



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 16701:2015

Corrosion of metals and alloys - Corrosion in artificial atmosphere - Accelerated corrosion test involving exposure under controlled conditions of humidity cycling and intermittent spraying of a salt solution (ISO 16701:2015)

## I.S. EN ISO 16701:2015

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

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*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

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NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

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Corrosion of metals and alloys - Corrosion in artificial atmosphere - Accelerated corrosion test involving exposure under controlled conditions of humidity cycling and intermittent spraying of a salt solution (ISO 16701:2015)

Corrosion des métaux et alliages - Corrosion en atmosphère artificielle - Essai de corrosion accélérée comprenant des expositions sous conditions contrôlées à des cycles d'humidité et à des vaporisations intermittentes de solution saline (ISO 16701:2015)

Korrosion von Metallen und Legierungen - Korrosion in künstlicher Atmosphäre - Beschleunigte Korrosionsprüfungen unter zyklischer Einwirkung von Feuchte und intermittierendem Versprühen einer Salzlösung unter kontrollierten Bedingungen (ISO 16701:2015)

This European Standard was approved by CEN on 16 April 2015.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

**EN ISO 16701:2015 (E)**

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## **Foreword**

This document (EN ISO 16701:2015) has been prepared by Technical Committee ISO/TC 156 "Corrosion of metals and alloys" in collaboration with Technical Committee CEN/TC 262 "Metallic and other inorganic coatings" the secretariat of which is held by BSI.

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 November 2015, and conflicting national standards shall be withdrawn at the latest by November 2015.

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

This document supersedes EN ISO 16701:2008.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### **Endorsement notice**

The text of ISO 16701:2015 has been approved by CEN as EN ISO 16701:2015 without any modification.

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INTERNATIONAL  
STANDARD

ISO  
16701

Second edition  
2015-05-15

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**Corrosion of metals and alloys —  
Corrosion in artificial atmosphere —  
Accelerated corrosion test involving  
exposure under controlled conditions  
of humidity cycling and intermittent  
spraying of a salt solution**

*Corrosion des métaux et alliages — Corrosion en atmosphère  
artificielle — Essai de corrosion accélérée comprenant des  
expositions sous conditions contrôlées à des cycles d'humidité et à des  
vaporisations intermittentes de solution saline*



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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



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## ISO 16701:2015(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](http://www.iso.org/directives)).

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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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 156, *Corrosion of metals and alloys*.

This second edition cancels and replaces the first edition (ISO 16701:2003), of which it constitutes a minor revision.

## **Introduction**

Atmospheric corrosion of metallic materials, with or without corrosion protection, is influenced by many environmental factors, the importance of which might vary with the type of metallic material and with the type of environment. It is therefore not possible to design a laboratory corrosion test in such a way that the full complexity of real in-service conditions are taken into account. Acceleration (forced conditions) as such can also have a negative impact on the correlation to field performance. Nevertheless, tests with humidity cycling and only intermittent exposure to salt solution will generally provide a better correlation to field performance than tests using continuous salt spray.

This International Standard was developed in the automotive context, where the major contributor to corrosion is the use of winter time de-icing road salt in cool/cold temperate areas around the world, here as sodium chloride compounds acting in cyclic humidity conditions. The test procedure is moderately forced by humidity and salt and intended to be applicable for quality assurance of the metals and corrosion protections typically encountered in motor vehicles. The method can have relevance also in other areas of application, provided representing similar climatic conditions with an influence of sodium chloride compounds.



# Corrosion of metals and alloys — Corrosion in artificial atmosphere — Accelerated corrosion test involving exposure under controlled conditions of humidity cycling and intermittent spraying of a salt solution

## 1 Scope

This International Standard specifies the test method, the reagents, and the procedure to be used in an accelerated atmospheric corrosion test constituting a 6 h exposure to a slightly acidified solution of 1 % NaCl twice weekly, followed by a condition of controlled humidity cycling between 95 % RH and 50 % RH at a constant temperature of 35 °C.

This International Standard does not specify the dimensions of the tests specimens, the exposure period to be used for a particular product, or the interpretation of the results. Such details are provided in the appropriate product specifications.

The accelerated laboratory corrosion test applies to

- metals and their alloys,
- metallic coatings (anodic or cathodic),
- chemical conversion coatings, and
- organic coatings on metallic materials.

NOTE 1 If testing low-alloy stainless steels, especially austenitic grades, according to this International Standard, there is a risk of receiving exaggerated pitting, not representative for most service environments.

NOTE 2 This International Standard is not suitable for testing of wax and oil based rust protection agents, due to the constantly elevated temperature condition of the test.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4628-1, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 1: General introduction and designation system*

ISO 4628-2, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering*

ISO 4628-4, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 4: Assessment of degree of cracking*

ISO 4628-5, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 5: Assessment of degree of flaking*

ISO 8407, *Corrosion of metals and alloys — Removal of corrosion products from corrosion test specimens*

ISO 10289, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates — Rating of test specimens and manufactured articles subjected to corrosion tests*

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