

**norm****NEN-EN 927-6**

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

Publicatie uitsluitend voor commentaar

december 2016

ICS 87.040

Commentaar vóór 2017-01-09

Zal vervangen NEN-EN 927-6:2006

Als Europees normontwerp is gepubliceerd: prEN 927-6:2016, IDT

Definitief vastgestelde normen zullen als Nederlandse norm gelden. Daarom wordt dit normontwerp in Nederland voor commentaar gepubliceerd. Op het ontwerp ingebracht commentaar zal aan de bevoegde normcommissie worden voorgelegd die hiermee rekening zal houden bij de bepaling van de Nederlandse stem. Indien er geen bezwaar bij NEN wordt gebracht, kan dat leiden tot ongewijzigde definitieve vaststelling van het ontwerp als norm.

Van Europese normen bestaan drie officiële versies: Engels, Frans en Duits. Voor Nederland zal de Engelse versie gelden. Daarnaast kan er gekozen worden voor een andere geautoriseerde versie in het Nederlands.

Normcommissie 342035 "Verfwaren"



**THIS PUBLICATION IS COPYRIGHT PROTECTED**

**DEZE PUBLICATIE IS AUTEURSRECHTELIJK BESCHERMD**

Apart from exceptions provided by the law, nothing from this publication may be duplicated and/or published by means of photocopy, microfilm, storage in computer files or otherwise, which also applies to full or partial processing, without the written consent of the Royal Netherlands Standardization Institute.

The Royal Netherlands Standardization Institute shall, with the exclusion of any other beneficiary, collect payments owed by third parties for duplication and/or act in and out of law, where this authority is not transferred or falls by right to the Reproduction Rights Foundation.

Auteursrecht voorbehouden. Behoudens uitzondering door de wet gesteld mag zonder schriftelijke toestemming van het Koninklijk Nederlands Normalisatie-instituut niets uit deze uitgave worden verveelvoudigd en/of openbaar gemaakt door middel van fotokopie, microfilm, opslag in computerbestanden of anderszins, hetgeen ook van toepassing is op gehele of gedeeltelijke bewerking.

Het Koninklijk Nederlands Normalisatie-instituut is met uitsluiting van ieder ander gerechtigd de door derden verschuldigde vergoedingen voor verveelvoudiging te innen en/of daartoe in en buiten rechte op te treden, voor zover deze bevoegdheid niet is overgedragen c.q. rechtens toekomt aan de Stichting Reprorecht.

Although the utmost care has been taken with this publication, errors and omissions cannot be entirely excluded. The Royal Netherlands Standardization Institute and/or the members of the committees therefore accept no liability, not even for direct or indirect damage, occurring due to or in relation with the application of publications issued by the Royal Netherlands Standardization Institute.

Hoewel bij deze uitgave de uiterste zorg is nagestreefd, kunnen fouten en onvolledigheden niet geheel worden uitgesloten. Het Koninklijk Nederlands Normalisatie-instituut en/of de leden van de commissies aanvaarden derhalve geen enkele aansprakelijkheid, ook niet voor directe of indirecte schade, ontstaan door of verband houdend met toepassing van door het Koninklijk Nederlands Normalisatie-instituut gepubliceerde uitgaven.

Voorbeeld  
Preview

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 927-6**

November 2016

ICS 87.040

Will supersede EN 927-6:2006

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 : Vieillessement 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 draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 139.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

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

<b>Contents</b>	<b>Page</b>
European foreword.....	4
Introduction.....	5
1 Scope.....	6
2 Normative references.....	6
3 Principle.....	7
4 Apparatus.....	7
4.1 Test chamber.....	7
4.2 Lamps.....	7
4.3 Device for wetting the test panels.....	8
4.4 Black panel thermometer.....	8
4.5 Irradiance control.....	8
5 Test panels.....	8
5.1 Wood.....	8
5.2 Preparation and selection of wood panels.....	9
5.3 Preparation of coated panels.....	9
5.3.1 Wood conditioning.....	9
5.3.2 Preparation of panels for the test coating.....	10
5.3.3 Conditioning.....	10
6 Procedure.....	10
6.1 Examination before exposure.....	10
6.2 Mounting the test panels.....	10
6.3 Exposure.....	10
6.3.1 Exposure cycle.....	10
6.3.2 Sample rotation and maintenance.....	11
6.3.3 Duration of test.....	11
6.4 Examination of test panels.....	11
7 Precision.....	12
8 Expression of results and test report.....	14
Annex A (normative) Details of the test methods.....	15
A.1 Gloss and change of gloss.....	15
A.2 Colour and colour change.....	15
A.3 Blistering.....	15
A.4 Flaking.....	15
A.5 Cracking.....	15
A.6 Chalking.....	15
A.7 General appearance.....	16
A.8 Adhesion.....	16
A.8.1 General.....	16

<b>A.8.2 Apparatus and material .....</b>	<b>16</b>
<b>A.8.2.1 Cutting tool.....</b>	<b>16</b>
<b>A.8.2.2 Transparent pressure-sensitive adhesive tape.....</b>	<b>16</b>
<b>A.8.3 Procedure.....</b>	<b>16</b>
<b>Annex B (informative) Explanatory notes .....</b>	<b>17</b>
<b>B.1 Explanation of exposure cycle .....</b>	<b>17</b>
<b>B.2 Reproducibility.....</b>	<b>17</b>
<b>B.3 Correlation to natural weathering .....</b>	<b>17</b>
<b>B.4 Dependency on wood species and substrate.....</b>	<b>17</b>
<b>B.5 Recommendation of periodical performance assessments .....</b>	<b>17</b>
<b>Annex C (informative) Test for heartwood in pine.....</b>	<b>18</b>
<b>Annex D (informative) Water treatment, devices for water purification .....</b>	<b>19</b>
<b>Annex E (normative) Test for abnormally porous wood.....</b>	<b>20</b>
<b>Annex F (informative) Alternative procedure for preparation and coating of panels.....</b>	<b>21</b>
<b>Bibliography .....</b>	<b>22</b>

Copyright  
 Preview

**prEN 927-6:2016 (E)****European foreword**

This document (prEN 927-6:2016) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 927-6:2006.

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*

## 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 experimenter 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.

Copyright  
Preview

**prEN 927-6:2016 (E)****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, 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.

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

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 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.

### 4 Apparatus

#### 4.1 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.

#### 4.2 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.

The lamp shall be of the following type:

Lamp, commonly called UV-A 340, with a peak emission at 340 nm and the following relative spectral irradiance (see EN ISO 16474-3):

**Table 1 — Relative spectral irradiance of lamp**

Wavelength nm	Relative spectral irradiance <sup>a</sup> %
290 < λ ≤ 400	100
λ ≤ 290	0,0
290 < λ ≤ 300	0,2
Note: Broader band pass below	6,2 to 8,6
300 < λ ≤ 320	27,1 to 30,7
320 < λ ≤ 340	34,2 to 35,4
340 < λ ≤ 360	19,5 to 23,7
360 < λ ≤ 380	6,6 to 7,8
380 < λ ≤ 400	

<sup>a</sup> The spectral irradiance between 290 nm and 400 nm is defined as 100 %.

# Bestelformulier

# NEN

## Stuur naar:

NEN Standards Products & Services  
t.a.v. afdeling Klantenservice  
Antwoordnummer 10214  
2600 WB Delft

## NEN Standards Products & Services

Postbus 5059  
2600 GB Delft

Vlinderweg 6  
2623 AX Delft

T (015) 2 690 390  
F (015) 2 690 271

[www.nen.nl/normshop](http://www.nen.nl/normshop)

## Ja, ik bestel

\_\_ ex. NEN-EN 927-6:2016 Ontw. en 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 € 23.50

**Wilt u deze norm in PDF-formaat? Deze bestelt u eenvoudig via [www.nen.nl/normshop](http://www.nen.nl/normshop)**

### Gratis e-mailnieuwsbrieven

Wilt u op de hoogte blijven van de laatste ontwikkelingen op het gebied van normen, normalisatie en regelgeving? Neem dan een gratis abonnement op een van onze e-mailnieuwsbrieven. [www.nen.nl/nieuwsbrieven](http://www.nen.nl/nieuwsbrieven)

### Retourneren

Fax: (015) 2 690 271  
E-mail: [klantenservice@nen.nl](mailto:klantenservice@nen.nl)  
Post: NEN Standards Products & Services,  
t.a.v. afdeling Klantenservice  
Antwoordnummer 10214,  
2600 WB Delft  
(geen postzegel nodig).

## Gegevens

Bedrijf / Instelling

T.a.v. \_\_\_\_\_ O M O V

E-mail

Klantnummer NEN

Uw ordernummer \_\_\_\_\_ BTW nummer \_\_\_\_\_

Postbus / Adres

Postcode \_\_\_\_\_ Plaats \_\_\_\_\_

Telefoon \_\_\_\_\_ Fax \_\_\_\_\_

**Factuuradres** (indien dit afwijkt van bovenstaand adres)

Postbus / Adres

Postcode \_\_\_\_\_ Plaats \_\_\_\_\_

Datum \_\_\_\_\_ Handtekening \_\_\_\_\_

### Voorwaarden

- De prijzen zijn geldig tot 31 december 2016, tenzij anders aangegeven.
- Alle prijzen zijn excl. btw, verzend- en handelingskosten en onder voorbehoud bij o.m. ISO- en IEC-normen.
- Bestelt u via de normshop een pdf, dan betaalt u geen handeling en verzendkosten.
- Meer informatie: telefoon (015) 2 690 391, dagelijks van 8.30 tot 17.00 uur.
- Wijzigingen en typfouten in teksten en prijsinformatie voorbehouden.
- U kunt onze algemene voorwaarden terugvinden op: [www.nen.nl/leveringsvoorwaarden](http://www.nen.nl/leveringsvoorwaarden).