

Paints and varnishes - Determination of resistance to cyclic corrosion conditions - Part 2: Wet (salt fog)/dry/humidity/UV light (ISO 11997-2:2013)

This document is a preview generated by EVS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 11997-2:2013 sisaldab Euroopa standardi EN ISO 11997-2:2013 inglisekeelset teksti.	This Estonian standard EVS-EN ISO 11997-2:2013 consists of the English text of the European standard EN ISO 11997-2:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.09.2013.	Date of Availability of the European standard is 04.09.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 87.040

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

Paints and varnishes - Determination of resistance to cyclic corrosion conditions - Part 2: Wet (salt fog)/dry/humidity/UV light (ISO 11997-2:2013)

Peintures et vernis - Détermination de la résistance aux conditions de corrosion cyclique - Partie 2: Brouillard salin/sécheresse/humidité/lumière UV (ISO 11997-2:2013)

Beschichtungsstoffe - Bestimmung der Beständigkeit bei zyklischen Korrosionsbedingungen - Teil 2: Nass (Salzsprühnebel)/trocken/Feuchte/UV-Strahlung (ISO 11997-2:2013)

This European Standard was approved by CEN on 17 August 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 11997-2:2013) has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" in collaboration with Technical Committee CEN/TC 139 "Paints and varnishes" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 11997-2:2006.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 11997-2:2013 has been approved by CEN as EN ISO 11997-2:2013 without any modification.

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Principle	2
4 Salt fog test solution	2
5 Apparatus	2
6 Sampling	3
7 Test panels	3
7.1 Material and dimensions.....	3
7.2 Preparation and coating of panels.....	3
7.3 Drying and conditioning.....	3
7.4 Thickness of coating.....	3
7.5 Scribing of panels.....	3
8 Procedure	3
9 Examination of test panels	4
10 Precision	4
11 Test report	4
Annex A (informative) Alternative test procedures	6
Bibliography	8

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 part of ISO 11997 has been found useful for air-drying industrial maintenance coatings on steel; other cycles may be used as required.

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

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

1 Scope

This part of ISO 11997 specifies a test method of determining resistance of coatings to a defined cycle of wet (salt fog)/dry/humidity/UV light conditions using a specified solution.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 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 degradation of coatings — Designation 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 degradation of coatings — Designation 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 degradation of coatings — Designation 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 degradation of coatings — Designation of quantity and size of defects, and of intensity of uniform changes in appearance — Part 10: Assessment of degree of filiform corrosion*

ISO 11997-1:2005, *Paints and varnishes — Determination of resistance to cyclic corrosion conditions — Part 1: Wet (salt fog)/dry/humidity*

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

ISO 16474-3:—¹⁾, *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 Principle

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

4 Salt fog test solution

4.1 Prepare the spray solution by dissolving sodium chloride and ammonium sulfate in water of grade 1 or grade 2 quality as defined in ISO 3696 to give a solution with $c(\text{NaCl}) = (0,50 \pm 0,01)$ g/l and $c[(\text{NH}_4)_2\text{SO}_4] = (3,50 \pm 0,01)$ g/l.

4.2 The salts shall be white and 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

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

5 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

5.1 Artificial weathering cabinet, conforming to the requirements of ISO 16474-3, fitted with UVA 340 lamps and set to repeat a test cycle consisting of light (UV) at 60 °C black panel temperature and condensation in the dark period at 50 °C, unless otherwise specified. The cycle used is 4 h light (UV) and 4 h condensation.

5.2 Cyclic corrosion cabinet, conforming to the requirements of ISO 11997-1.

If the cabinet ([5.1](#) or [5.2](#)) has been used for a spray test, or for any other purpose, using a solution differing from that specified for the current test cycle, then it shall be thoroughly cleaned before use.

Other light sources and cabinets which may be used if otherwise specified or agreed are described in [Annex A](#).

1) To be published.