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Corrosion of metals and alloys — Accelerated testing involving cyclic exposure to salt mist, "dry" and "wet" conditions

Corrosion des métaux et alliages — Essais accélérés comprenant des expositions cycliques à des conditions de brouillard salin, de séchage et d'humidité



Reference number ISO 14993:2001(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

International Standard ISO 14993 was prepared by Technical Committee ISO/TC 156, Corrosion of metals and alloys.

Annexes A and B of this International Standard are rinformation only.

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Introduction

Corrosion of metallic materials with or without corrosion protection is influenced by many environmental factors, the importance of which may vary depending on the type of metallic material and depending on the type of environment. It is impossible, therefore, to design accelerated laboratory corrosion tests in such a way that all environmental factors influencing the vesistance to corrosion are taken into account. Laboratory tests are therefore designed to simulate the effects of the most important factors enhancing the corrosion of metallic materials.

The accelerated corrosion test method described in this International Standard is designed to simulate and enhance the environmental influence on a metallic material of exposure to an outdoor climate where exposure to salt-contaminated conditions occurs and may promote corrosion. The test method involves cyclic exposure of test specimens to a mist of salt solution, to drying conditions and to periods of high humidity. However, the method is mainly intended for comparative testing and the results obtained do not permit far-reaching conclusions on the corrosion resistance of the tested metallic material under the whole range of environmental conditions within which it may be used. Nevertheless, the method provides valuable information on the relative performance of materials exposed to salt-contaminated environments similar to those used in the test.

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Corrosion of metals and alloys — Accelerated testing involving cyclic exposure to salt mist, "dry" and "wet" conditions

WARNING — This International Standard may involve hazardous materials, operations and equipment. It does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies the apparatus and test procedure to be used in conducting accelerated corrosion tests for the comparative evaluation of metallic materials with or without permanent corrosion protection or temporary corrosion protection in salt-contaminated outdoor environments. The test involves cyclic exposure of the specimens to neutral salt mist, "dry" and "wet" conditions. The type of test specimen and the exposure period are not specified.

The particular advantages of this test over conventional accelerated tests such as the neutral salt spray test (NSS) lie in its ability to better reproduce the corrosion that occurs in outdoor salt-contaminated environments.

The accelerated corrosion tests involving cyclic exposure to salt mist, "dry" and "wet" conditions apply to:

- metals and their alloys;
- metallic coatings (anodic and cathodic);
- conversion coatings;
- anodic oxide coatings;
- organic coatings on metallic materials.

NOTE Methods of test for coatings to determine their resistance, in the presence of scribe marks through to the substrate, to various cyclic corrosion conditions which include the condensation of water on the st panels during periods of humidity are given in ISO 11997-1:1998.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 8407:1991, Corrosion of metals and alloys - Removal of corrosion products from corrosion test specimens