



**SLOVENSKI STANDARD**  
**oSIST prEN 927-7:2018**

**01-november-2018**

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**Barve in laki - Premazi in premazni sistemi za zaščito lesa za zunanjo uporabo - 7. del: Ocenjevanje odpornosti premazov proti obarvanju zaradi grč v lesu**

Paints and varnishes - Coating materials and coating systems for exterior wood - Part 7: Assessment of knot staining resistance of wood coatings

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Beurteilung der Beständigkeit von Holzbeschichtungen gegen Astausfärbung

Peintures et vernis - Produits de peintures et systèmes de peintures pour bois en extérieur - Partie 7 : Evaluation de la résistance des revêtements pour bois aux taches provoquées par les noeuds

**Ta slovenski standard je istoveten z: prEN 927-7**

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**ICS:**

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

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**prEN 927-7**

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ICS 87.040

Will supersede CEN/TS 16359:2012

English Version

## Paints and varnishes - Coating materials and coating systems for exterior wood - Part 7: Assessment of knot staining resistance of wood coatings

Peintures et vernis - Produits de peintures et systèmes de peintures pour bois en extérieur - Partie 7 : Evaluation de la résistance des revêtements pour bois aux taches provoquées par les noeuds

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Beurteilung der Beständigkeit von Holzbeschichtungen gegen Astausfärbung

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.

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 927-7:2018) 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 CEN/TS 16359:2012.

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## Introduction

The treatment of exterior wood surfaces has both aesthetic and protective functions. A vital purpose of a coating system is to protect against discoloration caused by wood extractives. Discoloration can be characterized as tannin staining or as knot staining.

This document provides a method for assessment of discoloration of coatings on wood caused by wood extractives in knots, i.e. it relates to knot staining only.

The method can be used for testing exterior and interior coatings for wood.

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## 1 Scope

This document specifies a test method for assessing the discoloration of coating systems on wood due to wood extractives from knots. The discoloration is measured by colorimetry and the result is stated as the colour difference between the coated surface on the knot and the coated surface beside the knot.

## 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 14298, *Sawn timber - Assessment of drying quality*

EN ISO 4892-2:2013, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2:2013)*

EN ISO 11664-4, *Colorimetry - Part 4: CIE 1976 L\*a\*b\* Colour space (ISO 11664-4)*

EN ISO 15528, *Paints, varnishes and raw materials for paints and varnishes - Sampling (ISO 15528)*

EN ISO 18314-1, *Analytical colorimetry - Part 1: Practical colour measurement (ISO 18314-1)*

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

## 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 <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>

### 3.1

#### **tannin staining**

appearance of discoloration on coated surfaces caused by wood extractives in the substrate

### 3.2

#### **knot staining**

appearance of discoloration on coated surfaces caused by wood extractives in knots

### 3.3

#### **wood extractives**

low-molecular wood components soluble in organic solvents or water

### 3.4

#### **sound knot**

knot that, at the relevant surface, is intergrown with the surrounding wood along more than 75 % of its circumference and is free of decay

**prEN 927-7:2018 (E)****4 Test panels****4.1 Wood**

The raw material for the test panels shall be panels of pine (*Pinus silvestris*) free from visible cracks, blue stain, bacterial attack and rot damage. The panels shall be dried to target moisture content 18 % in accordance with EN 14298. The drying temperature shall not exceed 70 °C during any part of the drying schedule.

There are no specific demands on wood dimension, specific gravity, growth ring orientation, content of heartwood and surface structure, however sawn panels 25 mm × 100 mm (thickness × width) with a considerable amount of knots is a suitable raw material.

After drying, the panels shall be stored in an atmosphere in accordance with ISO 554 at  $(20 \pm 2) \text{ °C} / (65 \pm 5) \text{ % RH}$  until equilibrium has been reached, i.e. normally minimum for one month and maximally for 6 months.

From this dried and climatized wood material test panels with a nominal size of 150 mm × 74 mm × min. 10 mm are prepared with at least one sound knot with a diameter at least as large as the measuring aperture of the apparatus for colour measurement. The test panels shall be cut such that no part of the test face contains material originating closer than 10 mm from the surface of the raw material. The test face shall be “fresh”; therefore the original wood material shall be sawn, cut or machined at least 10 mm below its original surface. A practical procedure of panel preparation is shown in Figure 1. The shown procedure is a suggestion, not a specification.

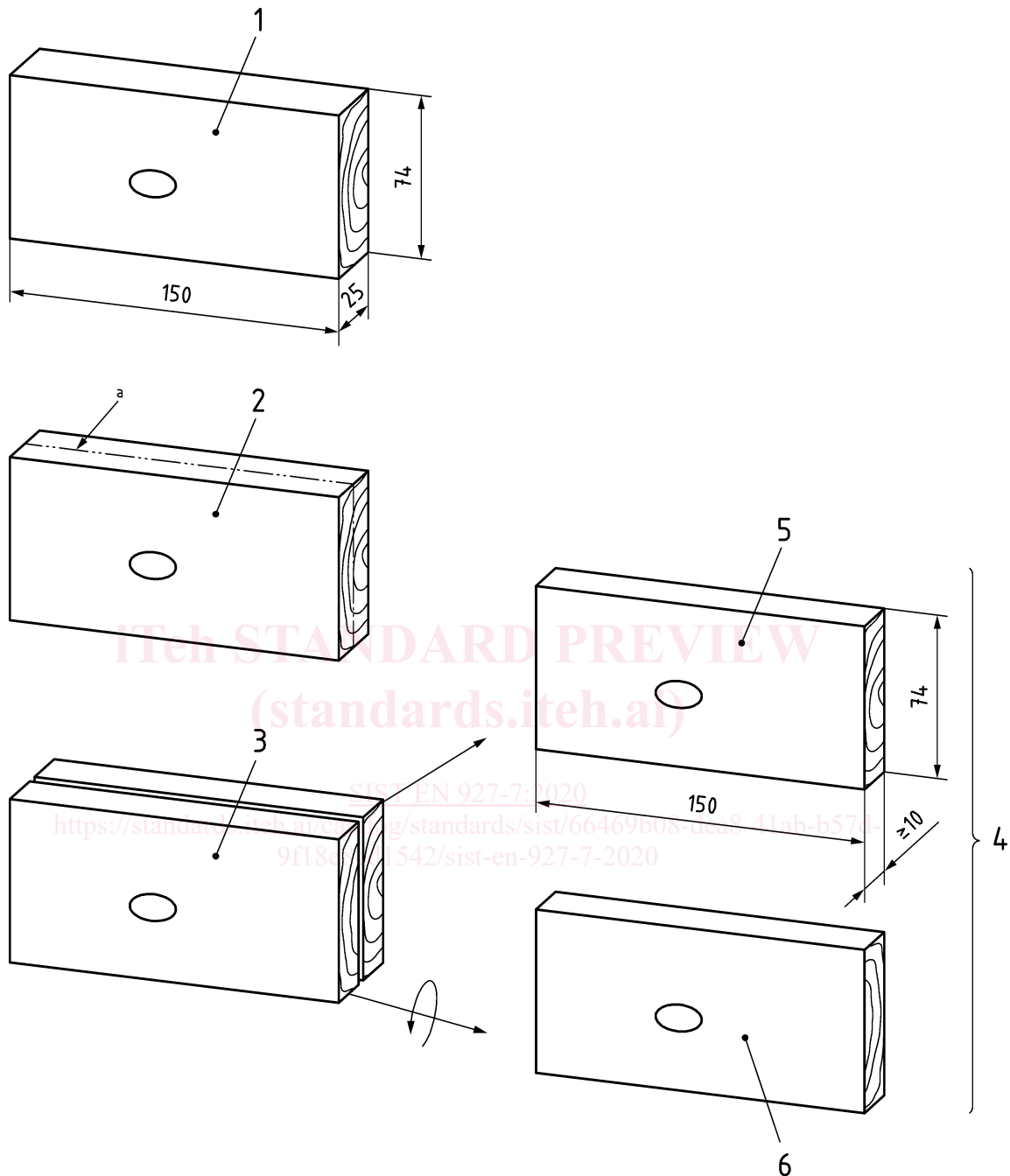
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Dimensions in millimetres

**Key**

- 1 raw material is a pine panel with a sound knot at least as large as the measuring aperture of the colorimeter. The knot shall look sound and sufficiently large on both sides of the panel
- 2 the original panel is divided in two equally sized panels, preferably by band sawing. No more panels of this type should be produced than can be further machined within one week after sawing
- 3 the two panels should be at least 10 mm thick at this stage
- 4 the test face to be further machined and coated is the freshly sawn surface designated 5 and 6 in Figure 1

**Figure 1 — Example of practical procedure for panel production**

**prEN 927-7:2018 (E)**

NOTE 1 Following this procedure two panels each 150 mm × 74 mm × approximately 10 mm are produced from one initially 25 mm thick panel. It has been experienced that such two halves originating from the same initial panel, often but not always, perform similarly in the test. This provides an opportunity to use matched samples in test trials, e.g. coating one half of each matched pair of panels with a reference coating. This is an option; it is not specified as the normal test procedure.

For each coating system under test select a minimum of 20 test panels 150 mm × 74 mm × approximately 10 mm on a random basis from the available supply.

NOTE 2 The number of panels has influence of the accuracy of the test.

Plane the test face with an ordinary rotary planing machine and store the test panels (14 ± 2) days at (20 ± 2) °C/(65 ± 5) % RH with the planed surface exposed to the atmosphere of the climate chamber, (the surface shall not be obstructed).

NOTE 3 The time interval between planing and coating has a decisive influence on knot staining. Freshly machined surfaces give a more pronounced discoloration than aged surfaces. It is therefore important to respect the specified two week ageing interval.

**4.2 Sampling of coating products**

A representative sample of the product to be tested (or of each product in the case of a multicoat system) shall be taken as specified in EN ISO 15528.

**4.3 Preparation of coated panels**

Apply the coating system respecting the method and spreading rate specified by the manufacturer with the product or products under test. Normally a white top coat should be applied. Unless otherwise specified, dry the coated test panels at (20 ± 2) °C/(65 ± 5) % RH for a period of (7 ± 2) days.

**5 Equipment****5.1 Apparatus for accelerated ageing**

Accelerated ageing of the coated test panels shall be performed in an apparatus in accordance with EN ISO 4892-2:2013.

**5.2 Apparatus for colour measurements**

The colour shall be measured in CIELAB colour coordinates with an apparatus with illuminant D65/10° standard observer as specified in EN ISO 11664-4. Specular gloss may be included or excluded, but the selected principle should be stated.

**6 Procedure of exposure**

The coated test panels are mounted in the exposure cabinet with the coated surface towards the xenon-arc lamps and exposed continuously for 72 h according to EN ISO 4892-2:2013, Method A, Cycle No. 1. Exposure period: 102 min dry, 18 min water spray. Black-standard temperature: (65 ± 3) °C.

After 72 h of exposure, remove the coated test panels from the exposure apparatus, blot any water from the surface and store the panels without obstructing the coated surface at 20 °C/65 % RH for maximum 3 days before colour measurement.