

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