International Standard

ISO 11997-1

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

Part 1: Wet (salt fog)/dry/humid

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

Partie 1: Brouillard salin/sécheresse/humidité

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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 fourth edition cancels and replaces the third edition (ISO 11997-1:2017), which has been technically revised.

The main changes are as follows:

— the general warning and warnings for each chemical material have been added;

— a figure illustrating the scribe has been added to 8.5;

— the dry air supply for cycle C has been revised;

— guidance for salt spray humidification has been added;

— 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.

Introduction

Coatings of paints, varnishes and similar materials are exposed to one of four cycles of wet and dry conditions specified in this document (see Annexes A, B, C and D), using specified salt solutions in a cabinet in order to simulate, in the laboratory, processes occurring in aggressive outdoor conditions, such as marine environments. Generally, correlation between such outdoor weathering and laboratory testing cannot be expected because of the large number of factors influencing the breakdown process. Correlation can only be expected if the effect on the coating of important parameters (e.g. the nature of the pollutant, the spectral distribution of the incident irradiance in the relevant photochemical region, the temperature of the specimen, the 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 also give a means of checking that the quality of a paint or paint system is being maintained.

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 resistance.

The test cycles included in this document have been used successfully, with documented evidence, in the industry for the assessment of performance. The cycles can be summarized as follows.

— Cycle A (see Annex A): This cycle is specified in Japanese Automobile Standards JASO M 609-91 and JASO M 610-92.

— Cycle B (see Annex B): This cycle is identical to VDA 621-415 (1982-02) and is widely used in Europe. It has also been shown to give good correlation with natural weathering for thermosetting paints in vehicle corrosion.

— Cycle C (see Annex C): This cycle was developed in the United Kingdom for use with water-dilutable and latex paint systems and has been shown to give good correlation with natural weathering.

— Cycle D (see Annex D): This cycle is specified in Japanese Standard JIS K 5621-2003.

ISO 11997-2 describes a method for determining the cyclic corrosion resistance of paints which includes UV exposure as part of the cycle. It has been found to give good correlation with natural weathering for industrial maintenance coatings.

ISO 11997-3 describes a method based on a cyclic corrosion test for testing the corrosion protection of automobiles using coating systems on aluminium, steel or galvanized steel. The test method uses corrosive conditions (temperature and humidity ramps and salt spray) to create realistic corrosion patterns. These corrosion patterns are typical for automobiles, and they are comparable in the case of sufficiently similar protective coating systems.

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

Part 1: Wet (salt fog)/dry/humid

1 Scope

This document specifies a method for the determination of the resistance of coatings to one of four defined cycles of wet (salt fog)/dry/humid conditions using specified solutions.

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 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 4628-8, *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*

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