SLOVENSKI STANDARD
SIST EN 927-6:2019

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Nadomešča:
SIST EN 927-6:2007

Barve in laki - Premazi in premazni sistemi za zaščito lesa za zunanjo uporabo - 6. del: Umetno staranje s fluorescentnimi UV svetilkami in vodo

Paints and varnishes - Coating materials and coating systems for exterior wood - Part 6: Exposure of wood coatings to artificial weathering using fluorescent UV lamps and water

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Teil 6: Künstliche Bewitterung von Holzbeschichtungen mit fluoreszierenden UV-Lampen und Wasser

Peintures et vernis - Produits de peinture et systèmes de peinture pour bois en extérieur - Partie 6 : Vieillissement artificiel des revêtements pour bois par exposition à des lampes UV fluorescentes et à de l'eau

Ta slovenski standard je istoveten z: **EN 927-6:2018**

ICS:

71.100.50	Kemikalije za zaščito lesa	Wood-protecting chemicals
87.040	Barve in laki	Paints and varnishes

SIST EN 927-6:2019 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 927-6

October 2018

ICS 87.040

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English Version

Paints and varnishes - Coating materials and coating systems for exterior wood - Part 6: Exposure of wood coatings to artificial weathering using fluorescent UV lamps and water

Peintures et vernis - Produits de peinture et systèmes de peinture pour bois en extérieur - Partie 6 : Vieillissement artificiel des revêtements pour bois par exposition à des lampes UV fluorescentes et à de l'eau

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Teil 6: Künstliche Bewitterung von Holzbeschichtungen mit fluoreszierenden UV-Lampen und Wasser

This European Standard was approved by CEN on 9 April 2018.

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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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 927-6:2018) has been prepared by 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 April 2019, and conflicting national standards shall be withdrawn at the latest by April 2019.

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.

This document supersedes EN 927-6:2006.

The main technical changes are:

a) update of Normative references;

b) introduction of a new clause on precision (8);

c) new informative Annex G for the determination of the adhesive strength of the tape on test surface.

EN 927 consists of the following parts under the general title *“Paints and varnishes — Coating materials and coating systems for exterior wood”:*

— *Part 1: Classification and selection;*

— *Part 2: Performance specification;*

— *Part 3: Natural weathering test;*

— *Part 5: Assessment of the liquid water permeability;*

— *Part 6: Exposure of wood coatings to artificial weathering using fluorescent UV lamps and water.*

The following Technical Specifications are published in this context:

CEN/TS 16358, *Paints and varnishes — Coating materials and coating systems for exterior wood — Assessment of air inclusions/microfoam in coating films*

CEN/TS 16359, *Paints and varnishes — Coating materials and coating systems for exterior wood — Assessment of knot staining resistance of wood coatings*

CEN/TS 16360, *Paints and varnishes — Coating materials and coating systems for exterior wood — Assessment of film extensibility by indentation of a coating on a wooden substrate*

CEN/TS 16498, *Paints and varnishes — Coating materials and coating systems for exterior wood — Assessment of tannin staining*

CEN/TS 16499, *Paints and varnishes — Coating materials and coating systems for exterior wood — Resistance to blocking of paints and varnishes on wood*

CEN/TS 16700, *Paints and varnishes — Coating materials and coating systems for exterior wood — Assessment of resistance to impact of a coating on a wooden substrate*

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Coatings from paints, varnishes and similar materials are weathered in a laboratory in order to accelerate ageing processes (caused by temperature, wetness and irradiation) which occur during natural weathering. Generally, a simple accelerating ratio between ageing during artificial and natural weathering cannot be expected due to the influencing factors having different effects according to the nature of the coating and substrate. Predictable relationships can only be expected if the effect of the important parameters (spectral distribution of the irradiance in the photochemically relevant range, temperature of the specimen, type of wetting, wetting cycle relative humidity) on the coating is known. Moreover acceleration of the coating chemistry can cause alternative degradation pathways to be followed. However, unlike natural weathering, testing in the laboratory can be controlled by the operator and therefore the results are more repeatable and reproducible. This revision of EN 927-6 incorporates the results of a precision investigation that quantifies the capability of the test in terms of repeatability and reproducibility.

1 Scope

This part of EN 927 specifies a method for determining the resistance of wood coatings to artificial weathering performed in an apparatus equipped with fluorescent UV lamps, condensation and water spray devices.

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 927-1, *Paints and varnishes - Coating materials and coating systems for exterior wood - Part 1: Classification and selection*

EN ISO 2409, *Paints and varnishes - Cross-cut test (ISO 2409)*

EN ISO 2813, *Paints and varnishes - Determination of gloss value at 20°, 60° and 85° (ISO 2813)*

EN ISO 4628-1:2016, *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 4628-1:2016)*

EN 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 4628-2)*

EN 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 4628-4)*

EN 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 4628-5)*

EN 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 4628-6)*

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

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 18314-1, *Analytical colorimetry — Part 1: Practical colour measurement*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Principle

Artificial weathering of coatings using fluorescent UV lamps, condensation or water spray is carried out in order to produce a certain radiant exposure or mutually agreed total number of operation hours, based on a given degree of a change in a property or properties. The properties of the exposed coatings are compared with those of unexposed coatings, which are prepared from the same coating materials under identical conditions or with coatings whose degradation properties are known.

Radiation, temperature and humidity all contribute to the ageing process. Therefore, the apparatus specified in this standard simulates all three factors.

The results obtained by this method do not necessarily directly relate to the results obtained under natural exposure conditions. The relationship between these results needs to be established before the method can be used to predict performance.

The standard test substrate is pine sapwood with the back side of panels coated. However, supplementary information on coating performance may be obtained by conducting optional tests on additional wood species, on pine, modified or impregnated by industrial processes or without coating the back side of the panels.

5 Apparatus

5.1 Test chamber

The test chamber consists of an enclosure made from corrosion-resistant material which houses the lamps, a heated water tray, spray nozzles and test panel racks.

5.2 Lamps

A UV lamp emits UV light from a low pressure mercury arc. The required spectral distribution is achieved by careful selection of the type of phosphor coating on the inner surface of the lamp and the nature of the glass used in the construction of the tubes.

NOTE The principle construction details are described in EN ISO 16474-1.

The lamp shall be of type 1A (UVA 340) in accordance with EN ISO 16474-3 (peak emission at 340 nm).

5.3 Device for wetting the test panels

The test panels shall be wetted by condensation from the heated water tray and by spray. To prevent spotting on to the test panels, water with a pH value between 5,0 and 7,5 and an electrical conductivity of maximum 2 mS/m, measured at (25 ± 1) °C shall be used. See Annex D.

5.4 Black panel thermometer

Set the apparatus to operate at the specified parameters. The temperature shall be monitored by a remote sensor attached to the black panel. The black panel thermometer shall be exposed to the same exposure conditions as the specimens. Black panel thermometers shall be calibrated in accordance with the manufacturer's recommendations.

NOTE The construction of the black panel thermometer is described in ISO 16474-1.

5.5 Irradiance control

The irradiance at 340 nm shall be set to 0,89 W/(m^2 nm) (see 7.3.1).

Apparatus equipped with an irradiance control system shall be calibrated in accordance with the manufacturer's recommendations.

Lamps within the apparatus without an irradiance control system need to be rotated and replaced in accordance with the manufacturer's recommendations to compensate for lamp ageing.

6 Test panels

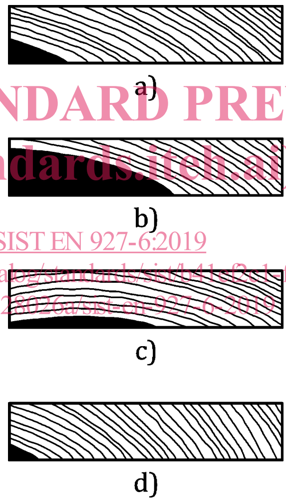
6.1 Wood

The wood shall be Scots Pine (*Pinus sylvestris*) that has been selected free of knots, cracks and resinous streaks, to be straight-grained and of normal growth rate (i.e. 3 to 8 annual rings per 10 mm). The inclination of the growth rings to the face shall be 5° to 45° (see Figure 1).

The wood shall be free from blue stain and evidence of surface or bulk fungal infection. Abnormal porosity (caused by bacterial attack) shall be avoided (see Annex E).

The panels shall be selected to give a sapwood test surface on the convex side of the growth rings, with no heartwood (if present), closer than 10 mm to the test surface. If the presence of heartwood in the selected pine cannot be detected by a difference in the colour in the wood, it shall be checked using the test described in Annex C.

The wood shall be conditioned at (20 ± 2) °C and a relative humidity of (65 ± 5) % (in accordance with ISO 554) to constant mass.



The topside of the panels is the exposed side, the bottom is the rear face.

Key

a) Example of a panel fulfilling the demands of growth ring orientation (5° to 45°) at the front side. No heartwood is closer than 10 mm to the test surface

b) This panel does not meet the specification because the heartwood is too close to the front side

c) This panel does not meet the specification because the growth ring orientation is not within the (5° to 45°) band. The growth rings incline at −10° on the left of the panel and 30° on the right. Consequently a part of the surface contains a tangentially cut wood surface (growth ring inclination 0°), with considerable risk of crack formation

d) This panel does not meet the specification because the growth ring orientation is not within the (5° to 45°) band and the growth rings incline 45° on the left of the panel and 70° on the right

Figure 1 — Cross section of the panels