

Anodizing of aluminium and its alloys - Assessment of resistance of anodic oxidation coatings to cracking by deformation (ISO 3211:2018)

EESTI STANDARDI EESSÕNA

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English Version

**Anodizing of aluminium and its alloys - Assessment of
resistance of anodic oxidation coatings to cracking by
deformation (ISO 3211:2018)**

Anodisation de l'aluminium et de ses alliages -
Évaluation de la résistance des couches anodiques à la
formation de criques par déformation (ISO 3211:2017)

Anodisieren von Aluminium und
Aluminiumlegierungen - Prüfung der Beständigkeit
von anodisch erzeugten Oxidschichten gegen
Rissbildung durch Verformung (ISO 3211:2018)

This European Standard was approved by CEN on 27 October 2018.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN ISO 3211:2018) has been prepared by Technical Committee ISO/TC 79 "Light metals and their alloys" in collaboration with Technical Committee CEN/TC 132 "Aluminium and aluminium alloys" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

This document supersedes EN ISO 3211:2010.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 3211:2018 has been approved by CEN as EN ISO 3211:2018 without any modification.

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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).

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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 fourth edition cancels and replaces the third edition (ISO 3211:2010), which has been technically revised. The main changes compared to the previous edition are as follows:

- the unit of length has been changed from cm to mm;
- the information of the test specimen has been added;
- the title of [Clause 7](#) “Determination” has been changed to “Procedure”.

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 — Assessment of resistance of anodic oxidation coatings to cracking by deformation

1 Scope

This document specifies an empirical method for assessing the resistance of anodic oxidation coatings to cracking by deformation.

The method is applicable particularly to sheet material with anodic oxidation coatings of thickness less than 5 µm, and is useful for development purposes.

NOTE If the test specimen is thick, more than 5 µm of coating can be measured (see [Clause 9](#)).

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

A test specimen is bent along a spiral, graduated with a radius of curvature index, using a simple instrument. The radius of curvature corresponding to the region where the first cracks in the oxide layer appear is determined and the percentage elongation of the test specimen corresponding to this radius is calculated.

5 Apparatus

5.1 Measuring instruments.

- a) **Spiral plate**, mounted on a suitable base, in the shape of a spiral (see [Figure 1](#)), graduated in deformation indexes, E , from 1 to 18. These indexes, E , correspond to radii of curvature, R , as shown in [Table 1](#), and are derived from [Formula \(1\)](#):

$$R = 210 - 10E \quad (1)$$