

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### METALLURGY

**C23 COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL** (by metallising textiles [D06M 11/83](#); decorating textiles by locally metallising [D06Q 1/04](#)); **CHEMICAL SURFACE TREATMENT; DIFFUSION TREATMENT OF METALLIC MATERIAL; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL** (for specific applications, see the relevant places, e.g. for manufacturing resistors [H01C 17/06](#)); **INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL** (treating metal surfaces or coating of metals by electrolysis or electrophoresis [C25D](#), [C25F](#))  
(NOTE omitted)

**C23F NON-MECHANICAL REMOVAL OF METALLIC MATERIAL FROM SURFACE** (working metal by laser beams [B23K 26/00](#); desurfacing by applying flames [B23K 7/00](#); working of metal by electro-erosion [B23H](#); producing decorative effects by removing surface material, e.g. by engraving, by etching, [B44C 1/22](#); electrolytic etching or polishing [C25F](#)); **INHIBITING CORROSION OF METALLIC MATERIAL OR INCRUSTATION IN GENERAL; MULTI-STEP PROCESSES FOR SURFACE TREATMENT OF METALLIC MATERIAL INVOLVING AT LEAST ONE PROCESS PROVIDED FOR IN CLASS [C23](#) AND AT LEAST ONE PROCESS COVERED BY SUBCLASS [C21D](#) OR [C22F](#) OR CLASS [C25](#)**

#### NOTES

1. protective layers or coating compositions or methods of applying them; these are classified in the appropriate places, e.g. [B05](#), [B44](#), [C09D](#), [C23C](#).
2. mechanical devices or constructional features of particular articles for inhibiting incrustation; these are classified in the appropriate places, e.g. in pipes or pipe fittings [F16L 58/00](#).
3. articles characterised by being made of materials selected for their properties of resistance to corrosion or incrustation; these are classified in the appropriate places, e.g. turbine blades [F01D 5/28](#).

#### WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[C23F 1/24](#)

covered by

<b>1/00</b>	<b>Etching metallic material by chemical means</b>	1/22	. . . . for etching magnesium or alloys thereof
	(manufacture of printing surfaces <a href="#">B41C</a> ; manufacture of printed circuits <a href="#">H05K</a> )	1/26	. . . . for etching refractory metals
		1/28	. . . . for etching iron group metals
1/02	. Local etching	1/30	. . . . for etching other metallic material
1/04	. . Chemical milling	1/32	. . . Alkaline compositions ( <a href="#">C23F 1/42</a> takes precedence)
1/06	. Sharpening files		
1/08	. Apparatus, e.g. for photomechanical printing surfaces (photo- mechanical reproduction <a href="#">G03F</a> )	1/34	. . . . for etching copper or alloys thereof
1/10	. Etching compositions ( <a href="#">C23F 1/44</a> takes precedence)	1/36	. . . . for etching aluminium or alloys thereof
1/12	. . Gaseous compositions	1/38	. . . . for etching refractory metals
1/14	. . Aqueous compositions	1/40	. . . . for etching other metallic material
1/16	. . . Acidic compositions ( <a href="#">C23F 1/42</a> takes precedence)	1/42	. . . containing a dispersed water-immiscible liquid
1/18	. . . . for etching copper or alloys thereof	1/44	. Compositions for etching metallic material from a metallic material substrate of different composition
1/20	. . . . for etching aluminium or alloys thereof	1/46	. Regeneration of etching compositions

3/00	<b>Brightening metals by chemical means</b>	11/182	. . . {Sulfur, boron or silicon containing compounds}
3/02	. Light metals		
3/03	. . with acidic solutions	11/184	. . . {Phosphorous, arsenic, antimony or bismuth containing compounds}
3/04	. Heavy metals		
3/06	. . with acidic solutions	11/185	. . . {Refractory metal-containing compounds}
		11/187	. . . {Mixtures of inorganic inhibitors}
4/00	<b>Processes for removing metallic material from surfaces, not provided for in group <a href="#">C23F 1/00</a> or <a href="#">C23F 3/00</a></b>	11/188	. . . . {containing phosphates}
4/02	. by evaporation	13/00	<b>Inhibiting corrosion of metals by anodic or cathodic protection</b>
4/04	. by physical dissolution	13/005	. {Anodic protection}
11/00	<b>Inhibiting corrosion of metallic material by applying inhibitors to the surface in danger of corrosion or adding them to the corrosive agent (adding inhibitors to mineral oil, fuels, or lubricants <a href="#">C10</a>; adding inhibitors to pickling solutions <a href="#">C23G</a>)</b>	13/02	. cathodic; Selection of conditions, parameters or procedures for cathodic protection, e.g. of electrical conditions
11/02	. in air or gases by adding vapour phase inhibitors	13/04	. . Controlling or regulating desired parameters
11/04	. in markedly acid liquids	13/06	. . Constructional parts, or assemblies of cathodic-protection apparatus
11/06	. in markedly alkaline liquids	13/08	. . . Electrodes specially adapted for inhibiting corrosion by cathodic protection; Manufacture thereof; Conducting electric current thereto
11/08	. in other liquids	13/10	. . . . Electrodes characterised by the structure ( <a href="#">C23F 13/16</a> takes precedence)
11/10	. . using organic inhibitors	13/12	. . . . Electrodes characterised by the material ( <a href="#">C23F 13/16</a> takes precedence)
	<b>NOTES</b>	13/14	. . . . . Material for sacrificial anodes
	1. A compound is classified in the last appropriate place.	13/16	. . . . Electrodes characterised by the combination of the structure and the material
	2. Esters or anhydrides of organic acids are classified as the relevant acid unless otherwise indicated. Salts of a compound with an inorganic compound are classified as that compound unless specifically provided for.	13/18	. . . . Means for supporting electrodes
11/12	. . . Oxygen-containing compounds	13/20	. . . . Conducting electric current to electrodes
11/122	. . . . {Alcohols; Aldehydes; Ketones}	13/22	. . . . Monitoring arrangements therefor
11/124	. . . . {Carboxylic acids}	14/00	<b>Inhibiting incrustation in apparatus for heating liquids for physical or chemical purposes (adding scale preventives or removers to water <a href="#">C02F 5/00</a> ; inhibiting incrustation in polymerisation reactors <a href="#">C23F 15/005</a>)</b>
11/126	. . . . . {Aliphatic acids}	14/02	. by chemical means
11/128	. . . . {Esters of carboxylic acids}	15/00	<b>Other methods of preventing corrosion or incrustation</b>
11/14	. . Nitrogen-containing compounds	15/005	. {Inhibiting incrustation}
11/141	. . . . {Amines; Quaternary ammonium compounds}	17/00	<b>Multi-step processes for surface treatment of metallic material involving at least one process provided for in class <a href="#">C23</a> and at least one process covered by subclass <a href="#">C21D</a> or <a href="#">C22F</a> or class <a href="#">C25</a> (<a href="#">C23C 28/00</a> takes precedence)</b>
11/142	. . . . . {Hydroxy amines}	2201/00	<b>Type of materials to be protected by cathodic protection</b>
11/143	. . . . . {Salts of amines}	2201/02	. Concrete, e.g. reinforced
11/144	. . . . {Aminocarboxylic acids}	2213/00	<b>Aspects of inhibiting corrosion of metals by anodic or cathodic protection</b>
11/145	. . . . {Amides; N-substituted amides}	2213/10	. Controlling or regulating parameters
11/146	. . . . {containing a multiple nitrogen-to-carbon bond}	2213/11	. . for structures subject to stray currents
11/147	. . . . {containing a nitrogen-to-oxygen bond}	2213/20	. Constructional parts or assemblies of the anodic or cathodic protection apparatus
11/148	. . . . {containing a nitrogen-to-nitrogen bond}	2213/21	. . combining at least two types of anodic or cathodic protection
11/149	. . . . {Heterocyclic compounds containing nitrogen as hetero atom}	2213/22	. . characterized by the ionic conductor, e.g. humectant, hydratant or backfill
11/16	. . Sulfur-containing compounds	2213/30	. Anodic or cathodic protection specially adapted for a specific object
11/161	. . . . {Mercaptans}	2213/31	. . Immersed structures, e.g. submarine structures
11/162	. . . . {Thioaldehydes; Thioketones}	2213/32	. . Pipes
11/163	. . . . {Sulfonic acids}		
11/164	. . . . {containing a -SO <sub>2</sub> -N group}		
11/165	. . . . {Heterocyclic compounds containing sulfur as hetero atom}		
11/167	. . Phosphorus-containing compounds		
11/1673	. . . . {Esters of phosphoric or thiophosphoric acids}		
11/1676	. . . . {Phosphonic acids}		
11/173	. . Macromolecular compounds		
11/18	. . using inorganic inhibitors		
11/181	. . {Nitrogen containing compounds}		