
**Anodizing of aluminium and its
alloys — Determination of breakdown
voltage and withstand voltage**

*Anodisation de l'aluminium et de ses alliages — Détermination de la
tension de claquage et de la tension de tenue*



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Foreword

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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).

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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 2376:2010), which has been technically revised. The main changes compared with the previous edition are as follows:

- the information of the test specimen has been added;
- a withstand voltage test has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Anodizing of aluminium and its alloys — Determination of breakdown voltage and withstand voltage

1 Scope

This document specifies test methods for the determination of the breakdown voltage and withstand voltage of anodic oxidation coatings on aluminium and its alloys, on flat or near-flat surfaces and on round wire. The methods are applicable to anodic oxidation coatings used primarily as electrical insulators.

The methods are not applicable to coatings in the vicinity of cut edges, the edges of holes, or sharp changes of angle on, for example, extruded shapes.

NOTE 1 Breakdown voltage and withstand voltage are affected by relative humidity.

NOTE 2 The methods described do not give satisfactory results for unsealed coatings because they are affected by the humidity in particular.

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

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 Principle

The electric voltage at which current first passes through an anodic oxidation coating is measured. These breakdown voltage and withstand voltage are a function of the dielectric characteristics and the insulation properties of the anodic oxidation coatings. The breakdown voltage and withstand voltage depend upon the thickness of the coating, as well as on many other factors, particularly the composition of the basis metal, its surface condition, the effectiveness of sealing, the dryness of the test specimen and the degree of ageing.

5 Apparatus

5.1 Power supply, from a suitable 50 Hz or 60 Hz source.

5.2 Transformer (AC), having an output with a waveform as nearly sinusoidal as possible, capable of producing the voltage required.