

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; 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:

| | | |
|----------------------------|------------|---|
| C25D 2/00 | covered by | B23K 28/006 |
| 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 19/00 | covered by | C25D 17/00 |
- 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.

| | | | |
|-------------|--|-------|---|
| 1/00 | Electroforming | 3/24 | . . . from cyanide baths |
| 1/003 | . {3D structures, e.g. superposed patterned layers} | 3/26 | . . of cadmium |
| 1/006 | . {Nanostructures, e.g. using aluminium anodic oxidation templates [AAO]} | 3/28 | . . . from cyanide baths |
| 1/02 | . Tubes; Rings; Hollow bodies | 3/30 | . . of tin |
| 1/04 | . Wires; Strips; Foils | 3/32 | . . . characterised by the organic bath constituents used |
| 1/06 | . Wholly-metallic mirrors | 3/34 | . . of lead |
| 1/08 | . Perforated or foraminous objects, e.g. sieves (C25D 1/10 takes precedence) | 3/36 | . . . characterised by the organic bath constituents used |
| 1/10 | . Moulds; Masks; Masterforms | 3/38 | . . of copper |
| 1/12 | . by electrophoresis | 3/40 | . . . from cyanide baths {, e.g. with Cu+} |
| 1/14 | . . of inorganic material | 3/42 | . . of light metals |
| 1/16 | . . . Metals | 3/44 | . . . Aluminium |
| 1/18 | . . of organic material | 3/46 | . . of silver |
| 1/20 | . Separation of the formed objects from the electrodes {with no destruction of said electrodes} | 3/48 | . . of gold |
| 1/22 | . . Separating compounds | 3/50 | . . of platinum group metals |
| 3/00 | Electroplating; Baths therefor | 3/52 | . . . characterised by the organic bath constituents used |
| 3/02 | . from solutions (C25D 5/34 - C25D 5/46 take precedence) | 3/54 | . . of metals not provided for in groups C25D 3/04 - C25D 3/50 |
| 3/04 | . . of chromium | 3/56 | . . of alloys |
| 3/06 | . . . from solutions of trivalent chromium | 3/562 | . . . {containing more than 50% by weight of iron or nickel or cobalt} |
| 3/08 | . . . Deposition of black chromium {, e.g. hexavalent chromium, CrVI} | 3/565 | . . . {containing more than 50% by weight of zinc} |
| 3/10 | . . . characterised by the organic bath constituents used | 3/567 | . . . {containing more than 50% by weight of platinum group metals} |
| 3/12 | . . of nickel or cobalt | 3/58 | . . . containing more than 50% by weight of copper |
| 3/14 | . . . from baths containing acetylenic or heterocyclic compounds | 3/60 | . . . containing more than 50% by weight of tin |
| 3/16 | Acetylenic compounds | 3/62 | . . . containing more than 50% by weight of gold |
| 3/18 | Heterocyclic compounds | 3/64 | . . . containing more than 50% by weight of silver |
| 3/20 | . . of iron | 3/66 | . from melts |
| 3/22 | . . of zinc | 3/665 | . . {from ionic liquids} |

- 5/00 Electroplating characterised by the process; Pretreatment or after-treatment of workpieces**
- 5/003 . {Electroplating using gases, e.g. pressure influence}
 - 5/007 . {Electroplating using magnetic fields, e.g. magnets}
 - 5/009 . . {Deposition of ferromagnetic material}
 - 5/011 . {Electroplating using electromagnetic wave irradiation (using locally applied electromagnetic radiation [C25D 5/024](#))}
 - 5/013 . . {Wavelengths other than ultra-violet [UV], visible or infra-red [IR], e.g. X-rays or microwaves}
 - 5/02 . Electroplating of selected surface areas
 - 5/022 . . {using masking means}
- WARNING**
- Group [C25D 5/022](#) is incomplete pending reclassification of documents from group [C25D 11/022](#).
- Groups [C25D 11/022](#) and [C25D 5/022](#) should be considered in order to perform a complete search.
- 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
 - 5/08 . Electroplating with moving electrolyte e.g. jet electroplating {(using locally applied jets of electrolyte [C25D 5/026](#))}
 - 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
 - 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 of non-metallic surfaces ([C25D 7/12](#) takes precedence)

WARNING

Group [C25D 5/54](#) is impacted by reclassification into group [C25D 5/56](#).

Groups [C25D 5/54](#) and [C25D 5/56](#) should be considered in order to perform a complete search.

- 5/56 . . of plastics

WARNING

Group [C25D 5/56](#) is incomplete pending reclassification of documents from group [C25D 5/54](#).

Groups [C25D 5/54](#) and [C25D 5/56](#) should be considered in order to perform a complete search.

- 5/60 . {Electroplating characterised by the structure or texture of the layers}
- 5/605 . . {Surface topography of the layers, e.g. rough, dendritic or nodular layers}
- 5/611 . . . {Smooth layers}
- 5/615 . . {Microstructure of the layers, e.g. mixed structure}
- 5/617 . . . {Crystalline layers}
- 5/619 . . . {Amorphous layers}
- 5/623 . . {Porosity of the layers}
- 5/625 . . {Discontinuous layers, e.g. microcracked layers}
- 5/627 . {Electroplating characterised by the visual appearance of the layers, e.g. colour, brightness or mat appearance}
- 5/67 . {Electroplating to repair workpiece}

7/00 Electroplating characterised by the article coated**WARNING**

Group [C25D 7/00](#) is impacted by reclassification into group [C25D 7/005](#).

Groups [C25D 7/00](#) and [C25D 7/005](#) should be considered in order to perform a complete search.

- 7/001 . {Magnets}
- 7/003 . {Threaded pieces, e.g. bolts or nuts}
- 7/005 . {Jewels; Clockworks; Coins}

WARNING

Group [C25D 7/005](#) is incomplete pending reclassification of documents from group [C25D 7/00](#).

Groups [C25D 7/00](#) and [C25D 7/005](#) should be considered in order to perform a complete search.

- 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 | 11/12 | . . . Anodising more than once, e.g. in different baths |
| 7/12 | . Semiconductors | 11/14 | . . . Producing integrally coloured layers |
| | WARNING | 11/16 | . . . Pretreatment {, e.g. desmutting } |
| | Group C25D 7/12 is impacted by reclassification into groups C25D 7/123 and C25D 7/126 . | 11/18 | . . . After-treatment, e.g. pore-sealing |
| | Groups C25D 7/12 , C25D 7/123 , and C25D 7/126 should be considered in order to perform a complete search. | 11/20 | Electrolytic after-treatment |
| | | 11/22 | for colouring layers |
| | | 11/24 | Chemical after-treatment |
| | | 11/243 | { using organic dyestuffs } |
| 7/123 | . . {Semiconductors first coated with a seed layer or a conductive layer} | 11/246 | { for sealing layers } |
| | WARNING | 11/26 | . . of refractory metals or alloys based thereon |
| | Group C25D 7/123 is incomplete pending reclassification of documents from group C25D 7/12 . | 11/28 | . . of actinides or alloys based thereon |
| | Groups C25D 7/12 and C25D 7/123 should be considered in order to perform a complete search. | 11/30 | . . of magnesium or alloys based thereon |
| | | 11/32 | . . of semiconducting materials |
| 7/126 | . . . { for solar cells } | 11/34 | . . of metals or alloys not provided for in groups C25D 11/04 - C25D 11/32 |
| | WARNING | 11/36 | . Phosphatising |
| | Group C25D 7/126 is incomplete pending reclassification of documents from group C25D 7/12 . | 11/38 | . Chromatising |
| | Groups C25D 7/12 and C25D 7/126 should be considered in order to perform a complete search. | 13/00 | Electrophoretic coating characterised by the process (C25D 15/00 takes precedence; compositions for electrophoretic coating C09D 5/44) |
| 9/00 | Electrolytic coating other than with metals (C25D 11/00, C25D 15/00 take precedence; electrophoretic coating C25D 13/00) | 13/02 | . with inorganic material |
| 9/02 | . with organic materials | 13/04 | . with organic material |
| 9/04 | . with inorganic materials | 13/06 | . . with polymers { not used , see C09D 5/44 } |
| 9/06 | . . by anodic processes | 13/08 | . . . by polymerisation in situ of monomeric materials { not used , see C09D 5/4476 } |
| 9/08 | . . by cathodic processes | 13/10 | . characterised by the additives used { not used , see C09D 5/448 } |
| 9/10 | . . . on iron or steel | 13/12 | . characterised by the article coated |
| 9/12 | . . . on light metals | 13/14 | . . Tubes; Rings; Hollow bodies |
| 11/00 | Electrolytic coating by surface reaction, i.e. forming conversion layers | 13/16 | . . Wires; Strips; Foils |
| 11/005 | . {Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating C25D 17/00)} | 13/18 | . using modulated, pulsed, or reversing current |
| 11/02 | . Anodisation | 13/20 | . Pretreatment |
| 11/022 | . . { Anodisation on selected surface areas } | 13/22 | . Servicing or operating { apparatus or multistep processes } |
| | WARNING | 13/24 | . . Regeneration of process liquids |
| | Group C25D 11/022 is impacted by reclassification into group C25D 5/022 . | | WARNING |
| | Groups C25D 11/022 and C25D 5/022 should be considered in order to perform a complete search. | | Group C25D 13/24 is impacted by reclassification into groups C25D 21/16 , C25D 21/18 , C25D 21/20 , and C25D 21/22 . |
| 11/024 | . . { Anodisation under pulsed or modulated current or potential } | | All groups listed in this Warning should be considered in order to perform a complete search. |
| 11/026 | . . { Anodisation with spark discharge } | 15/00 | Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires |
| 11/028 | . . { Borodising , i.e. borides formed electrochemically} | 15/02 | . Combined electrolytic and electrophoretic processes { with charged materials } |
| 11/04 | . . of aluminium or alloys based thereon | 17/00 | Constructional parts, or assemblies thereof, of cells for electrolytic coating |
| 11/045 | . . . { for forming AAO templates } | 17/001 | . {Apparatus specially adapted for electrolytic coating of wafers, e.g. semiconductors or solar cells} |
| 11/06 | . . . characterised by the electrolytes used | 17/002 | . {Cell separation, e.g. membranes, diaphragms} |
| 11/08 | containing inorganic acids | 17/004 | . {Sealing devices} |
| 11/10 | containing organic acids | 17/005 | . {Contacting devices} |
| | | 17/007 | . {Current directing devices} |
| | | 17/008 | . {Current shielding 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}
- 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

WARNING

Groups [C25D 21/16](#) - [C25D 21/22](#) are incomplete pending reclassification of documents from group [C25D 13/24](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 21/18 . . of electrolytes ([C25D 21/22 takes precedence](#))
- 21/20 . . of rinse-solutions ([C25D 21/22 takes precedence](#))
- 21/22 . . by ion-exchange