



SLOVENSKI STANDARD
SIST EN 17737:2023

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Pohištveno okovje - Preskusne metode in vrednotenje odpornosti okovja proti koroziji

Hardware for furniture - Test and evaluation methods for the corrosion resistance of furniture fittings

Möbelbeschläge - Prüf- und Bewertungsverfahren für die Korrosionsbeständigkeit von Möbelbeschlägen

Quincaillerie d'ameublement Méthodes d'essai et d'évaluation de la résistance à la corrosion des ferrures de meubles

Ta slovenski standard je istoveten z: EN 17737:2022

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97.140 Pohištvo Furniture

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Hardware for furniture - Test and evaluation methods for the corrosion resistance of furniture fittings

Quincaillerie d'ameublement - Méthodes d'essai et d'évaluation de la résistance à la corrosion des ferrures de meubles

Möbelbeschläge - Prüf- und Bewertungsverfahren für die Korrosionsbeständigkeit von Möbelbeschlägen

This European Standard was approved by CEN on 2 October 2022.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents		Page
European foreword		3
1	Scope	4
2	Normative references	4
3	Terms and definitions	4
4	Test equipment	5
5	Test methods	5
5.1	General	5
5.2	Test set-up	5
5.3	Test samples	5
6	Visual inspection and assessment procedures after the corrosion tests	6
6.1	General	6
6.2	Visual inspection	6
6.3	Cleaning procedure for R_A rating	6
6.4	Cleaning procedure for R_p rating	6
6.5	Determination of R_A and R_p rating	6
6.6	Test report	8
Annex A (informative) Recommendation for the evaluation of corrosion resistance		9

SIST EN 17737:2023

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European foreword

This document (EN 17737:2022) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by May 2023, and conflicting national standards shall be withdrawn at the latest by month May 2023.

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

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EN 17737:2022 (E)**1 Scope**

This document specifies test methods for the determination of corrosion resistance of furniture fittings as ready-to-use assemblies or their individual parts.

It applies to the optical assessment of surface changes for the following materials:

- metals and their alloys;
- metal coatings with anodic or cathodic properties;
- conversion coatings;
- anodic oxide layers;
- organic coatings on metallic materials.

This document does not include any requirements regarding the corrosion resistance of furniture fittings. These can be given in the product specifications.

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.

EN ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests (ISO 9227)*

EN ISO 6270-2, *Paints and varnishes — Determination of resistance to humidity — Part 2: Condensation (in-cabinet exposure with heated water reservoir) (ISO 6270-2)*

EN ISO 10289, *Methods for corrosion testing of metallic and other inorganic coatings on metallic substrates — Rating of test specimens and manufactured articles subjected to corrosion tests (ISO 10289)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 **R_p value**

rating assigned to the strength of the coating to protect the base metal against corrosion

[SOURCE: ISO 10289:1999, 2.1, modified – The wording has been adapted]

3.2 **R_A value**

rating, which specifies the degree of optical change of the protective coating and the evaluation of its appearance

[SOURCE: ISO 10289:1999, 2.3, modified – The wording has been adapted]

4 Test equipment

Cleaning-brush: Bristles of polyamide, length 20 mm, thickness 0,4 mm, 40 bristles in each bundle. See Figure 1.

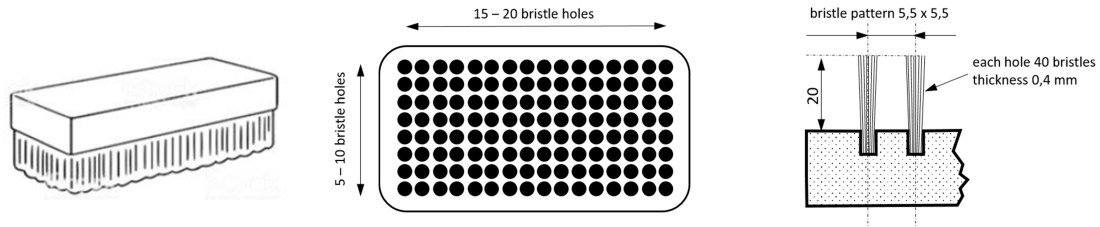


Figure 1 — Cleaning brush

5 Test methods

5.1 General

The test methods and evaluation criteria are based on the salt spray test according to EN ISO 9227 — NSS or an acetic acid salt spray test according to EN ISO 9227 — AASS or a condensation water test according to EN ISO 6270-2 — AHT. Each test is independently evaluated.

AHT test according to EN ISO 6270-2: Condensation water alternating climate test (AHT test) shall be prepared in accordance with EN ISO 6270-2. It is the test method in which test samples in a test chamber are subjected to high humidity and periodically changing temperatures (20 °C to 40 °C) so that condensation water is continuously deposited on the test samples.

NSS test according to EN ISO 9227: Neutral salt spray test (NSS test) shall be prepared in accordance with EN ISO 9227. It is the test method in which a 5 % sodium chloride solution is sprayed in a defined environment (test chamber).

AASS test according to EN ISO 9227: Acetic acid salt spray test (AASS test) shall be prepared in accordance with EN ISO 9227 so that the sprayed solution collected has a pH value of 3,1–3,3. The test specimens shall be exposed to the test solution in a defined environment (test chamber).

5.2 Test set-up

Regarding the salt spray test according to EN ISO 9227, the samples in the chamber shall be arranged so that they are not directly hit by the spray jet.

An inclination (ideally $(20 \pm 5)^\circ$ to the vertical) shall ensure that the test liquid can run off continuously.

Samples shall be arranged so that they do not come into contact with the walls of the chamber. Samples may be placed in the chamber at different levels, provided that the liquid does not drip from samples or their supports onto lower positioned samples.

The supports for the samples shall be made of non-metallic and inert materials.

5.3 Test samples

For the evaluation of complete furniture fittings, the tests shall be carried out on the complete fitting which is not dismantled into its individual parts.

The test and evaluation procedures can also be applied to individual components. The test specimens shall not be cleaned before testing.

6 Visual inspection and assessment procedures after the corrosion tests

6.1 General

Corrosion products are assessed after testing and cleaning in accordance with EN ISO 10289 by specifying the surface characteristics R_A and R_P achieved.

6.2 Visual inspection

The assessment shall be done with the naked eye, at a distance of approximately 300 mm without magnification, and shall be subjected to a visual inspection with indirect, glare-free light with an illuminance of 700 lux to 1 000 lux for approximately 10 s.

The following criteria are not considered as defects:

- a) superficial, only adhering corrosion products or soiling;
- b) corrosion in places where the salt spray solution or liquid collects and concentrates before it drips off the test sample;
- c) cutting edges, screw slots, rivet heads, thread-surfaces, weld seams.

6.3 Cleaning procedure for R_A rating

Before the determination of the R_A value, test related residues that adhere to the surface shall be removed. Rinse the samples with deionized/distilled water at a temperature not exceeding 40 °C and then immediately dry the samples in an air stream at an overpressure not exceeding 200 kPa and at a distance of about 300 mm.

Then the R_A rating is determined to describe the change in appearance due to corrosiveness of the protective coatings, e.g. white rust.

6.4 Cleaning procedure for R_P rating

Before the determination of the R_P rating, a second, more intensive cleaning with a brush and deionized/distilled water is carried out with the aim of removing the more adhering corrosion products in order to clearly identify only the damaged areas with base material corrosion.

Thoroughly clean the reference specimens with an appropriate organic solvent (such as a hydrocarbon with a boiling point between 60 °C and 120 °C), using a clean cleaning-brush (see Clause 4) or soft cloth, non-woven lint free cloth, that does not leave any remains, or an ultrasonic cleaning device. Carry out the cleaning in a vessel full of solvent. After cleaning, rinse the reference specimens with fresh solvent and then dry them.

6.5 Determination of R_A and R_P rating

The samples shall be evaluated/assessed within one hour of removal from the test chamber. The examination takes place after the cleaning procedure. The evaluation system for R_P and R_A base on the area of the protective coating (for R_A) or the base material (for R_P) on which corrosion occurs.

The evaluation is based on the formula:

$$R_P = 3(2 - \lg A) \text{ or } R_A = 3(2 - \lg A)$$

where

A is the percentage of the significant total area on which a visual change in the protective coating/corrosion of the base material occurs;

R_P and R_A are rounded to the next round figure, see Table 1.

Table 1 — Defective area (%) and assessment levels R_A and R_P

Defective area %	Assessment levels R_A and R_P
0	10
$0 < A \leq 0,1$	9
$0,1 < A \leq 0,25$	8
$0,25 < A \leq 0,5$	7
$0,5 < A \leq 1,0$	6
$1,0 < A \leq 2,5$	5
$2,5 < A \leq 5,0$	4
$5,0 < A \leq 10$	3
$10 < A \leq 20$	2
$20 < A \leq 50$	1
$50 < A$	0

Example calculation of the assessment level R_A :

A surface of 20 cm² of a significant total area of 120 cm² has changed optically after the corrosion test (e.g. white rust).

$$\text{Changed area } A = (20 \text{ cm}^2 \times 100 \%) / 120 \text{ cm}^2 = 16,7 \%$$

$$R_A = 3 \times (2 - \lg A) = 3(2 - \lg 16,7) = 2,3$$

Rounded down to the next round figure, the result is level $R_A = 2$.

Each test shall take into account the test procedure and duration and the surface characteristics R_A and R_P to be achieved in accordance with EN ISO 10289.

The test name shall be composed of the test procedure and the test duration (in hours), e.g. AHT-72, NSS-12, AASS-4.

NOTE In some cases, calculating the exact area can be difficult, especially on deeply worked specimens such as thread, bores, etc. In these cases, it can be necessary for the inspector to estimate the area as closely as possible (see Annex A).

EN 17737:2022 (E)**6.6 Test report**

The test report shall include information on the performance of the test procedure. This information may vary according to the purpose of the test and the instructions prescribed; a general list of the details to be required is as follows:

- a) reference to this document;
- b) type of test method;
- c) duration of test;
- d) positioning of the test sample in the test chamber/test device;
- e) description of cleaning method;
- f) description of the tested material or product;
- g) number of test samples representative of each material or product;
- h) test results of R_A and R_P according to subclause 6.5;
- i) details of any deviations from the specified method;
- j) any unusual features observed;
- k) the date of the test.

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