

ISO 2931:2017



EN ISO 2931:2018

NBN EN ISO 2931:2018



Anodizing of aluminium and its alloys - Assessment of quality of sealed anodic oxidation coatings by measurement of admittance (ISO 2931:2017)

Valid from 28-02-2018

Replaces NBN EN ISO 2931:2010

ICS: 25.220.20

EUROPEAN STANDARD
 NORME EUROPÉENNE
 EUROPÄISCHE NORM

EN ISO 2931

February 2018

ICS 25.220.20

Supersedes EN ISO 2931:2010

English Version

**Anodizing of aluminium and its alloys - Assessment of
 quality of sealed anodic oxidation coatings by
 measurement of admittance (ISO 2931:2017)**

Anodisation de l'aluminium et de ses alliages -
 Évaluation de la qualité des couches anodiques
 colmatées par mesurage de l'admittance (ISO
 2931:2017)

Anodisieren von Aluminium und
 Aluminiumlegierungen - Prüfung der Qualität von
 verdichteten, anodisch erzeugten Oxidschichten durch
 Messung des Scheinleitwertes (ISO 2931:2017)

This European Standard was approved by CEN on 1 December 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
 COMITÉ EUROPÉEN DE NORMALISATION
 EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 2931:2018 (E)

	Page
Contents	
European foreword.....	3

European foreword

This document (EN ISO 2931:2018) 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 August 2018, and conflicting national standards shall be withdrawn at the latest by August 2018.

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 2931:2010.

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 2931:2017 has been approved by CEN as EN ISO 2931:2018 without any modification.

INTERNATIONAL STANDARD

ISO 2931

Fourth edition
2017-11

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

*Anodisation de l'aluminium et de ses alliages — Évaluation de
la qualité des couches anodiques colmatées par mesurage de
l'admittance*



Reference number
ISO 2931:2017(E)

© ISO 2017

ISO 2931:2017(E)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	2
5 Apparatus and materials	2
6 Test specimen	3
6.1 Sampling.....	3
6.2 Treatment before testing.....	3
7 Procedure	3
8 Expression of results	4
9 Test report	4
Bibliography	5

ISO 2931:2017(E)

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 fourth edition cancels and replaces the third edition (ISO 2931:2010), which has been technically revised.

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

- the content of [Clause 6](#), now entitled “Test specimen”, has been revised.

Introduction

The test described in this document is intended to give a quick, non-destructive assessment of the quality of sealed anodic oxidation coatings and is very suitable for routine production control. It is carried out following sealing and before any other supplementary process is undertaken, for example, oiling, waxing or lacquering.

The correlation of the results obtained with those of other tests that can assess sealing quality such as that of ISO 2143 can be affected by the presence of sealing additives or contaminants such as silicate or phosphate. For this reason, the quality is checked from time to time by one of the reference acid-dissolution methods specified in ISO 3210.

The pre-treatment, the anodizing process, the colouring process used and the alloy can all have an effect on admittance readings.

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

1 Scope

This document specifies a method for assessing the quality of sealed anodic oxidation coatings on aluminium and its alloys by measurement of the admittance.

The method is applicable to anodic oxidation coatings sealed in an aqueous medium.

NOTE 1 Results obtained from anodic oxidation coatings sealed by different methods, e.g. hydrothermal sealing and cold sealing, are not necessarily comparable.

NOTE 2 Results obtained from anodic oxidation coatings on alloys containing more than 2 % silicon or 5 % manganese or 3 % magnesium are not comparable with results obtained from anodic oxidation coatings on more dilute alloys.

The method is suitable for use as a production-control test and as an acceptance test where there is agreement between the anodizer and the customer.

Any type of anodized component can be tested by the method described, provided that there is a sufficient area (a circle of diameter about 20 mm) and that the film thickness is greater than 3 µm.

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

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 and the following apply.

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

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

3.1 admittance

Y

inverse of the complex apparent resistance, *Z*

$$Y = 1 / Z$$

Note 1 to entry: In an alternating current circuit, *Z* (impedance) is represented by the vectorial sum of actual resistance, *R*, and the reactance, *X_c*, using