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Metallic and other inorganic coatings — Cleaning and preparation of metal surfaces —

Part 2: Non-ferrous metals and alloys

Revêtements métalliques et autres revêtements inorganiques — Nettoyage et préparation des surfaces métalliques —

Partie 2: Métaux non ferreux et alliages

Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
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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

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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

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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

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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**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 27831-2 was prepared by Technical Committee ISO/TC 107, *Metallic and other inorganic coatings*, Subcommittee SC 3, *Electrodeposited coatings and related finishes*.

ISO 27831 consists of the following parts, under the general title *Metallic and other inorganic coatings — Cleaning and preparation of metal surfaces*:

— *Part 1: Ferrous metals and alloys*

— *Part 2: Non-ferrous metals and alloys*

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Introduction

The adhesion of deposited coatings depends upon the efficiency of degreasing and cleaning processes used on the substrate surface. The removal of grease, oil and dirt and all other forms of contamination left from fabrication processes or due to corrosion/erosion of surfaces in storage or in service is essential for successful production of a pristine, chemically clean active surface for deposition of coatings.

The surface contaminants can be

— corrosion products, mould sand or mould release agents on ferrous and non-ferrous castings;

— corrosion products and mill scales on hot-rolled steel sheet, girders, etc. (broken mill scale is cathodic to the underlying substrate);

— oil and rolling lubricant on cold-rolled steel sheet;

— rolling lubricant on e.g. cold-rolled aluminium sheet;

— corrosion products on delivery or during storage on hot-dip-galvanized steel sheet or angle bars/brackets;

— other undesirable materials from storage and handling.

The difficulty of coating these surfaces is well known.

Cleaning processes for removing surface contaminants are varied, depending, among other things, on the identification and classification of the soil as well as the size and shape of the substrate, the degree of cleanliness required, the availability of the facilities needed, the cost of the processes used and their impact on the environment, and the nature of subsequent processes to which the substrate is going to be subjected.

ISO 27831 includes cleaning processes ranging from mechanical methods (which give the least degree of cleanliness) to chemical and ultrasonic methods (which give a higher degree of surface preparation) and substrate conditioning by glow discharge plasma (sputter cleaning) for vapour deposition.

ISO 27831 describes practices for cleaning a variety of metals and metal alloys prior to the application of a range of coatings or without any coating requirements.

The cleaning processes described in ISO 27831-1 and ISO 27831-2 are indicative only of those most commonly used in practice. However, there are numerous formulations of solutions and numerous proprietary processes available which are not included in ISO 27831-1 or ISO 27831-2. Wherever possible, references to particular processes have been made. For references concerning all other processes included in either part of ISO 27831, the publications given in the Bibliography in the respective part should be consulted.

ISO 27831-1 covers ferrous metals and their alloys, whilst ISO 27831-2 covers non-ferrous metals and their alloys. For ISO 27831-2 to be usable, as far as possible, as a “stand-alone” document, Clauses 1 to 6 of ISO 27831-1 have been included in it as Clauses 1 to 6 and the numbering of the other clauses follows the same sequence as in ISO 27831-1. Additionally, since some of the cleaning and preparation processes specified for ferrous materials in ISO 27831-1 can also be used for non-ferrous metals, the cleaning and preparation processes follow the same sequence, using the same designations, as in ISO 27831-1.

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