BS EN ISO 7441:2015

BSI Standards Publication

Corrosion of metals and alloys — Determination of bimetallic corrosion in atmospheric exposure corrosion tests

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National foreword

This British Standard is the UK implementation of EN ISO 7441:2015. It supersedes BS EN ISO 7441:1995 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/NFE/8, Corrosion of metals and alloys.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Corrosion of metals and alloys - Determination of bimetallic corrosion in atmospheric exposure corrosion tests (ISO 7441:2015)

Corrosion des métaux et alliages - Détermination de la corrosion bimétallique par des essais d'exposition de corrosion atmosphérique (ISO 7441:2015)

Korrosion von Metallen und Legierungen - Bestimmung der Kontaktkorrosion durch Freibewitterungsversuche (ISO 7441:2015)

This European Standard was approved by CEN on 15 November 2014.

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

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

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Foreword

This document (EN ISO 7441:2015) 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of an identical text or by endorsement, at the latest by July 2015, and conflicting national standards shall be withdrawn at the latest by July 2015.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 7441:1995.

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Endorsement notice

The text of ISO 7441:2015 has been approved by CEN as EN ISO 7441:2015 without any modification.

Contents

Page

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. www.iso.org/directives

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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 7441:1984), which has been technically revised.

Introduction

Bimetallic corrosion occurs when a metal in electrical contact with a more noble metal corrodes at a higher rate than it would in the same environment but without this contact.

Bimetallic corrosion in the atmosphere, in contrast to that in electrolytes, is characterized by a large potential drop between the anode and the cathode. Therefore, bimetallic corrosion is usually limited to a distance within about 0,5 cm from the point of contact[1].

The determination of bimetallic corrosion in atmospheric exposure tests can be made with several methods, each with its own advantages. Three standardized tests are compared and described in this International Standard:

— rectangular plates;

— washers;

— wire on bolt.

The standard starts with an overview and comparison of the three methods, with the purpose of aiding the selection of an appropriate test method. Test procedures for the rectangular plate and washer test are included in this standard since no independent standard describes these methods while those who wish to use the wire on bolt test need to consult ASTM G116 for a complete description of the method.

The standard describes how to derive the bimetallic effect, which is a relative measure of the bimetallic corrosion of a metal compared to the corrosion of the same metal but without the bimetallic effect. A high galvanic effect does not necessarily mean that the bimetallic corrosion rate is high. Therefore, valuable complementary information is the classification of the corrosivity of the test site according to ISO 9223[2].

INTERNATIONAL STANDARD **ISO 7441:2015(E)**

Corrosion of metals and alloys — Determination of bimetallic corrosion in atmospheric exposure corrosion tests

1 Scope

This International Standard specifies and compares methods for the determination of bimetallic corrosion of metals and coated metals in atmospheric exposure corrosion tests.

NOTE In the text of this International Standard, the term "metal" is used for both metals and alloys, and the term "coated metal" for metals and alloys with metallic and non-metallic inorganic coatings.

The methods are intended for the determination of the amount and type of corrosion effect, arising in natural atmospheres, caused by contact with different metals.

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 1456, *Metallic and other inorganic coatings — Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium*

ISO 2081, *Metallic and other inorganic coatings — Electroplated coatings of zinc with supplementary treatments on iron or steel*

ISO 7599, *Anodizing of aluminium and its alloys — General specifications for anodic oxidation coatings on aluminium*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 8044, *Corrosion of metals and alloys — Basic terms and definitions*

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

ISO 8565, *Metals and alloys — Atmospheric corrosion testing — General requirements*

ISO 15510, *Stainless steels — Chemical composition*

ASTM G116, *Standard Practice for Conducting Wire-on-Bolt Test for Atmospheric Galvanic Corrosion*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following apply.

3.1
test specimens
specimens that are exposed for evaluation of bimetallic corrosion caused by contact with different materials