INTERNATIONAL STANDARD

ISO 11845

Second edition
2020-03

Corrosion of metals and alloys — General principles for corrosion testing

Corrosion des métaux et alliages — Principes généraux des essais de corrosion

Reference number
ISO 11845:2020(E)

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Published in Switzerland

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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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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

This second edition cancels and replaces the first edition (ISO 11845:1995), which has been technically revised. The main changes compared with the previous edition are as follows:

— the format has been changed;

— Annex A has been added with general requirements for corrosion tests under constant immersion.

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.

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Introduction

The existence of a wide range of corrosion tests, partly as a function of the various materials and corrosive media in existence, calls for guidance in the general procedures that should be used. Corrosion tests, if they are to evaluate and give comparable results, are carried out in accordance with established conditions. Conditions deviating from these conditions are precisely quoted, taking into account all the details given in this document. The most relevant results on corrosion behaviour of metals can normally be obtained from long-term tests under conditions close to those obtained in practice.

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Corrosion of metals and alloys — General principles for corrosion testing

1 Scope

This document specifies general principles for carrying out corrosion tests under conditions of constant immersion. Some of these general principles are applicable to other types of corrosion testing.

This document does not cover important procedures for stress corrosion testing, such as those given in ISO 7539 (all parts).

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 8044, *Corrosion of metals and alloys — Vocabulary*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 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 General principles

4.1 Corrosion tests are generally carried out as comparative tests, i.e. a number of materials or corrosive media are compared under the given test conditions. It is, however, also advisable to include reference materials or reference solutions in which the behaviour under practical conditions of attack are known. It is important to have a clear understanding of the objectives of any corrosion testing programme and to make a judicious choice of the most practical methods in order to evaluate corrosion damage.

4.2 During the tests, the degree of attack as a function of time is observed and, as far as possible, quantitatively recorded. The objective of most types of testing should be to determine the state of the specimens on more than three separate occasions apart from the start of the test. The duration of tests should be such that, on completion of the test, a clear result is obtained concerning the behaviour of the material and, where applicable, the reference material under the given test conditions. If necessary, additional tests extending beyond the time originally planned should be required.

4.3 Because results often exhibit considerable scatter, a single value provides little useful information. For this reason, whenever possible, every test result should be verified by taking the mean of at least three tests per measurement point. For this purpose, each specimen should be used only once.

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