

ISO 27831-2:2008-10 (E)

Metallic and other inorganic coatings - Cleaning and preparation of metal surfaces - Part 2: Non-ferrous metals and alloys

Contents	Page
Foreword	vii
Introduction	viii
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 Essential information to be supplied by the purchaser to the processor	3
5 Requirements	4
6 Standard cleaning methods	5
7 Non-corrosion-resisting steels, cast irons and pure irons	5
8 Corrosion-resisting and heat-resisting steels	6
9 Pretreatment of metals prior to powder coating	6
10 Cleaning and preparation processes	6
11 Aluminium and aluminium alloys	6
11.1 General	6
11.2 General degreasing and cleaning	6
11.3 Removal of corrosion products	6
11.4 Preparation prior to anodizing	7
11.5 Preparation prior to oxide removal treatment (process O) or filming treatment	7
11.6 Preparation prior to adhesive bonding of unanodized items	7
11.7 Preparation prior to electroplating	7
11.8 Preparation prior to autocatalytic nickel plating	7
11.9 Preparation prior to conversion coating	7
11.10 Preparation prior to metal spraying	7
11.11 Preparation prior to vitreous enamelling	8
11.11.1 Sheet, extrusions and items made from casting alloys	8
11.11.2 Other castings	8
11.12 Preparation prior to supplementary treatments on physically vapour deposited aluminium	8
12 Copper and copper alloys	8
12.1 General degreasing and cleaning	8
12.2 Preparation prior to electroplating	9
12.3 Preparation prior to autocatalytic nickel plating	9
12.4 Preparation prior to hot tinning (TRI process)	10
12.5 Preparation prior to vitreous tinning	10
13 Nickel alloys	10
13.1 General degreasing and cleaning	10
13.2 Preparation prior to electroplating	10
13.3 Preparation prior to autocatalytic deposition	11
13.4 Preparation prior to vitreous enamelling	11
14 Titanium and titanium alloys	11

14.1	General degreasing and cleaning	11
14.2	Preparation prior to electroplating	12
14.3	Preparation prior to autocatalytic nickel plating	12
15	Magnesium alloys	12
15.1	General degreasing and cleaning prior to electroplating and conversion coating	12
15.2	Preparation prior to electroplating	12
15.3	Preparation prior to conversion coating	13
15.3.1	General	13
15.3.2	As-cast castings	13
15.3.3	Machined castings	14
15.3.4	Forgings	14
15.3.5	Sheets and extrusions	14
16	Zinc-based alloys	14
16.1	General degreasing and cleaning	14
16.2	Cleaning of corroded items	14
16.3	Preparation of zinc alloy die castings prior to electroplating	14
16.4	Preparation of zinc alloy castings prior to chromate conversion coating or phosphate treatment	14
17	Tin and its alloys	14
18	Tungsten alloys	15
18.1	Preparation prior to electroplating	15
18.2	Preparation prior to adhesive bonding	15
19	Lead and its alloys	15
20	Zinc-, cadmium-, chromium- and gold-coated items	15
20.1	Preparation of zinc-coated items prior to chromate conversion coating	15
20.2	Preparation of cadmium-coated items prior to chromate conversion coating	15
20.3	Preparation of physically vapour deposited cadmium prior to supplementary treatments	15
20.4	Preparation for chromium-coated parts prior to supplementary treatments	16
20.5	Removal of surface contamination from gold coatings	16
21	Pretreatment of metals prior to powder coating	16
21.1	Preparation of aluminium prior to powder coating	16
21.2	Preparation of zinc and hot-dip-galvanized steel prior to powder coating	16
21.3	Preparation of copper and brass prior to powder coating	16
22	Cleaning and preparation processes	16
22.1	Process A -- Organic-solvent degreasing and cleaning	17
22.1.1	General	17
22.1.2	Method A1 -- Hot solvent, not water-rinsable	17
22.1.3	Method A2 -- Cold solvent, not water-rinsable	17
22.1.4	Method A3 -- Hot solvent, water-rinsable	17
22.1.5	Method A4 -- Cold solvent, water-rinsable	18
22.1.6	Method A5 -- Petroleum fuel based mixtures containing emulsifying agents	18
22.1.7	Method A6 -- Ultrasonic cleaning	18
22.2	Process B -- Alkaline degreasing	18
22.2.1	General	18
22.2.2	Method B1 -- General-purpose alkaline degreasing	18
22.2.3	Method B2 -- Mild alkaline degreasing	18
22.2.4	Method B3 -- Cathodic alkaline degreasing	19
22.3	Process C -- Acid emulsion cleaning	19
22.4	Process D -- Abrasive cleaning	19
22.4.1	General	19
22.4.2	Method D1 -- Coarse-abrasive blasting	19
22.4.3	Method D2 -- Fine-abrasive blasting	19
22.4.4	Method D3 -- Scouring	19
22.4.5	Method D4 -- Tumbling	20
22.4.6	Method D5 -- Wire brushing	20
22.5	Process E -- Caustic-alkali descaling	20
22.6	Process F -- Acid pickling without electrolysis	20
22.7	Process G -- Acid dipping	20
22.8	Process H -- Anodic pickling	20
22.8.1	General	20
22.8.2	Method H1	20

22.9	Process J -- Acid de-rusting	20
22.10	Process K -- Alkaline de-rusting	21
22.11	Process L -- Chemical smoothing and electropolishing of steels	21
22.12	Process M -- Passivation and removal of surface contamination from corrosion-resisting steels and surface preparation prior to electroplating	21
22.13	Process N -- Acid pickling of aluminium alloys	21
22.13.1	General	21
22.13.2	Method N1	21
22.13.3	Method N2	21
22.13.4	Method N3	21
22.13.5	Method N4	22
22.13.6	Method N5	22
22.13.7	Method N6	22
22.14	Process O -- Oxide removal, i.e. "etching", treatment of aluminium and aluminium alloys	22
22.14.1	General	22
22.14.2	Degreasing and cleaning	22
22.14.3	Preparation prior to anodizing and adhesive bonding	23
22.15	Process P -- Aluminium and aluminium alloys -- Removal of corrosion products, etching treatment, chemical polishing, electrobrightening and electropolishing	24
22.15.1	Removal of corrosion products	24
22.15.1.1	Method P1 -- Immersion	24
22.15.1.2	Method P2 -- Swabbing	24
22.15.2	Etching treatment	24
22.15.2.1	Method P3 -- Etching by brushing or spray treatment	24
22.15.2.2	Method P4 -- Etching and de-smutting treatment using sodium hydroxide	24
22.15.3	Method P5 -- Chemical polishing	25
22.15.4	Method P6 -- Electrobrightening	25
22.15.5	Method P7 -- Electropolishing	26
22.16	Process Q -- Cleaning of copper and copper alloys	26
22.16.1	Method Q1 -- Cleaning in dichromate/sulfuric acid solution	26
22.16.2	Method Q2 -- Cleaning in ferric sulfate/sulfuric acid solution	26
22.17	Process R -- Acid descaling, etching, chemical smoothing and electropolishing of copper and copper alloys	26
22.17.1	Method R1 -- Descaling dip	26
22.17.2	Method R2 -- Bright dip	26
22.17.3	Method R3 -- Chemical smoothing	27
22.17.4	Method R4 -- Pickling in nitric acid	27
22.17.5	Method R5 -- Electropolishing	27
22.18	Process S -- Pickling of titanium and titanium alloys	27
22.18.1	General	27
22.18.2	Method S1	27
22.18.3	Method S2	27
22.19	Process T -- Pickling, chemical polishing and electropolishing of nickel and its alloys	28
22.19.1	General	28
22.19.2	Method T1	28
22.19.3	Method T2	28
22.19.4	Method T3	28
22.19.5	Method T4 -- Chemical polishing	28
22.19.6	Method T5 -- Electropolishing	29
22.20	Process U -- Preparation of tin alloy for electroplating	29
22.21	Process V -- Removal of surface contamination from gold coatings	29
22.22	Process W -- Preparation of aluminium alloys prior to electroplating	29
22.23	Process X -- Preparation of nickel alloys prior to electroplating	30
22.24	Process Y -- Preparation of titanium alloys prior to electroplating	31
22.24.1	Method Y1 -- General method for titanium alloys	31
22.24.2	Method Y2 -- Method for titanium and selected titanium alloys	32
22.24.3	Method Y3 -- Chemical-etching method	32
22.25	Process Z -- Preparation of zinc and zinc alloys prior to electroplating	33
22.25.1	Method Z1	33
22.25.2	Method Z2	33
	Annex A (informative) Maintenance of organic and vapour degreasing baths	34

Annex B (informative) The control of acidity in vapour cleaning baths	35
Annex C (normative) Method for the determination of oxidizable material in sulfuric acid	36
Annex D (informative) Method for determining free acidity	37
Annex E (normative) Selection of method of cleaning according to the tensile strength of the steel in zinc-coated steel items prior to chromate conversion coating	38
Annex F (normative) Method M4	40
Bibliography	41