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# Corrosion tests in artificial atmospheres — Salt spray tests

*Essais de corrosion en atmosphères artificielles — Essais aux brouillards salins*

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# Contents

Page

**Foreword** ..... **v**

**Introduction** ..... **vi**

**1 Scope** ..... **1**

**2 Normative references** ..... **1**

**3 Terms and definitions** ..... **2**

**4 Principle** ..... **3**

**5 Test solutions** ..... **3**
5.1 Preparation of the sodium chloride solution ..... 3
5.2 pH adjustment ..... 3
5.2.1 pH of the salt solution ..... 3
5.2.2 Neutral salt spray (NSS) test ..... 3
5.2.3 Acetic acid salt spray (AASS) test ..... 3
5.2.4 Copper-accelerated acetic acid salt spray (CASS) test ..... 4
5.3 Filtration ..... 4

**6 Apparatus** ..... **4**
6.1 Component protection ..... 4
6.2 Spray cabinet ..... 4
6.3 Heater and temperature control ..... 4
6.4 Spraying device ..... 4
6.5 Collecting devices ..... 5
6.6 Re-use ..... 5

**7 Method for evaluating cabinet corrosivity** ..... **6**
7.1 General ..... 6
7.2 Reference specimens ..... 6
7.3 Arrangement of the reference specimens ..... 6
7.4 Determination of mass loss (mass per area) ..... 7
7.5 Satisfactory performance of cabinet ..... 7

**8 Test specimens** ..... **7**

**9 Arrangement of the test specimens** ..... **8**

**10 Operating conditions** ..... **8**

**11 Duration of tests** ..... **9**

**12 Treatment of test specimens after test** ..... **9**
12.1 General ..... 9
12.2 Non-organic coated test specimens: metallic and/or inorganic coated ..... 9
12.3 Organic coated test specimens ..... 9
12.3.1 Scribed organic coated test specimens ..... 9
12.3.2 Organic coated but not scribed test specimens ..... 10

**13 Evaluation of results** ..... **10**

**14 Test report** ..... **10**

**Annex A** (informative) **Example schematic diagram of one possible design of spray cabinet with means for optional treating fog exhaust and drain** ..... **12**

**Annex B** (informative) **Complementary method for evaluating cabinet corrosivity using zinc reference specimens** ..... **14**

**Annex C** (normative) **Preparation of specimens with organic coatings for testing** ..... **16**

**Annex D** (normative) **Required supplementary information for testing test specimens with organic coatings** ..... **17**

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**Bibliography** ..... **18**

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

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

This fourth edition cancels and replaces the third edition (ISO 9227:2012), which has been technically revised. The main technical changes are as follows:

— new definitions for reference material, reference specimen, test specimen and substitute specimen have been implemented;

— checking of the test apparatus during test operation has been made possible;

— Clause 4 has been added, with some of its text moved from the scope;

— Clause 7 has been summarized.

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# Introduction

There is seldom a direct relation between resistance to the action of salt spray and resistance to corrosion in other media, because several factors influencing the progress of corrosion, such as the formation of protective films, vary greatly with the conditions encountered. Therefore, the test results should not be regarded as a direct guide to the corrosion resistance of the tested metallic materials in all environments where these materials might be used. Also, the performance of different materials during the test should not be taken as a direct guide to the corrosion resistance of these materials in service.

Nevertheless, the method described gives a means of checking that the comparative quality of a metallic material, with or without corrosion protection, is maintained.

Different metallic substrates (metals) cannot be tested in direct comparison in accordance to their corrosion resistances in salt spray tests. Comparative testing is only applicable for the same kind of substrate.

Salt spray tests are generally suitable as corrosion protection tests for rapid analysis for discontinuities, pores and damage in organic and inorganic coatings. In addition, for quality control purposes, comparison can be made between specimens coated with the same coating. As comparative tests, however, salt spray tests are only suitable if the coatings are sufficiently similar in nature.

It is often not possible to use results gained from salt spray testing as a comparative guide to the long-term behaviour of different coating systems, since the corrosion stress during these tests differs significantly from the corrosion stresses encountered in practice.


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# Corrosion tests in artificial atmospheres — Salt spray tests

## 1 Scope

This document specifies the apparatus, the reagents and the procedure to be used in conducting the neutral salt spray (NSS), acetic acid salt spray (AASS) and copper-accelerated acetic acid salt spray (CASS) tests for assessment of the corrosion resistance of metallic materials, with or without permanent or temporary corrosion protection.

It also describes the method employed to evaluate the corrosivity of the test cabinet environment.

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

The salt spray tests are particularly useful for detecting discontinuities, such as pores and other defects, in certain metallic, organic, anodic oxide and conversion coatings.

The neutral salt spray (NSS) test particularly applies to

— metals and their alloys,

— metallic coatings (anodic and cathodic),

— conversion coatings,

— anodic oxide coatings, and

— organic coatings on metallic materials.

The acetic acid salt spray (AASS) test is especially useful for testing decorative coatings of copper + nickel + chromium, or nickel + chromium. It has also been found suitable for testing anodic and organic coatings on aluminium.

The copper-accelerated acetic acid salt spray (CASS) test is useful for testing decorative coatings of copper + nickel + chromium, or nickel + chromium. It has also been found suitable for testing anodic and organic coatings on aluminium.

The salt spray methods are all suitable for checking that the quality of a metallic material, with or without corrosion protection, is maintained. They are not intended to be used for comparative testing 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.

## 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 3574, *Cold-reduced carbon steel sheet of commercial and drawing qualities*

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

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