

## SECTION C — CHEMISTRY; METALLURGY

### C25 ELECTROLYTIC OR ELECTROPHORETIC PROCESSES; APPARATUS THEREFOR

**C25D PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING** (manufacturing printed circuits by metal deposition H05K 3/18); **JOINING WORKPIECES BY ELECTROLYSIS; APPARATUS THEREFOR** (anodic or cathodic protection C23F 13/00; single-crystal growth C30B) [2, 6]

#### Note(s) [2012.01]

Coating with two or more superposed coatings obtained by combination of methods provided for in this subclass and in subclass C23C is classified in group C23C 28/00.

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| <b>1/00 Electroforming [2, 2006.01]</b>  | 3/44 • • • Aluminium [2, 2006.01]  |
| 1/02 • Tubes; Rings; Hollow bodies [2, 2006.01]  | 3/46 • • of silver [2, 2006.01]  |
| 1/04 • Wires; Strips; Foils [2, 2006.01]   | 3/48 • • of gold [2, 2006.01]  |
| 1/06 • Wholly-metallic mirrors [2, 2006.01]  | 3/50 • • of platinum group metals [2, 2006.01]   |
| 1/08 • Perforated or foraminous objects, e.g. sieves (C25D 1/10 takes precedence) [2, 2006.01] | 3/52 • • • characterised by the organic bath constituents used [2, 2006.01]  |
| 1/10 • Moulds; Masks; Masterforms [2, 2006.01]   | 3/54 • • of metals not provided for in groups C25D 3/04-C25D 3/50 [2, 2006.01]   |
| 1/12 • by electrophoresis [2, 2006.01]   | 3/56 • • of alloys [2, 2006.01]  |
| 1/14 • • of inorganic material [2, 2006.01]  | 3/58 • • • containing more than 50% by weight of copper [2, 2006.01]   |
| 1/16 • • • Metals [2, 2006.01]   | 3/60 • • • containing more than 50% by weight of tin [2, 2006.01]  |
| 1/18 • • of organic material [2, 2006.01]  | 3/62 • • • containing more than 50% by weight of gold [2, 2006.01]   |
| 1/20 • Separation of the formed objects from the electrodes [2, 2006.01]                       | 3/64 • • • containing more than 50% by weight of silver [2, 2006.01]   |
| 1/22 • • Separating compounds [2, 2006.01]   | 3/66 • from melts [2, 2006.01]   |
| <b>2/00 Joining workpieces by electrolysis [6, 2006.01]</b>                                    |  |
| <b>3/00 Electroplating; Baths therefor [2, 2006.01]</b>  | <b>5/00 Electroplating characterised by the process; Pretreatment or after-treatment of workpieces [2, 2006.01]</b>            |
| 3/02 • from solutions (C25D 5/24-C25D 5/32 take precedence) [2, 2006.01]                       | 5/02 • Electroplating of selected surface areas [2, 2006.01]   |
| 3/04 • • of chromium [2, 2006.01]  | 5/04 • Electroplating with moving electrodes [2, 2006.01]  |
| 3/06 • • • from solutions of trivalent chromium [2, 2006.01]                                   | 5/06 • • Brush or pad plating [2, 2006.01]   |
| 3/08 • • • Deposition of black chromium [2, 2006.01]   | 5/08 • Electroplating with moving electrolyte, e.g. jet electroplating [2, 2006.01]  |
| 3/10 • • • characterised by the organic bath constituents used [2, 2006.01]                    | 5/10 • Electroplating with more than one layer of the same or of different metals (for bearings C25D 7/10) [2, 2006.01]        |
| 3/12 • • of nickel or cobalt [2, 2006.01]  | 5/12 • • at least one layer being of nickel or chromium [2, 2006.01]   |
| 3/14 • • • from baths containing acetylenic or heterocyclic compounds [2, 2006.01]             | 5/14 • • • two or more layers being of nickel or chromium, e.g. duplex or triplex layers [2, 2006.01]                          |
| 3/16 • • • • Acetylenic compounds [2, 2006.01]   | 5/16 • Electroplating with layers of varying thickness [2, 2006.01]  |
| 3/18 • • • • Heterocyclic compounds [2, 2006.01]   | 5/18 • Electroplating using modulated, pulsed or reversing current [2, 2006.01]  |
| 3/20 • • of iron [2, 2006.01]  | 5/20 • Electroplating using ultrasonics [2, 2006.01]   |
| 3/22 • • of zinc [2, 2006.01]  | 5/22 • Electroplating combined with mechanical treatment during the deposition [2, 2006.01]                                    |
| 3/24 • • • from cyanide baths [2, 2006.01]   | 5/24 • Electroplating of metal surfaces to which a coating cannot readily be applied (C25D 5/34 takes precedence) [2, 2006.01] |
| 3/26 • • of cadmium [2, 2006.01]   | 5/26 • • of iron or steel surfaces [2, 2006.01]  |
| 3/28 • • • from cyanide baths [2, 2006.01]   |  |
| 3/30 • • of tin [2, 2006.01]   |  |
| 3/32 • • • characterised by the organic bath constituents used [2, 2006.01]                    |  |
| 3/34 • • of lead [2, 2006.01]  |  |
| 3/36 • • • characterised by the organic bath constituents used [2, 2006.01]                    |  |
| 3/38 • • of copper [2, 2006.01]  |  |
| 3/40 • • • from cyanide baths [2, 2006.01]   |  |
| 3/42 • • of light metals [2, 2006.01]  |  |

5/28	• • of surfaces of refractory metals [2, 2006.01]	13/00	<b>Electrophoretic coating characterised by the process</b> (C25D 15/00 takes precedence; compositions for electrophoretic coating C09D 5/44) [2, 2006.01]
5/30	• • of surfaces of light metals [2, 2006.01]	13/02	• with inorganic material [2, 2006.01]
5/32	• • of surfaces of actinides [2, 2006.01]	13/04	• with organic material [2, 2006.01]
5/34	• Pretreatment of metallic surfaces to be electroplated [2, 2006.01]	13/06	• • polymers [2, 2006.01]
5/36	• • of iron or steel [2, 2006.01]	13/08	• • • by polymerisation <u>in situ</u> of monomeric materials [2, 2006.01]
5/38	• • of refractory metals or nickel [2, 2006.01]	13/10	• characterised by the additives used [2, 2006.01]
5/40	• • • Nickel; Chromium [2, 2006.01]	13/12	• characterised by the article coated [2, 2006.01]
5/42	• • of light metals [2, 2006.01]	13/14	• • Tubes; Rings; Hollow bodies [2, 2006.01]
5/44	• • • Aluminium [2, 2006.01]	13/16	• • Wires; Strips; Foils [2, 2006.01]
5/46	• • of actinides [2, 2006.01]	13/18	• using modulated, pulsed or reversing current [2, 2006.01]
5/48	• After-treatment of electroplated surfaces [2, 2006.01]	13/20	• Pretreatment [2, 2006.01]
5/50	• • by heat-treatment [2, 2006.01]	13/22	• Servicing or operating [2, 2006.01]
5/52	• • by brightening or burnishing [2, 2006.01]	13/24	• • Regeneration of process liquids [2, 2006.01]
5/54	• Electroplating of non-metallic surfaces (C25D 7/12 takes precedence) [2, 2006.01]		
5/56	• • of plastics [2, 2006.01]		
7/00	<b>Electroplating characterised by the article coated [2, 2006.01]</b>	15/00	<b>Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires [2, 2006.01]</b>
7/02	• Slide fasteners [2, 2006.01]	15/02	• Combined electrolytic and electrophoretic processes [2, 2006.01]
7/04	• Tubes; Rings; Hollow bodies [2, 2006.01]		
7/06	• Wires; Strips; Foils [2, 2006.01]	17/00	<b>Constructional parts, or assemblies thereof, of cells for electrolytic coating [2, 2006.01]</b>
7/08	• Mirrors; Reflectors [2, 2006.01]	17/02	• Tanks; Installations therefor [2, 2006.01]
7/10	• Bearings [2, 2006.01]	17/04	• • External supporting frames or structures [2, 2006.01]
7/12	• Semiconductors [2, 2006.01]	17/06	• Suspending or supporting devices for articles to be coated [2, 2006.01]
9/00	<b>Electrolytic coating other than with metals</b> (C25D 11/00, C25D 15/00 take precedence; electrophoretic coating C25D 13/00) [2, 2006.01]	17/08	• • Racks [2, 2006.01]
9/02	• with organic materials [2, 2006.01]	17/10	• Electrodes [2, 2006.01]
9/04	• with inorganic materials [2, 2006.01]	17/12	• • Shape or form (C25D 17/14 takes precedence) [2, 2006.01]
9/06	• • by anodic processes [2, 2006.01]	17/14	• • for pad-plating [2, 2006.01]
9/08	• • by cathodic processes [2, 2006.01]	17/16	• Apparatus for electrolytic coating of small objects in bulk [2, 2006.01]
9/10	• • • on iron or steel [2, 2006.01]	17/18	• • having closed containers [2, 2006.01]
9/12	• • • on light metals [2, 2006.01]	17/20	• • • Horizontal barrels [2, 2006.01]
11/00	<b>Electrolytic coating by surface reaction, i.e. forming conversion layers [2, 2006.01]</b>	17/22	• • having open containers [2, 2006.01]
11/02	• Anodisation [2, 2006.01]	17/24	• • • Oblique barrels [2, 2006.01]
11/04	• • of aluminium or alloys based thereon [2, 2006.01]	17/26	• • • Oscillating baskets [2, 2006.01]
11/06	• • • characterised by the electrolytes used [2, 2006.01]	17/28	• • with means for moving the objects individually through the apparatus during the treatment [2, 2006.01]
11/08	• • • containing inorganic acids [2, 2006.01]		
11/10	• • • containing organic acids [2, 2006.01]	19/00	<b>Electrolytic coating plants [2, 2006.01]</b>
11/12	• • • Anodising more than once, e.g. in different baths [2, 2006.01]		
11/14	• • • Producing integrally coloured layers [2, 2006.01]	21/00	<b>Processes for servicing or operating cells for electrolytic coating [2, 2006.01]</b>
11/16	• • • Pretreatment [2, 2006.01]	21/02	• Heating or cooling [2, 2006.01]
11/18	• • • After-treatment, e.g. pore-sealing [2, 2006.01]	21/04	• Removal of gases or vapours [2, 2006.01]
11/20	• • • • Electrolytic after-treatment [2, 2006.01]	21/06	• Filtering [2, 2006.01]
11/22	• • • • • for colouring layers [2, 2006.01]	21/08	• Rinsing [2, 2006.01]
11/24	• • • • Chemical after-treatment [2, 2006.01]	21/10	• Agitating of electrolytes; Moving of racks [2, 2006.01]
11/26	• • of refractory metals or alloys based thereon [2, 2006.01]	21/11	• Use of protective surface layers on electrolytic baths [3, 2006.01]
11/28	• • of actinides or alloys based thereon [2, 2006.01]	21/12	• Process control or regulation [2, 2006.01]
11/30	• • of magnesium or alloys based thereon [2, 2006.01]	21/14	• • Controlled addition of electrolyte components [2, 2006.01]
11/32	• • of semiconducting materials [2, 2006.01]	21/16	• Regeneration of process solutions [2, 2006.01]
11/34	• • of metals or alloys not provided for in groups C25D 11/04-C25D 11/32 [2, 2006.01]	21/18	• • of electrolytes (C25D 21/22 takes precedence) [2, 2006.01]
11/36	• Phosphatising [2, 2006.01]		
11/38	• Chromatising [2, 2006.01]		

21/20 • • of rinse-solutions (C25D 21/22 takes precedence) **[2, 2006.01]**

21/22 • • by ion-exchange **[2, 2006.01]**