SLOVENSKI STANDARD
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Barve in laki - Premazi in premazni sistemi za zaščito lesa v zunanji uporabi - Odpornost filmov premazov proti medsebojnemu zlepljanju

Paints and varnishes - Coating materials and coating systems for exterior wood - Resistance to blocking of paints and varnishes on wood

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Bestimmung der Blockfestigkeit

Peintures et vernis - Produits de peinture et systèmes de peinture pour le bois en extérieur - Résistance au blocage des peintures et vernis sur bois

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87.040	Barve in laki	Paints and varnishes

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Paints and varnishes - Coating materials and coating systems for exterior wood - Resistance to blocking of paints and varnishes on wood

Peintures et vernis - Produits de peinture et systèmes de peinture pour le bois en extérieur - Résistance au blocage des peintures et vernis sur bois

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Bestimmung der Blockfestigkeit

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

This document (FprCEN/TS 16499:2012) 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 Formal Vote.

Remark about climatic conditions:

EN 23270, *Paints and varnishes and their raw materials — Temperatures and humidity for conditioning and testing (ISO 3270)* prescribe the use of standard conditions 23/50 [(23 ± 2) °C and (50 ± 5) % relative humidity]. Historically for wooden substrates there are a lot of mechanical properties which refer to the alternative standard conditions 20/65 [(20 ± 2) °C and (65 ± 5) % relative humidity] according to ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*. Therefore the use of standard conditions 20/65 instead of standard conditions 23/50 could be arranged but should be noted.

1 Scope

This Technical Specification specifies a test method for determining, under standard conditions, whether a single-coat film or a multi-coat system of paints and varnishes on wood after a specified drying period is sufficiently dry to avoid damage when two painted surfaces or one painted surface and another surface are placed in contact under pressure and subsequently separated. The method is intended to simulate the conditions when painted articles come into contact which each other. In comparison to EN ISO 9117-2, *Paints and varnishes — Drying tests — Part 2: Pressure test for stackability* the conditioning and parameters which influences the behaviour of wood coatings are more specific.

NOTE In some countries, the test is called a “block or blocking resistance” test.

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 23270, *Paints, varnishes and their raw material — Temperatures and humidities for conditioning and testing (ISO 3270:1984)*

EN ISO 1513, *Paints and varnishes — Examination and preparation of test samples*

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

3 Terms and definitions

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

3.1
blocking
unwanted adhesion between two surfaces, at least one of which has been coated, when they are left in contact under load after a given drying period

[Source: EN ISO 4618:2006]

Note 1 to entry Blocking does not apply to bonding of coated surfaces after insufficient drying.

Note 2 to entry In practice blocking may occur if coated wood panels are stacked on each other or on windows and doors if the frames are in direct contact with the faces. Blocking depends on temperature and load (pressure).

Note 3 to entry The term blocking is also sometimes used to describe agglomerated caked powder.

Note 4 to entry Unwanted adhesion may lead to damage upon separation.

3.2
load
mass needed to achieve a suitable test pressure

Note 1 to entry High temperature and humidity increase the challenge at a given load. The application method, film thickness, drying conditions and climatic conditions shall also be taken into account.

3.3
after tack
property of a film to remain sticky after normal drying or curing

[Source: EN ISO 4618:2006]

Note 1 to entry The term after tack can also mean a subjectively stickiness of the surface ("finger tack" or "surface tack"). This effect however may not necessarily be related blocking.

3.4
stable mass
mass achieved when the difference between two subsequent weightings within 24 h does not exceed 0,2 %

[Source: EN 927-5:2006]

3.5
stackability
resistance to damage due to unwanted adhesion between adjacent surfaces of articles that develops when these articles are left in contact

[Source: EN ISO 9117-2:2010]

4 Principle

The coating material or the coating system under test has to be applied on test panels or cut stripes under specified conditions. After specified drying time and under specified climatic conditions, the two test panels or cut stripes are placed crosswise in contact with each other. This assembly is subsequently placed in a test apparatus to be subjected to a specified pressure load under specified climatic conditions. After a specified period of time, the load is removed and the test panels manually separated under specific climatic conditions and the contact areas examined for any damage to the coating in the area of contact.

5 Apparatus

5.1 Weights

Of a mass which correspondents to the requirements of 12.1.

5.2 Oven or conditioning room

Depending on the selected climatic conditions during load (see clause 11 or 12.2): Oven of appropriate size, controlled at a temperature of (50 ± 2) °C or (60 ± 2) °C. Climatic conditioning chamber where the selected climatic conditions can be achieved.

5.3 Application on Specimen s3 - inert substrate

Test panels[1)] ("strips") made of polyvinyl chloride film free of migrating plasticizers, of sufficient rigidity to ensure a flat surface, impervious to and unaffected by water or aliphatic organic solvents and of nominal thickness 0,25 mm. Other types of plastic film may be used where the coating contains solvents which may adversely affect the PVC film. If the coating delaminates from the substrate before or during the test, another, more suitable substrate should be used.

Film applicator, preferably automatic, used at an application speed of 10 mm/s to 15 mm/s and fitted with a doctor blade (see 8.2) with an appropriate gap clearance and a gap width of at least 60 mm.

Cutting knife, metal template or straight-edge ruler to cut the foils.

5.4 Application on test specimen s1, s2, s4

Application tools (e. g. roller, brush, spray equipment) depending on the paint manufacturer's specification.

6 Sampling

A representative sample of the product to be tested (or of each product in the case of a multi-coat system), should be taken in accordance with EN ISO 15528. Examine and prepare each sample for testing in accordance with EN ISO 1513.

7 Test panels – substrate – test specimen

7.1 General

Depending on the specimens provided for use, a different type of application method may be required.

1) Suitable test foil made of plasticised PVC is available from Leneta Co. Whitney Road, Mahawa, NJ 07430-3129, USA, or Erichsen GmbH, Am Iserbach 14, D-58675 Hemer, Germany, or Sheen Instruments, Unit 4, St George's Industrial Estate, Richmond Road, Kingston, Surrey KT2 5BQ, United Kingdom. This information is given for the convenience of users of the document and does not constitute an endorsement by CEN of the product named.

Table 1 — Substrate

Substrate (s)	Type	Description	Recommended use
s1	wood	spruce (picea abies) (see 7.1)	standard test method to check a coating system or a individual top coat.
s2	other wood substrates	any wood species (see 7.2)	individual wood species on customer-specific requirement (e.g. coated test specimen from which test panels can be cut)
s3	inert substrate	PVC-foil (see 5.3)	lab test method to compare different top coats (simulation of the blocking behaviour on not absorbing substrates)
s4	other plane substrates	e. g. plywood according to EN 636-3	lab test method to compare different coating materials or coating systems.

7.2 Substrate s1 – Spruce

The wood shall be spruce (picea abies) that has been selected to be free from knots and cracks, to be straight-grained and of normal growth rate (i. e. between 3 and 8 annual rings per 10 mm).

The panels shall be planed all round to a smooth and uniform finish. The inclination of the growth rings to the test face shall be (45 ± 10) °. See Figure 1. The wood shall be free from blue stain and evidence of surface or bulk infection. Abnormal porosity shall be avoided. Condition the wood prior to conversion into test panels in accordance with EN 23270 at (23 ± 2) °C and a relative humidity of (50 ± 5) %. The density of the wood shall be between 0,4 g/cm^3 and 0,5 g/cm^3 when measured at an equilibrium moisture content at standard climate in accordance with EN 23270 at (23 ± 2) °C and a relative humidity of (50 ± 5) %.

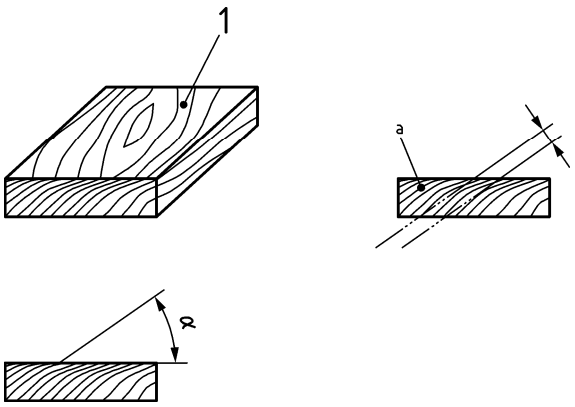

Figure 1

Key

1 Front of panel (test face)

a Min. 3, max. 8 growth rings per 10mm (applies for the whole panel)

α Angle of growth rings to test face min. 35°, max. 55°

Figure 2 — Selection of wood

7.3 Substrate s2 – Other wood species

In case of customer-specific requirements or if it might be assumed that other types of wood might give a different result an alternative wood species should be used as substrate. It is also an option for manufacturers to provide an already coated test specimen from which test panels can be cut. The chosen panel shall be precisely described in the test report. The surface of the specimens provided shall be plane. The test substrate shall be conditioned until constant mass at standard conditions according to EN 23270 [(23 ± 2) °C and (50 ± 5) % relative humidity].

7.4 Substrate s3 – Inert substrate

See paragraph 5.3.