International Standard

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2025-11

Paints and varnishes — Determination of resistance to cyclic corrosion conditions —

Part 2: Wet (salt fog)/dry/humid/UV light

Peintures et vernis — Détermination de la résistance aux conditions de corrosion cyclique —

Partie 2: Brouillard salin/sécheresse/humidité/lumière UV

Reference number
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Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **2**
4 Principle ... **2**
5 Salt fog test solution ... **2**
6 Apparatus ... **2**
7 Sampling ... **3**
8 Test panels ... **3**
8.1 Material and dimensions ... 3
8.2 Preparation and coating of panels ... 3
8.3 Drying and conditioning ... 3
8.4 Thickness of coating ... 3
8.5 Scribing of panels ... 3
9 Procedure ... **3**
10 Examination of test panels ... **4**
11 Test report ... **4**
Annex A (informative) **Alternative test procedures** ... **6**
Bibliography ... **8**

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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 document 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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This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139, *Paints and varnishes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11997-2:2013), which has been technically revised.

The main changes are as follows:

— Clause 3, Terms and definitions, has been added;

— in A.3.2.2, the designation of the fluorescent UV lamps has been updated;

— the normative references have been updated.

A list of all parts in the ISO 11997 series can be found on the ISO website.

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

Coatings of paints, varnishes and similar materials are exposed to cyclic wet and dry corrosion and UV exposure conditions using specified salt solutions in cabinets in order to simulate, in the laboratory, processes occurring in aggressive outdoor conditions. Generally, valid correlations between such outdoor weathering and laboratory testing cannot be expected because of the large number of factors influencing the breakdown process. Certain relationships can only be expected if the effect on the coating of the important parameters (e.g. nature of the pollutant, spectral distribution of the incident irradiance in the relevant photochemical region, temperature of the specimen, type and cycle of wetting and relative humidity) is known. In contrast to outdoor weathering, laboratory testing in a cabinet is performed with a reduced number of variables, which can be controlled and therefore the effects are more reproducible.

The method described can give a means of checking that the quality of a paint or paint system is being maintained. The method is intended to provide a more realistic simulation of these factors than is found in traditional tests with continuous exposure to a static set of corrosive conditions. The method has been found to be useful in comparing the cyclic salt spray resistance of different coatings. It is most useful in providing relevant ratings for a series of coated panels exhibiting significant differences in cyclic salt spray/UV exposure resistance tested at the same time and to the same test cycle.

The cycle specified in this document has been found useful for air-drying industrial maintenance coatings on steel; other cycles may be used as required.

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Paints and varnishes — Determination of resistance to cyclic corrosion conditions —

Part 2:
Wet (salt fog)/dry/humid/UV light

1 Scope

This document specifies a test method to determine the resistance of coatings to a specified cycle of wet (salt fog)/dry/humidity/UV light conditions using a specified solution.

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 1513, *Paints and varnishes — Examination and preparation of test samples*

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

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

ISO 3270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4618, *Paints and varnishes — Vocabulary*

ISO 4628-1, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 1: General introduction and designation system*

ISO 4628-2, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 2: Assessment of degree of blistering*

ISO 4628-3, *Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 3: Assessment of degree of rusting*

ISO 4628-4, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 4: Assessment of degree of cracking*

ISO 4628-5, *Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 5: Assessment of degree of flaking*

ISO 4628-6, *Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 6: Assessment of degree of chalking by tape method*

ISO 4628-8, *Paints and varnishes — Evaluation of degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 8: Assessment of degree of delamination and corrosion around a scribe or other artificial defect*

ISO 4628-10, *Paints and varnishes — Evaluation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 10: Assessment of degree of filiform corrosion*

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ISO 11997-1:—[1)], *Paints and varnishes — Determination of resistance to cyclic corrosion conditions — Part 1: Wet (salt fog)/dry/humid*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

ISO 16474-3, *Paints and varnishes — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Principle

A coated test panel is exposed to a cyclic wet (salt fog), drying, humidity and UV light test schedule. The effects of exposure are evaluated by criteria that has been agreed upon in advance by the interested parties, these criteria usually being of a subjective nature.

5 Salt fog test solution

5.1 Prepare the spray solution by dissolving sodium chloride and ammonium sulfate in water of grade 1 or grade 2 quality as specified in ISO 3696 to give a solution with c(NaCl) = (0,50 ± 0,01) g/l and $c[(NH_4)_2SO_4]$ = (3,50 ± 0,01) g/l.

5.2 The salts shall be white and shall comply with the purity requirements given in Table 1.

Table 1 — Purity of salt

Impurity	**Maximum mass percentage of impurity** (calculated on the dry salt) %
Total	0,5
Iodine	0,1
Copper	0,001
Nickel	0,001

5.3 Filter the solution before placing it in the reservoir of the cabinet, in order to remove any solid matter which can block the apertures of the spraying device.

6 Apparatus

Use ordinary laboratory apparatus and glassware, together with the following.

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