

SECTION C — CHEMISTRY; METALLURGY

C23 COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; CHEMICAL SURFACE TREATMENT; DIFFUSION TREATMENT OF METALLIC MATERIAL; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL; INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL

C23C COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; SURFACE TREATMENT OF METALLIC MATERIAL BY DIFFUSION INTO THE SURFACE, BY CHEMICAL CONVERSION OR SUBSTITUTION; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (making metal-coated products by extrusion B21C 23/22; covering with metal by connecting pre-existing layers to articles, see the relevant places, e.g. B21D 39/00, B23K; metallising of glass C03C; metallising mortars, concrete, artificial stone, ceramics or natural stone C04B 41/00; enamelling of, or applying a vitreous layer to, metals C23D; treating metal surfaces or coating of metals by electrolysis or electrophoresis C25D; single-crystal film growth C30B; by metallising textiles D06M 11/83; decorating textiles by locally metallising D06Q 1/04) **[4]**

Note(s) [4]

In this subclass, an operation is considered as pretreatment or after-treatment when it is specially adapted for, but quite distinct from, the coating process concerned and constitutes an independent operation. If an operation results in the formation of a permanent sub- or upper layer, it is not considered as pretreatment or after-treatment and is classified as a multi-coating process.

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Coating by applying the coating material in the molten state [4]

- 2/00 Hot-dipping or immersion processes for applying the coating material in the molten state without affecting the shape; Apparatus therefor [4, 2006.01]**
- 2/02 • Pretreatment of the material to be coated, e.g. for coating on selected surface areas (C23C 2/30 takes precedence) **[4, 2006.01]**
- 2/04 • characterised by the coating material **[4, 2006.01]**
- 2/06 • • Zinc or cadmium or alloys based thereon **[4, 2006.01]**
- 2/08 • • Tin or alloys based thereon **[4, 2006.01]**
- 2/10 • • Lead or alloys based thereon **[4, 2006.01]**
- 2/12 • • Aluminium or alloys based thereon **[4, 2006.01]**
- 2/14 • Removing excess of molten coatings; Controlling or regulating the coating thickness **[4, 2006.01]**
- 2/16 • • using fluids under pressure, e.g. air knives **[4, 2006.01]**
- 2/18 • • • Removing excess of molten coatings from elongated material **[4, 2006.01]**
- 2/20 • • • • Strips; Plates **[4, 2006.01]**
- 2/22 • • by rubbing, e.g. using knives **[4, 2006.01]**

- 2/24 • • using magnetic or electric fields **[4, 2006.01]**
- 2/26 • After-treatment (C23C 2/14 takes precedence) **[4, 2006.01]**
- 2/28 • • Thermal after-treatment, e.g. treatment in oil bath **[4, 2006.01]**
- 2/30 • Fluxes or coverings on molten baths (C23C 2/22 takes precedence) **[4, 2006.01]**
- 2/32 • using vibratory energy applied to the bath or substrate (C23C 2/14 takes precedence) **[4, 2006.01]**
- 2/34 • characterised by the shape of the material to be treated (C23C 2/14 takes precedence) **[4, 2006.01]**
- 2/36 • • Elongated material **[4, 2006.01]**
- 2/38 • • • Wires; Tubes **[4, 2006.01]**
- 2/40 • • • Plates; Strips **[4, 2006.01]**
- 4/00 Coating by spraying the coating material in the molten state, e.g. by flame, plasma or electric discharge** (build-up welding B23K, e.g. B23K 5/18, B23K 9/04) **[4, 2006.01, 2016.01]**
- 4/01 • Selective coating, e.g. pattern coating, without pretreatment of the material to be coated **[2016.01]**

- 4/02 • Pretreatment of the material to be coated, e.g. for coating on selected surface areas [4, 2006.01]
- 4/04 • characterised by the coating material [4, 2006.01]
- 4/06 • • Metallic material [4, 2006.01, 2016.01]
- 4/067 • • • containing free particles of non-metal elements, e.g. carbon, silicon, boron, phosphorus or arsenic [2016.01]
- 4/073 • • • containing MCrAl or MCrAlY alloys, where M is nickel, cobalt or iron, with or without non-metal elements [2016.01]
- 4/08 • • • containing only metal elements (C23C 4/073 takes precedence) [4, 2006.01, 2016.01]
- 4/10 • • Oxides, borides, carbides, nitrides or silicides; Mixtures thereof [4, 2006.01, 2016.01]
- 4/11 • • • Oxides [2016.01]
- 4/12 • characterised by the method of spraying [4, 2006.01, 2016.01]
- 4/123 • • Spraying molten metal [2016.01]
- 4/126 • • Detonation spraying [2016.01]
- 4/129 • • Flame spraying [2016.01]
- 4/131 • • Wire arc spraying [2016.01]
- 4/134 • • Plasma spraying [2016.01]
- 4/137 • • Spraying in vacuum or in an inert atmosphere [2016.01]
- 4/14 • • for coating elongate material [4, 2006.01, 2016.01]
- 4/16 • • • Wires; Tubes [4, 2006.01, 2016.01]
- 4/18 • After-treatment [4, 2006.01]
- 6/00 **Coating by casting molten material on the substrate [4, 2006.01]**

Solid state diffusion into metallic material surfaces [4]

- 8/00 **Solid state diffusion of only non-metal elements into metallic material surfaces (diffusion of silicon C23C 10/00); Chemical surface treatment of metallic material by reaction of the surface with a reactive gas, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals (C23C 14/00 takes precedence) [4, 2006.01]**
- 8/02 • Pretreatment of the material to be coated (C23C 8/04 takes precedence) [4, 2006.01]
- 8/04 • Treatment of selected surface areas, e.g. using masks [4, 2006.01]
- 8/06 • using gases [4, 2006.01]
- 8/08 • • only one element being applied [4, 2006.01]
- 8/10 • • • Oxidising [4, 2006.01]
- 8/12 • • • • using elemental oxygen or ozone [4, 2006.01]
- 8/14 • • • • • Oxidising of ferrous surfaces [4, 2006.01]
- 8/16 • • • • • using oxygen-containing compounds, e.g. H₂O, CO₂ [4, 2006.01]
- 8/18 • • • • • Oxidising of ferrous surfaces [4, 2006.01]
- 8/20 • • • • Carburising [4, 2006.01]
- 8/22 • • • • of ferrous surfaces [4, 2006.01]
- 8/24 • • • • Nitriding [4, 2006.01]
- 8/26 • • • • of ferrous surfaces [4, 2006.01]
- 8/28 • • • more than one element being applied in one step [4, 2006.01]
- 8/30 • • • Carbo-nitriding [4, 2006.01]
- 8/32 • • • • of ferrous surfaces [4, 2006.01]
- 8/34 • • more than one element being applied in more than one step [4, 2006.01]
- 8/36 • • using ionised gases, e.g. ionitriding [4, 2006.01]

- 8/38 • • • Treatment of ferrous surfaces [4, 2006.01]
- 8/40 • using liquids, e.g. salt baths, liquid suspensions [4, 2006.01]
- 8/42 • • only one element being applied [4, 2006.01]
- 8/44 • • • Carburising [4, 2006.01]
- 8/46 • • • • of ferrous surfaces [4, 2006.01]
- 8/48 • • • Nitriding [4, 2006.01]
- 8/50 • • • • of ferrous surfaces [4, 2006.01]
- 8/52 • • more than one element being applied in one step [4, 2006.01]
- 8/54 • • • Carbo-nitriding [4, 2006.01]
- 8/56 • • • • of ferrous surfaces [4, 2006.01]
- 8/58 • • more than one element being applied in more than one step [4, 2006.01]
- 8/60 • using solids, e.g. powders, pastes (using liquid suspensions of solids C23C 8/40) [4, 2006.01]
- 8/62 • • only one element being applied [4, 2006.01]
- 8/64 • • • Carburising [4, 2006.01]
- 8/66 • • • • of ferrous surfaces [4, 2006.01]
- 8/68 • • • Boronising [4, 2006.01]
- 8/70 • • • • of ferrous surfaces [4, 2006.01]
- 8/72 • • more than one element being applied in one step [4, 2006.01]
- 8/74 • • • Carbo-nitriding [4, 2006.01]
- 8/76 • • • • of ferrous surfaces [4, 2006.01]
- 8/78 • • more than one element being applied in more than one step [4, 2006.01]
- 8/80 • After-treatment [4, 2006.01]

10/00 Solid state diffusion of only metal elements or silicon into metallic material surfaces [4, 2006.01]

- 10/02 • Pretreatment of the material to be coated (C23C 10/04 takes precedence) [4, 2006.01]
- 10/04 • Diffusion into selected surface areas, e.g. using masks [4, 2006.01]
- 10/06 • using gases [4, 2006.01]
- 10/08 • • only one element being diffused [4, 2006.01]
- 10/10 • • • Chromising [4, 2006.01]
- 10/12 • • • • of ferrous surfaces [4, 2006.01]
- 10/14 • • more than one element being diffused in one step [4, 2006.01]
- 10/16 • • more than one element being diffused in more than one step [4, 2006.01]
- 10/18 • using liquids, e.g. salt baths, liquid suspensions [4, 2006.01]
- 10/20 • • only one element being diffused [4, 2006.01]
- 10/22 • • • Metal melt containing the element to be diffused [4, 2006.01]
- 10/24 • • • Salt bath containing the element to be diffused [4, 2006.01]
- 10/26 • • more than one element being diffused [4, 2006.01]
- 10/28 • using solids, e.g. powders, pastes [4, 2006.01]
- 10/30 • • using a layer of powder or paste on the surface (using liquid suspensions of solids C23C 10/18) [4, 2006.01]
- 10/32 • • • Chromising [4, 2006.01]
- 10/34 • • Embedding in a powder mixture, i.e. pack cementation [4, 2006.01]
- 10/36 • • • only one element being diffused [4, 2006.01]
- 10/38 • • • • Chromising [4, 2006.01]
- 10/40 • • • • • of ferrous surfaces [4, 2006.01]
- 10/42 • • • • • in the presence of volatile transport additives, e.g. halogenated substances [4, 2006.01]
- 10/44 • • • • Siliconising [4, 2006.01]

- 10/46 • • • • • of ferrous surfaces [4, 2006.01]
- 10/48 • • • • • Aluminising [4, 2006.01]
- 10/50 • • • • • of ferrous surfaces [4, 2006.01]
- 10/52 • • • • more than one element being diffused in one step [4, 2006.01]
- 10/54 • • • • • Diffusion of at least chromium [4, 2006.01]
- 10/56 • • • • • and at least aluminium [4, 2006.01]
- 10/58 • • • • more than one element being diffused in more than one step [4, 2006.01]
- 10/60 • • After-treatment [4, 2006.01]
- 12/00 **Solid state diffusion of at least one non-metal element other than silicon and at least one metal element or silicon into metallic material surfaces [4, 2006.01]**
- 12/02 • • Diffusion in one step [4, 2006.01]

Coating by vacuum evaporation, by sputtering or by ion implantation [4]

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- 14/00 Coating by vacuum evaporation, by sputtering or by ion implantation of the coating forming material [4, 2006.01]**
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- 14/02 • • Pretreatment of the material to be coated (C23C 14/04 takes precedence) [4, 2006.01]
 - 14/04 • • Coating on selected surface areas, e.g. using masks [4, 2006.01]
 - 14/06 • • characterised by the coating material (C23C 14/04 takes precedence) [4, 2006.01]
 - 14/08 • • Oxides (C23C 14/10 takes precedence) [4, 2006.01]
 - 14/10 • • Glass or silica [4, 2006.01]
 - 14/12 • • Organic material [4, 2006.01]
 - 14/14 • • Metallic material, boron or silicon [4, 2006.01]
 - 14/16 • • • • on metallic substrates or on substrates of boron or silicon [4, 2006.01]
 - 14/18 • • • • on other inorganic substrates [4, 2006.01]
 - 14/20 • • • • on organic substrates [4, 2006.01]
 - 14/22 • • characterised by the process of coating [4, 2006.01]
 - 14/24 • • Vacuum evaporation [4, 2006.01]
 - 14/26 • • • • by resistance or inductive heating of the source [4, 2006.01]
 - 14/28 • • • • by wave energy or particle radiation (C23C 14/32-C23C 14/48 take precedence) [4, 2006.01]
 - 14/30 • • • • by electron bombardment [4, 2006.01]
 - 14/32 • • • • by explosion; by evaporation and subsequent ionisation of the vapours (C23C 14/34-C23C 14/48 take precedence) [4, 2006.01]
 - 14/34 • • Sputtering [4, 2006.01]
 - 14/35 • • • • by application of a magnetic field, e.g. magnetron sputtering [5, 2006.01]
 - 14/36 • • • • Diode sputtering (C23C 14/35 takes precedence) [4, 5, 2006.01]
 - 14/38 • • • • • by direct current glow discharge [4, 2006.01]
 - 14/40 • • • • • with alternating current discharge, e.g. high-frequency discharge [4, 2006.01]
 - 14/42 • • • • Triode sputtering (C23C 14/35 takes precedence) [4, 5, 2006.01]
 - 14/44 • • • • • by application of high frequencies and additional direct voltages [4, 2006.01]
 - 14/46 • • • • • by ion beam produced by an external ion source (C23C 14/40 takes precedence) [4, 2006.01]
 - 14/48 • • Ion implantation [4, 2006.01]
 - 14/50 • • Substrate holders [4, 2006.01]

- 14/52 • • Means for observation of the coating process [4, 2006.01]
- 14/54 • • Controlling or regulating the coating process [4, 2006.01]
- 14/56 • • Apparatus specially adapted for continuous coating; Arrangements for maintaining the vacuum, e.g. vacuum locks [4, 2006.01]
- 14/58 • • After-treatment [4, 2006.01]

Chemical deposition or plating by decomposition; Contact plating [4]

- 16/00 Chemical coating by decomposition of gaseous compounds, without leaving reaction products of surface material in the coating, i.e. chemical vapour deposition [CVD] processes (reactive sputtering or vacuum evaporation C23C 14/00) [4, 2006.01]**
- 16/01 • • on temporary substrates, e.g. on substrates subsequently removed by etching [7, 2006.01]
 - 16/02 • • Pretreatment of the material to be coated (C23C 16/04 takes precedence) [4, 2006.01]
 - 16/04 • • Coating on selected surface areas, e.g. using masks [4, 2006.01]
 - 16/06 • • characterised by the deposition of metallic material [4, 2006.01]
 - 16/08 • • • • from metal halides [4, 2006.01]
 - 16/10 • • • • Deposition of chromium only [4, 2006.01]
 - 16/12 • • • • Deposition of aluminium only [4, 2006.01]
 - 16/14 • • • • Deposition of only one other metal element [4, 2006.01]
 - 16/16 • • • • from metal carbonyl compounds [4, 2006.01]
 - 16/18 • • • • from metallo-organic compounds [4, 2006.01]
 - 16/20 • • • • Deposition of aluminium only [4, 2006.01]
 - 16/22 • • characterised by the deposition of inorganic material, other than metallic material [4, 2006.01]
 - 16/24 • • • • Deposition of silicon only [4, 2006.01]
 - 16/26 • • • • Deposition of carbon only [4, 2006.01]
 - 16/27 • • • • Diamond only [7, 2006.01]
 - 16/28 • • • • Deposition of only one other non-metal element [4, 2006.01]
 - 16/30 • • • • Deposition of compounds, mixtures or solid solutions, e.g. borides, carbides, nitrides [4, 2006.01]
 - 16/32 • • • • Carbides [4, 2006.01]
 - 16/34 • • • • Nitrides [4, 2006.01]
 - 16/36 • • • • Carbo-nitrides [4, 2006.01]
 - 16/38 • • • • Borides [4, 2006.01]
 - 16/40 • • • • Oxides [4, 2006.01]
 - 16/42 • • • • Silicides [4, 2006.01]
 - 16/44 • • characterised by the method of coating (C23C 16/04 takes precedence) [4, 2006.01]
 - 16/442 • • • • using fluidised bed processes [7, 2006.01]
 - 16/448 • • • • characterised by the method used for generating reactive gas streams, e.g. by evaporation or sublimation of precursor materials [7, 2006.01]
 - 16/452 • • • • • by activating reactive gas streams before introduction into the reaction chamber, e.g. by ionization or by addition of reactive species [7, 2006.01]
 - 16/453 • • • • passing the reaction gases through burners or torches, e.g. atmospheric pressure CVD (C23C 16/513 takes precedence; for flame or plasma spraying of coating material in the molten state C23C 4/00) [7, 2006.01]

- 16/455 • • characterised by the method used for introducing gases into the reaction chamber or for modifying gas flows in the reaction chamber [7, 2006.01]
- 16/458 • • characterised by the method used for supporting substrates in the reaction chamber [7, 2006.01]
- 16/46 • • characterised by the method used for heating the substrate (C23C 16/48, C23C 16/50 take precedence) [4, 2006.01]
- 16/48 • • by irradiation, e.g. photolysis, radiolysis, particle radiation [4, 2006.01]
- 16/50 • • using electric discharges [4, 2006.01]
- 16/503 • • • using DC or AC discharges [7, 2006.01]
- 16/505 • • • using radio frequency discharges [7, 2006.01]
- 16/507 • • • • using external electrodes, e.g. in tunnel type reactors [7, 2006.01]
- 16/509 • • • • using internal electrodes [7, 2006.01]
- 16/511 • • • using microwave discharges [7, 2006.01]
- 16/513 • • • using plasma jets [7, 2006.01]
- 16/515 • • • using pulsed discharges [7, 2006.01]
- 16/517 • • • using a combination of discharges covered by two or more of groups C23C 16/503-C23C 16/515 [7, 2006.01]
- 16/52 • • Controlling or regulating the coating process [4, 2006.01]
- 16/54 • • Apparatus specially adapted for continuous coating [4, 2006.01]
- 16/56 • After-treatment [4, 2006.01]

18/00 Chemical coating by decomposition of either liquid compounds or solutions of the coating forming compounds, without leaving reaction products of surface material in the coating; Contact plating [4, 2006.01]

Note(s) [4]

This group covers also suspensions containing reactive liquids and non-reactive solid particles.

- 18/02 • by thermal decomposition [4, 2006.01]
- 18/04 • • Pretreatment of the material to be coated (C23C 18/06 takes precedence) [4, 2006.01]
- 18/06 • • Coating on selected surface areas, e.g. using masks [4, 2006.01]
- 18/08 • • characterised by the deposition of metallic material [4, 2006.01]
- 18/10 • • • Deposition of aluminium only [4, 2006.01]
- 18/12 • • characterised by the deposition of inorganic material other than metallic material [4, 2006.01]
- 18/14 • Decomposition by irradiation, e.g. photolysis, particle radiation [4, 2006.01]
- 18/16 • by reduction or substitution, i.e. electroless plating (C23C 18/54 takes precedence) [4, 2006.01]
- 18/18 • • Pretreatment of the material to be coated [4, 2006.01]
- 18/20 • • • of organic surfaces, e.g. resins [4, 2006.01]
- 18/22 • • • • Roughening, e.g. by etching [4, 2006.01]
- 18/24 • • • • • using acid aqueous solutions [4, 2006.01]
- 18/26 • • • • • using organic liquids [4, 2006.01]
- 18/28 • • • • Sensitising or activating [4, 2006.01]
- 18/30 • • • • • Activating [4, 2006.01]
- 18/31 • • Coating with metals [5, 2006.01]
- 18/32 • • • Coating with one of iron, cobalt or nickel; Coating with mixtures of phosphorus or boron with one of these metals [4, 5, 2006.01]
- 18/34 • • • • using reducing agents [4, 5, 2006.01]
- 18/36 • • • • • using hypophosphites [4, 5, 2006.01]
- 18/38 • • • Coating with copper [4, 5, 2006.01]

- 18/40 • • • • using reducing agents [4, 5, 2006.01]
- 18/42 • • • Coating with noble metals [4, 5, 2006.01]
- 18/44 • • • • using reducing agents [4, 5, 2006.01]
- 18/48 • • Coating with alloys [4, 5, 2006.01]
- 18/50 • • • with alloys based on iron, cobalt or nickel (C23C 18/32 takes precedence) [4, 5, 2006.01]
- 18/52 • • using reducing agents for coating with metallic material not provided for in a single one of groups C23C 18/32-C23C 18/50 [4, 2006.01]
- 18/54 • Contact plating, i.e. electroless electrochemical plating [4, 2006.01]

20/00 Chemical coating by decomposition of either solid compounds or suspensions of the coating forming compounds, without leaving reaction products of surface material in the coating [4, 2006.01]

Note(s) [4]

This group covers also suspensions containing non-reactive liquids and reactive solid particles.

- 20/02 • Coating with metallic material [4, 2006.01]
- 20/04 • • with metals [4, 2006.01]
- 20/06 • Coating with inorganic material, other than metallic material [4, 2006.01]
- 20/08 • • with compounds, mixtures or solid solutions, e.g. borides, carbides, nitrides [4, 2006.01]

22/00 Chemical surface treatment of metallic material by reaction of the surface with a reactive liquid, leaving reaction products of surface material in the coating, e.g. conversion coatings, passivation of metals [4, 2006.01]

Note(s) [4]

1. This group covers also suspensions containing reactive liquids and non-reactive solid particles.
2. Rejuvenating of the bath is classified in the appropriate place for the specific bath composition.

Note(s) [4]

In groups C23C 22/02-C23C 22/86, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

- 22/02 • using non-aqueous solutions [4, 2006.01]
- 22/03 • • containing phosphorus compounds [4, 2006.01]
- 22/04 • • containing hexavalent chromium compounds [4, 2006.01]
- 22/05 • using aqueous solutions [5, 2006.01]
- 22/06 • • using aqueous acidic solutions with pH < 6 [4, 5, 2006.01]
- 22/07 • • • containing phosphates [4, 5, 2006.01]
- 22/08 • • • • Orthophosphates [4, 5, 2006.01]
- 22/10 • • • • • containing oxidants [4, 5, 2006.01]
- 22/12 • • • • • containing zinc cations [4, 5, 2006.01]
- 22/13 • • • • • • containing also nitrate or nitrite anions [4, 5, 2006.01]
- 22/14 • • • • • • containing also chlorate anions [4, 5, 2006.01]
- 22/16 • • • • • • containing also peroxy-compounds [4, 5, 2006.01]
- 22/17 • • • • • • containing also organic acids [4, 5, 2006.01]
- 22/18 • • • • • • containing manganese cations [4, 5, 2006.01]

22/20	• • • • •	containing aluminium cations [4, 5, 2006.01]	22/63	• • •	Treatment of copper or alloys based thereon [4, 5, 2006.01]
22/22	• • • • •	containing alkaline earth metal cations [4, 5, 2006.01]	22/64	• • •	Treatment of refractory metals or alloys based thereon [4, 5, 2006.01]
22/23	• • • • •	Condensed phosphates [4, 5, 2006.01]	22/66	• • •	Treatment of aluminium or alloys based thereon [4, 5, 2006.01]
22/24	• • •	containing hexavalent chromium compounds [4, 5, 2006.01]	22/67	• • • •	with solutions containing hexavalent chromium [4, 5, 2006.01]
22/26	• • •	containing also organic compounds [4, 5, 2006.01]	22/68	• •	using aqueous solutions with pH between 6 and 8 [4, 5, 2006.01]
22/27	• • • • •	Acids [4, 5, 2006.01]	22/70	•	using melts [4, 2006.01]
22/28	• • • • •	Macromolecular compounds [4, 5, 2006.01]	22/72	• •	Treatment of iron or alloys based thereon [4, 2006.01]
22/30	• • • •	containing also trivalent chromium [4, 5, 2006.01]	22/73	•	characterised by the process [4, 2006.01]
22/32	• • • •	containing also pulverulent metals [4, 5, 2006.01]	22/74	• •	for obtaining burned-in conversion coatings [4, 2006.01]
22/33	• • • •	containing also phosphates [4, 5, 2006.01]	22/76	• •	Applying the liquid by spraying [4, 2006.01]
22/34	• • •	containing fluorides or complex fluorides [4, 5, 2006.01]	22/77	• •	Controlling or regulating of the coating process [4, 2006.01]
22/36	• • • •	containing also phosphates [4, 5, 2006.01]	22/78	•	Pretreatment of the material to be coated [4, 2006.01]
22/37	• • • •	containing also hexavalent chromium compounds [4, 5, 2006.01]	22/80	• •	with solutions containing titanium or zirconium compounds [4, 2006.01]
22/38	• • • • •	containing also phosphates [4, 5, 2006.01]	22/82	•	After-treatment [4, 2006.01]
22/40	• • •	containing molybdates, tungstates or vanadates [4, 5, 2006.01]	22/83	• •	Chemical after-treatment [4, 2006.01]
22/42	• • •	containing also phosphates [4, 5, 2006.01]	22/84	• •	Dyeing [4, 2006.01]
22/43	• • • •	containing also hexavalent chromium compounds [4, 5, 2006.01]	22/86	•	Regeneration of coating baths [4, 2006.01]
22/44	• • • •	containing also fluorides or complex fluorides [4, 5, 2006.01]	24/00	Coating starting from inorganic powder (spraying of the coating material in molten state C23C 4/00; solid state diffusion C23C 8/00-C23C 12/00) [4, 2006.01]	
22/46	• • •	containing oxalates [4, 5, 2006.01]	24/02	•	by application of pressure only [4, 2006.01]
22/47	• • • •	containing also phosphates [4, 5, 2006.01]	24/04	• •	Impact or kinetic deposition of particles [4, 2006.01]
22/48	• • •	not containing phosphates, hexavalent chromium compounds, fluorides or complex fluorides, molybdates, tungstates, vanadates or oxalates [4, 5, 2006.01]	24/06	• •	Compressing powdered coating material, e.g. by milling [4, 2006.01]
22/50	• • • •	Treatment of iron or alloys based thereon [4, 5, 2006.01]	24/08	•	by application of heat or pressure and heat (C23C 24/04 takes precedence) [4, 2006.01]
22/52	• • • •	Treatment of copper or alloys based thereon [4, 5, 2006.01]	24/10	• •	with intermediate formation of a liquid phase in the layer [4, 2006.01]
22/53	• • • •	Treatment of zinc or alloys based thereon [4, 5, 2006.01]	26/00	Coating not provided for in groups C23C 2/00-C23C 24/00 [4, 2006.01]	
22/54	• • • •	Treatment of refractory metals or alloys based thereon [4, 5, 2006.01]	26/02	•	applying molten material to the substrate [4, 2006.01]
22/56	• • • •	Treatment of aluminium or alloys based thereon [4, 5, 2006.01]	28/00	Coating for obtaining at least two superposed coatings either by methods not provided for in a single one of main groups C23C 2/00-C23C 26/00, or by combinations of methods provided for in subclasses C23C and C25D [4, 2006.01]	
22/57	• • • •	Treatment of magnesium or alloys based thereon [4, 5, 2006.01]	28/02	•	only coatings of metallic material [4, 2006.01]
22/58	• • • •	Treatment of other metallic material [4, 5, 2006.01]	28/04	•	only coatings of inorganic non-metallic material [4, 2006.01]
22/60	• •	using alkaline aqueous solutions with pH > 8 [4, 5, 2006.01]	30/00	Coating with metallic material characterised only by the composition of the metallic material, i.e. not characterised by the coating process (C23C 26/00, C23C 28/00 take precedence) [4, 2006.01]	
22/62	• • •	Treatment of iron or alloys based thereon [4, 5, 2006.01]			