
**Anodizing of aluminium and its alloys —
General specifications for anodic
oxidation coatings on aluminium**

*Anodisation de l'aluminium et de ses alliages — Spécifications
générales pour couches anodiques sur aluminium*



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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.

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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 7599 was prepared by Technical Committee ISO/TC 79, *Light metals and their alloys*, Subcommittee SC 2, *Organic and anodic oxidation coatings on aluminium*.

This second edition cancels and replaces the first edition (ISO 7599:1983), which has been technically revised.

Anodizing of aluminium and its alloys — General specifications for anodic oxidation coatings on aluminium

1 Scope

This International Standard lays down 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 oxidation coatings of the barrier layer type,
- b) oxidation coatings produced by chromic acid or phosphoric acid anodizing,
- c) oxidation coatings intended merely to prepare the substrate for subsequent application of organic coatings or electrodeposition of metals,
- 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 referenced documents are indispensable for the application 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 basis materials — 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 phosphoric acid/chromic acid solution*

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 — Vocabulary*

ISO 8251:—¹⁾, *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, *Aluminium and aluminium alloys — Rating system for the evaluation of pitting corrosion — Grid 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 and the following apply.

3.1
anodized aluminium
aluminium with an anodic oxidation coating, produced by an electrolytic oxidation process in which the surface of the aluminium is converted to a mainly oxidation coating having protective, decorative or functional properties

3.2
clear anodized aluminium
anodized aluminium with a substantially colourless, translucent anodic oxidation coating

3.3
colour anodized aluminium
anodized aluminium coloured either during anodizing or by subsequent colouring processes

3.4
integral colour anodized aluminium
anodized aluminium that has been anodized using an appropriate (usually organic acid-based) electrolyte which produces a coloured oxidation coating during the anodizing process itself

3.5
electrolytically coloured anodized aluminium
anodized aluminium with an anodic oxidation coating that has been coloured by the electrolytic deposition of a metal or metal oxide into the pore structure

3.6
dyed anodized aluminium
anodized aluminium with an anodic oxidation coating, coloured by absorption of dye-stuff or pigments into the pore structure

1) To be published. (Revision of ISO 8251:1987 and ISO 8252:1987)