

# 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

1. 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>

2. 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
<b>3/00</b>	<b>Electroplating; Baths therefor</b>	3/52	. . . characterised by the organic bath constituents used
3/02	. from solutions ( <a href="#">C25D 5/34</a> - <a href="#">C25D 5/46</a> take precedence)	3/54	. . of metals not provided for in groups <a href="#">C25D 3/04</a> - <a href="#">C25D 3/50</a>
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}

<b>5/00</b>	<b>Electroplating characterised by the process; Pretreatment or after-treatment of workpieces</b>
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 <a href="#">C25D 5/024</a> )}
5/013	. . {Wavelengths other than ultraviolet [UV], visible or infrared [IR], e.g. X-rays or microwaves}
5/02	. Electroplating of selected surface areas
5/022	. . {using masking means}
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 <a href="#">C25D 5/026</a> )}
5/10	. Electroplating with more than one layer of the same or of different metals (for bearings <a href="#">C25D 7/10</a> )
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 ( <a href="#">C25D 7/12</a> takes precedence)
5/56	. . of plastics
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}

<b>7/00</b>	<b>Electroplating characterised by the article coated</b>
7/001	. {Magnets}
7/003	. {Threaded pieces, e.g. bolts or nuts}
7/005	. {Jewels; Clockworks; Coins}
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	. . {Semiconductors first coated with a seed layer or a conductive layer}
7/126	. . . {for solar cells}
<b>9/00</b>	<b>Electrolytic coating other than with metals (<a href="#">C25D 11/00</a>, <a href="#">C25D 15/00</a> take precedence; electrophoretic coating <a href="#">C25D 13/00</a>)</b>
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
<b>11/00</b>	<b>Electrolytic coating by surface reaction, i.e. forming conversion layers</b>
11/005	. {Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating <a href="#">C25D 17/00</a> )}
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	17/28	. . with means for moving the objects individually through the apparatus during treatment
11/243	. . . . {using organic dyestuffs}		
11/246	. . . . {for sealing layers}		
11/26	. . of refractory metals or alloys based thereon	<b>21/00</b>	<b>Processes for servicing or operating cells for electrolytic coating</b>
11/28	. . of actinides or alloys based thereon	21/02	. Heating or cooling
11/30	. . of magnesium or alloys based thereon	21/04	. Removal of gases or vapours {; Gas or pressure control}
11/32	. . of semiconducting materials	21/06	. Filtering {particles other than ions (filtering ions C25D 21/22)}
11/34	. . of metals or alloys not provided for in groups C25D 11/04 - C25D 11/32	21/08	. Rinsing
11/36	. Phosphatising	21/10	. Agitating of electrolytes; Moving of racks
11/38	. Chromatising	21/11	. Use of protective surface layers on electrolytic baths
<b>13/00</b>	<b>Electrophoretic coating characterised by the process (C25D 15/00 takes precedence; compositions for electrophoretic coating C09D 5/44)</b>	21/12	. Process control or regulation (controlling or regulating in general G05)
13/02	. with inorganic material	21/14	. . Controlled addition of electrolyte components
13/04	. with organic material	21/16	. Regeneration of process solutions
13/06	. . with polymers {(not used, see C09D 5/44)}	21/18	. . of electrolytes (C25D 21/22 takes precedence)
13/08	. . . by polymerisation <i>in situ</i> of monomeric materials {(not used, see C09D 5/4476)}	21/20	. . of rinse-solutions (C25D 21/22 takes precedence)
13/10	. characterised by the additives used {(not used, see C09D 5/448)}	21/22	. . by ion-exchange
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		
<b>15/00</b>	<b>Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires</b>		
15/02	. Combined electrolytic and electrophoretic processes {with charged materials}		
<b>17/00</b>	<b>Constructional parts, or assemblies thereof, of cells for electrolytic coating</b>		
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		