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.

1/00 Electroforming [2, 2006.01]
1/02 • Tubes; Rings; Hollow bodies **[2, 2006.01]**
1/04 • Wires; Strips; Foils **[2, 2006.01]**
1/06 • Wholly-metallic mirrors **[2, 2006.01]**
1/08 • Perforated or foraminous objects, e.g. sieves (C25D 1/10 takes precedence) **[2, 2006.01]**
1/10 • Moulds; Masks; Masterforms **[2, 2006.01]**
1/12 • by electrophoresis **[2, 2006.01]**
1/14 • • of inorganic material **[2, 2006.01]**
1/16 • • • Metals **[2, 2006.01]**
1/18 • • of organic material **[2, 2006.01]**
1/20 • Separation of the formed objects from the electrodes **[2, 2006.01]**
1/22 • • Separating compounds **[2, 2006.01]**

2/00 Joining workpieces by electrolysis [6, 2006.01]

3/00 Electroplating; Baths therefor [2, 2006.01]
3/02 • from solutions (C25D 5/24-C25D 5/32 take precedence) **[2, 2006.01]**
3/04 • • of chromium **[2, 2006.01]**
3/06 • • • from solutions of trivalent chromium **[2, 2006.01]**
3/08 • • • Deposition of black chromium **[2, 2006.01]**
3/10 • • • characterised by the organic bath constituents used **[2, 2006.01]**
3/12 • • of nickel or cobalt **[2, 2006.01]**
3/14 • • • from baths containing acetylenic or heterocyclic compounds **[2, 2006.01]**
3/16 • • • • Acetylenic compounds **[2, 2006.01]**
3/18 • • • • Heterocyclic compounds **[2, 2006.01]**
3/20 • • of iron **[2, 2006.01]**
3/22 • • of zinc **[2, 2006.01]**
3/24 • • • from cyanide baths **[2, 2006.01]**
3/26 • • of cadmium **[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]**
3/44 • • • Aluminium **[2, 2006.01]**
3/46 • • of silver **[2, 2006.01]**
3/48 • • of gold **[2, 2006.01]**
3/50 • • of platinum group metals **[2, 2006.01]**
3/52 • • • characterised by the organic bath constituents used **[2, 2006.01]**
3/54 • • of metals not provided for in groups C25D 3/04-C25D 3/50 **[2, 2006.01]**
3/56 • • of alloys **[2, 2006.01]**
3/58 • • • containing more than 50% by weight of copper **[2, 2006.01]**
3/60 • • • containing more than 50% by weight of tin **[2, 2006.01]**
3/62 • • • containing more than 50% by weight of gold **[2, 2006.01]**
3/64 • • • containing more than 50% by weight of silver **[2, 2006.01]**
3/66 • from melts **[2, 2006.01]**

5/00 Electroplating characterised by the process; Pretreatment or after-treatment of workpieces [2, 2006.01]
5/02 • Electroplating of selected surface areas **[2, 2006.01]**
5/04 • Electroplating with moving electrodes **[2, 2006.01]**
5/06 • • Brush or pad plating **[2, 2006.01]**
5/08 • Electroplating with moving electrolyte, e.g. jet electroplating **[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]**
5/12 • • at least one layer being of nickel or chromium **[2, 2006.01]**
5/14 • • • two or more layers being of nickel or chromium, e.g. duplex or triplex layers **[2, 2006.01]**
5/16 • Electroplating with layers of varying thickness **[2, 2006.01]**
5/18 • Electroplating using modulated, pulsed or reversing current **[2, 2006.01]**
5/20 • Electroplating using ultrasonics **[2, 2006.01]**
5/22 • Electroplating combined with mechanical treatment during the deposition **[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]**
5/26 • • of iron or steel surfaces **[2, 2006.01]**

5/28 • • of surfaces of refractory metals **[2, 2006.01]**
5/30 • • of surfaces of light metals **[2, 2006.01]**
5/32 • • of surfaces of actinides **[2, 2006.01]**
5/34 • Pretreatment of metallic surfaces to be electroplated **[2, 2006.01]**
5/36 • • of iron or steel **[2, 2006.01]**
5/38 • • of refractory metals or nickel **[2, 2006.01]**
5/40 • • • Nickel; Chromium **[2, 2006.01]**
5/42 • • of light metals **[2, 2006.01]**
5/44 • • • Aluminium **[2, 2006.01]**
5/46 • • of actinides **[2, 2006.01]**
5/48 • After-treatment of electroplated surfaces **[2, 2006.01]**
5/50 • • by heat-treatment **[2, 2006.01]**
5/52 • • by brightening or burnishing **[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 Electroplating characterised by the article coated [2, 2006.01]
7/02 • Slide fasteners **[2, 2006.01]**
7/04 • Tubes; Rings; Hollow bodies **[2, 2006.01]**
7/06 • Wires; Strips; Foils **[2, 2006.01]**
7/08 • Mirrors; Reflectors **[2, 2006.01]**
7/10 • Bearings **[2, 2006.01]**
7/12 • Semiconductors **[2, 2006.01]**

9/00 Electrolytic coating other than with metals (C25D 11/00, C25D 15/00 take precedence; electrophoretic coating C25D 13/00) **[2, 2006.01]**
9/02 • with organic materials **[2, 2006.01]**
9/04 • with inorganic materials **[2, 2006.01]**
9/06 • • by anodic processes **[2, 2006.01]**
9/08 • • by cathodic processes **[2, 2006.01]**
9/10 • • • on iron or steel **[2, 2006.01]**
9/12 • • • on light metals **[2, 2006.01]**

11/00 Electrolytic coating by surface reaction, i.e. forming conversion layers [2, 2006.01]
11/02 • Anodisation **[2, 2006.01]**
11/04 • • of aluminium or alloys based thereon **[2, 2006.01]**
11/06 • • • characterised by the electrolytes used **[2, 2006.01]**
11/08 • • • • containing inorganic acids **[2, 2006.01]**
11/10 • • • • containing organic acids **[2, 2006.01]**
11/12 • • • Anodising more than once, e.g. in different baths **[2, 2006.01]**
11/14 • • • Producing integrally coloured layers **[2, 2006.01]**
11/16 • • • Pretreatment **[2, 2006.01]**
11/18 • • • After-treatment, e.g. pore-sealing **[2, 2006.01]**
11/20 • • • • Electrolytic after-treatment **[2, 2006.01]**
11/22 • • • • • for colouring layers **[2, 2006.01]**
11/24 • • • • Chemical after-treatment **[2, 2006.01]**
11/26 • • of refractory metals or alloys based thereon **[2, 2006.01]**
11/28 • • of actinides or alloys based thereon **[2, 2006.01]**
11/30 • • of magnesium or alloys based thereon **[2, 2006.01]**
11/32 • • of semiconducting materials **[2, 2006.01]**
11/34 • • of metals or alloys not provided for in groups C25D 11/04-C25D 11/32 **[2, 2006.01]**
11/36 • Phosphatising **[2, 2006.01]**
11/38 • Chromatising **[2, 2006.01]**

13/00 Electrophoretic coating characterised by the process (C25D 15/00 takes precedence; compositions for electrophoretic coating C09D 5/44) **[2, 2006.01]**
13/02 • with inorganic material **[2, 2006.01]**
13/04 • with organic material **[2, 2006.01]**
13/06 • • polymers **[2, 2006.01]**
13/08 • • • by polymerisation in situ of monomeric materials **[2, 2006.01]**
13/10 • characterised by the additives used **[2, 2006.01]**
13/12 • characterised by the article coated **[2, 2006.01]**
13/14 • • Tubes; Rings; Hollow bodies **[2, 2006.01]**
13/16 • • Wires; Strips; Foils **[2, 2006.01]**
13/18 • using modulated, pulsed or reversing current **[2, 2006.01]**
13/20 • Pretreatment **[2, 2006.01]**
13/22 • Servicing or operating **[2, 2006.01]**
13/24 • • Regeneration of process liquids **[2, 2006.01]**

15/00 Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires [2, 2006.01]
15/02 • Combined electrolytic and electrophoretic processes **[2, 2006.01]**

17/00 Constructional parts, or assemblies thereof, of cells for electrolytic coating [2, 2006.01]
17/02 • Tanks; Installations therefor **[2, 2006.01]**
17/04 • • External supporting frames or structures **[2, 2006.01]**
17/06 • Suspending or supporting devices for articles to be coated **[2, 2006.01]**
17/08 • • Racks **[2, 2006.01]**
17/10 • Electrodes **[2, 2006.01]**
17/12 • • Shape or form (C25D 17/14 takes precedence) **[2, 2006.01]**
17/14 • • for pad-plating **[2, 2006.01]**
17/16 • Apparatus for electrolytic coating of small objects in bulk **[2, 2006.01]**
17/18 • • having closed containers **[2, 2006.01]**
17/20 • • • Horizontal barrels **[2, 2006.01]**
17/22 • • having open containers **[2, 2006.01]**
17/24 • • • Oblique barrels **[2, 2006.01]**
17/26 • • • Oscillating baskets **[2, 2006.01]**
17/28 • • with means for moving the objects individually through the apparatus during the treatment **[2, 2006.01]**

19/00 Electrolytic coating plants [2, 2006.01]

21/00 Processes for servicing or operating cells for electrolytic coating [2, 2006.01]
21/02 • Heating or cooling **[2, 2006.01]**
21/04 • Removal of gases or vapours **[2, 2006.01]**
21/06 • Filtering **[2, 2006.01]**
21/08 • Rinsing **[2, 2006.01]**
21/10 • Agitating of electrolytes; Moving of racks **[2, 2006.01]**
21/11 • Use of protective surface layers on electrolytic baths **[3, 2006.01]**
21/12 • Process control or regulation **[2, 2006.01]**
21/14 • • Controlled addition of electrolyte components **[2, 2006.01]**
21/16 • Regeneration of process solutions **[2, 2006.01]**
21/18 • • of electrolytes (C25D 21/22 takes precedence) **[2, 2006.01]**

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

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