International Standard

ISO 14993

# 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*



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# Foreword

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

This third edition cancels and replaces the second edition (ISO 14993:2018), which has been technically revised.



The main changes are as follows:

— safety warnings have been added;

— apparatus has been revised to harmonize with ISO 16151.

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.

# Introduction

Corrosion of metallic materials with or without corrosion protection is influenced by many environmental factors, the importance of which can vary depending on the type of metallic material and the type of environment. It is impossible, therefore, to design accelerated laboratory corrosion tests in such a way that all environmental factors influencing resistance to corrosion are taken into account. Laboratory tests are, therefore, designed to simulate the effects of the most important factors that enhance the corrosion of metallic materials, however it is not possible to design a laboratory corrosion test in such a way that complexity and variations of real, in-service conditions are fully represented.

The accelerated corrosion test method described in this document 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 can 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. They are not intended to be used for comparative testing or as a means of ranking different materials relative to each other with respect to corrosion resistance or as means of predicting long-term corrosion resistance of the tested material (merely for testing the whole product). 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 can be used. Nevertheless, the method gives a means of checking that comparative quality of a metallic material, with or without corrosion protection, is maintained when exposed to salt-contaminated environments similar to those used in the test[15].

This test method is based on Japanese Automobile Standards JASO M 609-91 and JASO M 610-92.

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

**WARNING — This document can involve hazardous materials, operations and equipment. This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.**

## 1 Scope

This document specifies the apparatus and test procedure to be used when conducting accelerated corrosion tests for the comparative quality 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 common accelerated tests such as the neutral salt spray (NSS) test lie in its ability to better reproduce the corrosion that occurs in outdoor salt-contaminated environments.

This document is applicable 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 test specimens during periods of humidity are given in ISO 11997-1.

## 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 1514, *Paints and varnishes — Standard panels for testing*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 4623-2:2016, *Paints and varnishes — Determination of resistance to filiform corrosion — Part 2: Aluminium substrates*

ISO 8044, *Corrosion of metals and alloys — Vocabulary*

ISO 17872, *Paints and varnishes — Guidelines for the introduction of scribe marks through coatings on metallic panels for corrosion testing*