

# 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:
 

<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>	3/24	. . . 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 ( <a href="#">C25D 1/10</a> 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
		3/52	. . . characterised by the organic bath constituents used
<b>3/00</b>	<b>Electroplating: Baths therefor</b>	3/54	. . of metals not provided for in groups <a href="#">C25D 3/04</a> - <a href="#">C25D 3/50</a>
3/02	. from solutions ( <a href="#">C25D 5/34</a> - <a href="#">C25D 5/46</a> take precedence)	3/56	. . of alloys
3/04	. . of chromium	3/562	. . . {containing more than 50% by weight of iron or nickel or cobalt}
3/06	. . . from solutions of trivalent chromium	3/565	. . . {containing more than 50% by weight of zinc}
3/08	. . . Deposition of black chromium {, e.g. hexavalent chromium, CrVI}	3/567	. . . {containing more than 50% by weight of platinum group metals}
3/10	. . . characterised by the organic bath constituents used	3/58	. . . containing more than 50% by weight of copper
3/12	. . of nickel or cobalt	3/60	. . . containing more than 50% by weight of tin
3/14	. . . from baths containing acetylenic or heterocyclic compounds	3/62	. . . containing more than 50% by weight of gold
3/16	. . . . Acetylenic compounds	3/64	. . . containing more than 50% by weight of silver
3/18	. . . . Heterocyclic compounds	3/66	. from melts
3/20	. . of iron	3/665	. . {from ionic liquids}
3/22	. . of zinc		

<b>5/00</b>	<b>Electroplating characterised by the process; Pretreatment or after-treatment of workpieces</b>	<b>7/00</b>	<b>Electroplating characterised by the article coated</b>
5/003	. {Electroplating using gases, e.g. pressure influence}	7/001	. {Magnets}
5/007	. {Electroplating using magnetic fields, e.g. magnets}	7/003	. {Threaded pieces, e.g. bolts or nuts}
5/009	. . {Deposition of ferromagnetic material}	7/005	. {Jewels; Clockworks; Coins}
5/011	. {Electroplating using electromagnetic wave irradiation (using locally applied electromagnetic radiation <a href="#">C25D 5/024</a> )}	7/006	. {Nanoparticles}
5/013	. . {Wavelengths other than ultraviolet [UV], visible or infrared [IR], e.g. X-rays or microwaves}	7/008	. {Thermal barrier coatings}
5/02	. Electroplating of selected surface areas	7/02	. Slide fasteners
5/022	. . {using masking means}	7/04	. Tubes; Rings; Hollow bodies
5/024	. . {using locally applied electromagnetic radiation, e.g. lasers}	7/06	. Wires; Strips; Foils
5/026	. . {using locally applied jets of electrolyte}	7/0607	. . {Wires}
5/028	. . {one side electroplating, e.g. substrate conveyed in a bath with inhibited background plating}	7/0614	. . {Strips or foils}
5/04	. Electroplating with moving electrodes	7/0621	. . . {In horizontal cells}
5/06	. . Brush or pad plating	7/0628	. . . {In vertical cells}
5/08	. Electroplating with moving electrolyte e.g. jet electroplating {(using locally applied jets of electrolyte <a href="#">C25D 5/026</a> )}	7/0635	. . . {In radial cells}
5/10	. Electroplating with more than one layer of the same or of different metals (for bearings <a href="#">C25D 7/10</a> )	7/0642	. . . {Anodes}
5/12	. . at least one layer being of nickel or chromium	7/065	. . . {Diaphragms}
5/14	. . . two or more layers being of nickel or chromium, e.g. duplex or triplex layers	7/0657	. . . {Conducting rolls}
5/16	. Electroplating with layers of varying thickness	7/0664	. . . {Isolating rolls}
5/18	. Electroplating using modulated, pulsed or reversing current	7/0671	. . . {Selective plating}
5/20	. Electroplating using ultrasonics {, vibrations}	7/0678	. . . . {using masks}
5/22	. Electroplating combined with mechanical treatment during the deposition	7/0685	. . . {Spraying of electrolyte}
5/34	. Pretreatment of metallic surfaces to be electroplated	7/0692	. . . {Regulating the thickness of the coating}
5/36	. . of iron or steel	7/08	. Mirrors; Reflectors
5/38	. . of refractory metals or nickel	7/10	. Bearings
5/40	. . . Nickel; Chromium	7/12	. Semiconductors
5/42	. . of light metals	7/123	. . {Semiconductors first coated with a seed layer or a conductive layer}
5/44	. . . Aluminium	7/126	. . . {for solar cells}
5/46	. . of actinides	<b>9/00</b>	<b>Electrolytic coating other than with metals</b>
5/48	. After-treatment of electroplated surfaces		<a href="#">(C25D 11/00, C25D 15/00 take precedence; electrophoretic coating <a href="#">C25D 13/00</a>)</a>
5/50	. . by heat-treatment	9/02	. with organic materials
5/505	. . . {of electroplated tin coatings, e.g. by melting}	9/04	. with inorganic materials
5/52	. . by brightening or burnishing	9/06	. . by anodic processes
5/54	. Electroplating of non-metallic surfaces ( <a href="#">C25D 7/12 takes precedence</a> )	9/08	. . by cathodic processes
5/56	. . of plastics	9/10	. . . on iron or steel
5/60	. {Electroplating characterised by the structure or texture of the layers}	9/12	. . . on light metals
5/605	. . {Surface topography of the layers, e.g. rough, dendritic or nodular layers}	<b>11/00</b>	<b>Electrolytic coating by surface reaction, i.e. forming conversion layers</b>
5/611	. . . {Smooth layers}	11/005	. {Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating <a href="#">C25D 17/00</a> )}
5/615	. . {Microstructure of the layers, e.g. mixed structure}	11/02	. Anodisation
5/617	. . . {Crystalline layers}	11/022	. . {Anodisation on selected surface areas}
5/619	. . . {Amorphous layers}	11/024	. . {Anodisation under pulsed or modulated current or potential}
5/623	. . {Porosity of the layers}	11/026	. . {Anodisation with spark discharge}
5/625	. . {Discontinuous layers, e.g. microcracked layers}	11/028	. . {Borodising, i.e. borides formed electrochemically}
5/627	. {Electroplating characterised by the visual appearance of the layers, e.g. colour, brightness or mat appearance}	11/04	. . of aluminium or alloys based thereon
5/67	. {Electroplating to repair workpiece}	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
- 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**
- 17/001 . {Apparatus specially adapted for electrolytic coating of wafers, e.g. semiconductors or solar cells}
- 17/002 . {Cell separation, e.g. membranes, diaphragms}
- 17/004 . {Sealing devices}
- 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
- 21/18 . . of electrolytes ([C25D 21/22](#) takes precedence)
- 21/20 . . of rinse-solutions ([C25D 21/22](#) takes precedence)
- 21/22 . . by ion-exchange