
**Anodizing of aluminium and its
alloys — Method for specifying
decorative and protective anodic
oxidation coatings on aluminium**

*Anodisation de l'aluminium et de ses alliages — Méthode de
spécification des caractéristiques des revêtements décoratifs et
protecteurs obtenus par oxydation anodique sur aluminium*



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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 2, *Organic and anodic oxidation coatings on aluminium*.

This third edition cancels and replaces the second edition (ISO 7599:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

- certain terms and definitions have been deleted;
- [Annex D](#) has been revised.

Anodizing of aluminium and its alloys — Method for specifying decorative and protective anodic oxidation coatings on aluminium

1 Scope

This document specifies a method for specifying decorative and protective anodic oxidation coatings on aluminium (including aluminium-based alloys). It defines the characteristic properties of anodic oxidation coatings, lists methods of test for checking the characteristic properties, provides minimum performance requirements, and gives information on the grades of aluminium suitable for anodizing and the importance of pretreatment to ensure the required appearance or texture of the finished work.

It is not applicable to

- a) non-porous anodic oxidation coatings of the barrier layer type,
- b) anodic oxidation coatings produced by chromic acid or phosphoric acid anodizing,
- c) anodic oxidation coatings intended merely to prepare the substrate for subsequent application of organic coatings or for the electrodeposition of metals, and
- d) hard anodic oxidation coatings used mainly for engineering purposes, for which abrasion and wear resistance are the primary characteristics (see ISO 10074).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1463, *Metallic and oxide coatings — Measurement of coating thickness — Microscopical method*

ISO 2085, *Anodizing of aluminium and its alloys — Check for continuity of thin anodic oxidation coatings — Copper sulfate test*

ISO 2106, *Anodizing of aluminium and its alloys — Determination of mass per unit area (surface density) of anodic oxidation coatings — Gravimetric method*

ISO 2128, *Anodizing of aluminium and its alloys — Determination of thickness of anodic oxidation coatings — Non-destructive measurement by split-beam microscope*

ISO 2143, *Anodizing of aluminium and its alloys — Estimation of loss of absorptive power of anodic oxidation coatings after sealing — Dye-spot test with prior acid treatment*

ISO 2360, *Non-conductive coatings on non-magnetic electrically conductive base metals — Measurement of coating thickness — Amplitude-sensitive eddy-current method*

ISO 2376, *Anodizing of aluminium and its alloys — Determination of electric breakdown potential*

ISO 2931, *Anodizing of aluminium and its alloys — Assessment of quality of sealed anodic oxidation coatings by measurement of admittance*

ISO 3210, *Anodizing of aluminium and its alloys — Assessment of quality of sealed anodic oxidation coatings by measurement of the loss of mass after immersion in acid solution(s)*

ISO 3211, *Anodizing of aluminium and its alloys — Assessment of resistance of anodic oxidation coatings to cracking by deformation*

ISO 7583, *Anodizing of aluminium and its alloys — Terms and definitions*

ISO 8251, *Anodizing of aluminium and its alloys — Measurement of abrasion resistance of anodic oxidation coatings*

ISO 8993, *Anodizing of aluminium and its alloys — Rating system for the evaluation of pitting corrosion — Chart method*

ISO 8994, *Anodizing of aluminium and its alloys — Rating system for the evaluation of pitting corrosion — Grid method*

ISO 9220, *Metallic coatings — Measurement of coating thickness — Scanning electron microscope method*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7583 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Information supplied by the customer to the anodizer

4.1 General

The information required from the customer by the anodizer in order to anodize the product correctly is given in 4.2 and 4.3: 4.2 specifies information that is essential whenever a product is to be anodized; 4.3 identifies additional information required for particular product applications. A summary of the subclause references relating to this information is given in Annex F.

NOTE Certain properties (for example, high specular reflectance) are only obtainable by the use of special alloys, and some properties can be incompatible with others.

The customer and the anodizer can share the information about cleaning in case of external architectural application (see Annex E).

4.2 Essential information

The following information shall be supplied by the customer to the anodizer, if necessary in consultation with the aluminium supplier and/or anodizer:

- a) a reference to this document, i.e. ISO 7599;
- b) the intended service use of the article to be anodized;
- c) the specification of the aluminium to be anodized;
- d) an indication of the significant surface(s) of the article to be anodized;
- e) the surface preparation to be used on the aluminium before anodizing;
- f) the anodic oxidation coating thickness class required (see 6.2);
- g) whether a clear or coloured anodized finish is required;