes for pad plating C25D 17/14)}
- 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)}
- 5/10 . Electroplating with more than one layer of the same or of different metals (for bearings C25D 7/10)
- 5/12 . . at least one layer being of nickel or chromium
- 5/14 . . . two or more layers being of nickel or chromium, e.g. duplex or triplex layers
- 5/16 . Electroplating with layers of varying thickness {, e.g. rough surfaces}{; Hull cells}
- 5/18 . Electroplating using modulated, pulsed or reversing current
- 5/20 . Electroplating using ultrasonics {, vibrations}
- 5/22 . Electroplating combined with mechanical treatment during the deposition
- 5/34 . Pretreatment of metallic surfaces to be electroplated
- 5/36 . . of iron or steel
- 5/38 . . of refractory metals or nickel
- 5/40 . . . Nickel; Chromium
- 5/42 . . of light metals
- 5/44 . . . Aluminium
- 5/46 . . of actinides
- 5/48 . After-treatment of electroplated surfaces
- 5/50 . . by heat-treatment
- 5/505 . . . {of electroplated tin coatings, e.g. by melting}
- 5/52 . . by brightening or burnishing
- 5/54 . Electroplating {on} non-metallic surfaces {, e.g. on carbon or carbon composites} (C25D 7/12 takes precedence)
- 5/56 . . on {thin or conductive} plastics {(coating metallic material C23C)}
- 7/00 Electroplating characterised by the article coated**
- 7/001 . {Magnets}
- 7/003 . {Threaded pieces, e.g. bolts, nuts}
- 7/005 . {Jewels or clockworks}
- 7/006 . {Nanoparticles}
- 7/008 . {Thermal barrier coatings}
- 7/02 . Slide fasteners
- 7/04 . Tubes; Rings; Hollow bodies
- 7/06 . Wires; Strips; Foils
- 7/0607 . . {Wires}
- 7/0614 . . {Strips or foils}
- 7/0621 . . . {In horizontal cells}
- 7/0628 . . . {In vertical cells}
- 7/0635 . . . {In radial cells}
- 7/0642 . . . {Anodes}
- 7/065 . . . {Diaphragms}
- 7/0657 . . . {Conducting rolls}
- 7/0664 . . . {Isolating rolls}
- 7/0671 . . . {Selective plating}
- 7/0678 . . . . {using masks}
- 7/0685 . . . {Spraying of electrolyte}
- 7/0692 . . . {Regulating the thickness of the coating}
- 7/08 . Mirrors; Reflectors
- 7/10 . Bearings
- 7/12 . Semiconductors
- 7/123 . . {coated first with a seed layer, e.g. for filling vias}
- 7/126 . . {Semiconductors first coated with a seed layer for solar cells}
- 9/00 Electrolytic coating other than with metals (C25D 11/00, C25D 15/00 take precedence; electrophoretic coating C25D 13/00)**
- 9/02 . with organic materials
- 9/04 . with inorganic materials
- 9/06 . . by anodic processes
- 9/08 . . by cathodic processes
- 9/10 . . . on iron or steel
- 9/12 . . . on light metals
- 11/00 Electrolytic coating by surface reaction, i.e. forming conversion layers**
- 11/005 . {Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating C25D 17/00)}
- 11/02 . Anodisation
- 11/022 . . {Anodisation on selected surface areas}
- 11/024 . . {Anodisation under pulsed or modulated current or potential}
- 11/026 . . {Anodisation with spark discharge}
- 11/028 . . {Borodising,, i.e. borides formed electrochemically}
- 11/04 . . of aluminium or alloys based thereon
- 11/045 . . . {for forming AAO templates}
- 11/06 . . . characterised by the electrolytes used
- 11/08 . . . . containing inorganic acids
- 11/10 . . . . containing organic acids
- 11/12 . . . Anodising more than once, e.g. in different baths
- 11/14 . . . Producing integrally coloured layers
- 11/16 . . . Pretreatment {, e.g. desmutting}
- 11/18 . . . After-treatment, e.g. pore-sealing
- 11/20 . . . . Electrolytic after-treatment
- 11/22 . . . . . for colouring layers
- 11/24 . . . . . Chemical after-treatment
- 11/243 . . . . . {using organic dyestuffs}
- 11/246 . . . . . {for sealing layers}

- 11/26 . . of refractory metals or alloys based thereon
- 11/28 . . of actinides or alloys based thereon
- 11/30 . . of magnesium or alloys based thereon
- 11/32 . . of semiconducting materials
- 11/34 . . of metals or alloys not provided for in groups  
[C25D 11/04](#) - [C25D 11/32](#)
- 11/36 . Phosphatising {, e.g. NiP, CoP, FeP (bath solutions of NiP, CoP, FeP [C25D 3/562](#))}
- 11/38 . Chromatising
- 13/00 Electrophoretic coating characterised by the process ([C25D 15/00](#) takes precedence; compositions for electrophoretic coating [C09D 5/44](#))**
  - 13/02 . with inorganic material
  - 13/04 . with organic material
  - 13/06 . . with polymers {(not used, see [C09D 5/44](#))}
  - 13/08 . . . by polymerisation in situ of monomeric materials {(not used, see [C09D 5/4476](#))}
  - 13/10 . characterised by the additives used {(not used, see [C09D 5/448](#))}
  - 13/12 . characterised by the article coated
  - 13/14 . . Tubes; Rings; Hollow bodies
  - 13/16 . . Wires; Strips; Foils
  - 13/18 . using modulated, pulsed, or reversing current
  - 13/20 . Pretreatment
  - 13/22 . Servicing or operating {apparatus or multistep processes}
  - 13/24 . . Regeneration of process liquids
- 15/00 Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires**
  - 15/02 . Combined electrolytic and electrophoretic processes {with charged materials}
- 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)}**
  - 17/001 . {Apparatus specially adapted for plating wafers, e.g. semiconductors, solar cells}
  - 17/002 . {Cell separation, e.g. membranes, diaphragms}
  - 17/004 . {Sealing devices}
  - 17/005 . {Contacting devices}
  - 17/007 . {Current conducting devices}
  - 17/008 . {Current insulating devices}
  - 17/02 . Tanks; Installations therefor
  - 17/04 . . External supporting frames or structures
  - 17/06 . Suspending or supporting devices for articles to be coated
  - 17/08 . . {Supporting} racks {, i.e. not for suspending}
  - 17/10 . Electrodes {, e.g. composition, counter electrode}
  - 17/12 . . Shape or form ([C25D 17/14](#) takes precedence)
  - 17/14 . . for pad-plating
  - 17/16 . Apparatus for electrolytic coating of small objects in bulk
  - 17/18 . . having closed containers
  - 17/20 . . . Horizontal barrels
  - 17/22 . . having open containers
  - 17/24 . . . Oblique barrels
  - 17/26 . . . Oscillating baskets
- 17/28 . . with means for moving the objects individually through the apparatus during treatment
- 21/00 Processes for servicing or operating cells for electrolytic coating**
  - 21/02 . Heating or cooling
  - 21/04 . Removal of gases or vapours {; gas or pressure control (electroplating characterized by the use of gases [C25D 5/003](#))}
  - 21/06 . Filtering {particles other than ions (filtering ions [C25D 21/22](#))}
  - 21/08 . Rinsing
  - 21/10 . Agitating of electrolytes; Moving of racks
  - 21/11 . Use of protective surface layers on electrolytic baths
  - 21/12 . Process control or regulation (controlling or regulating in general [G05](#))
  - 21/14 . . Controlled addition of electrolyte components
  - 21/16 . Regeneration of process solutions {([C25D 13/24](#) takes precedence)}
  - 21/18 . . of electrolytes ([C25D 21/22](#) takes precedence)
  - 21/20 . . of rinse-solutions ([C25D 21/22](#) takes precedence)
  - 21/22 . . by ion-exchange