



SLOVENSKI STANDARD

SIST EN 927-2:2006

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Paints and varnishes - Coating materials and coating systems for exterior wood - Part 2:
Performance specification

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im
Außenbereich - Teil 2: Leistungsanforderungen

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Peintures et vernis - Produits de peinture et systemes de revetement pour le bois en
extérieur - Partie 2: Spécifications de performance

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English Version

**Paints and varnishes - Coating materials and coating systems
for exterior wood - Part 2: Performance specification**

Peintures et vernis - Produits de peinture et systèmes de
revêtement pour le bois en extérieur - Partie 2:
Spécifications de performance

Beschichtungsstoffe - Beschichtungsstoffe und
Beschichtungssysteme für Holz im Außenbereich - Teil 2:
Leistungsanforderungen

This European Standard was approved by CEN on 9 March 2006.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard (EN 927-2:2006) 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 October 2006, and conflicting national standards shall be withdrawn at the latest by October 2006.

This European Standard supersedes ENV 927-2:2000.

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*

This second edition cancels and replaces the first edition (ENV 927-2:2000), which has been technically revised. The main changes are:

- values for adhesion and maximum sum value in Table 1 were changed;
- former Annex A was deleted and the former Annex B became Annex A.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This is one of a number of parts of EN 927. Part 1 addresses the issue of an unequivocal terminology for the wide variety of exterior coatings for wood that are now available. Part 1 also provides a framework for communicating information on the suitability of a coating for particular specific end-use categories. Improved communication is beneficial in the removal of technical barriers to trade. However there remains the problem of comparing products tested, or likely to be exposed, in different climatic regions. EN 927-2 addresses this latter issue and sets specific performance criteria.

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1 Scope

This part of EN 927 specifies performance requirements for coating systems on exterior wood. Performance requirements are specified according to the categories of 'end use' and 'exposure conditions' (defined in EN 927-1) in terms of the results of natural weathering performance testing carried out in accordance with EN 927-3. A mandatory water permeability test in accordance with EN 927-5 is also specified. Additional optional tests are identified which may be used by suppliers to provide voluntary additional information, to a standardized format, on aspects of performance relevant to specific building components such as windows.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 927-1:1996, *Paints and varnishes — Coating materials and coating systems for exterior wood — Part 1: Classification and selection*

EN 927-3:2000, *Paints and varnishes — Coating materials and coating systems for exterior wood — Part 3: Natural weathering test*

EN 927-5, *Paints and varnishes — Coating materials and coating systems for exterior wood — Part 5: Assessment of the liquid water permeability*

prEN ISO 4618:2004, *Paints and varnishes — Terms and definitions (ISO/DIS 4618:2004)*

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3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 927-1:1996 and prEN ISO 4618:2004 apply.

4 Performance tests

4.1 Resistance to natural weathering

4.1.1 General

The assessment of a coating material to this specification will require a natural weathering test to be carried out in accordance with EN 927-3, using a flat wood panel of pine (*Pinus silvestris*) with a planed surface. A manufacturer of a coating system that meets one or more of the performance profiles described in 4.1.2 can claim conformity to the specification, as described in Clause 6. If a coating system does not meet the performance criteria the manufacturer cannot claim full conformity but might provide information gained from one or more of the optional tests.

The external durability of the coating system under test is assessed by a number of performance criteria. Guide values enable an assessment to be made of the suitability of the system for the proposed end-use. Comparative trials have shown that conformity to the criteria outlined below (Table 1) sets a performance standard capable of verification, but they do not in themselves constitute a certification procedure. Further guidance on the interpretation of the results is given in Annex A.

The severity of the exposure conditions is determined by reference to the performance of an Internal Comparison Product (ICP), which also serves as a reference standard for the optional evaluation of mould resistance.

4.1.2 Performance criteria

The scores for the assessment criteria, blistering, cracking, flaking and adhesion (from EN 927-3) and the water absorption value (from EN 927-5), are interpreted as meeting, or not meeting the required standard, relative to the end-use category, according to the criteria given in Table 1. These rankings are relative to the exposure conditions as described in 4.1.3.

Interpretation of criteria:

- (1) The first four values in each column each represent the maximum allowed for the arithmetic mean (to one decimal place) of the three replicates from the natural weathering test (EN 927-3).
- (2) The 'maximum sum value' is the limit which shall not be exceeded for the sum of the 12 (4 × 3) individual results.
- (3) The 'maximum difference to qualify as valid test', refers to the difference between the highest and lowest score in any of the individual test panels. If this value is exceeded the test is declared invalid and shall be repeated.
- (4) The 'water absorption value' is the maximum allowed for the arithmetic mean of the five replicates as determined by the procedure described in EN 927-5.
- (5) If a coating system does not meet all of these profiles the manufacturer cannot claim full conformity in any of the three end use categories.

Table 1 — Limit values for performance criteria - Natural weathering and water absorption

	'Stable'	'Semi-stable'	'Non-stable'
Blistering	0,3	0,7	1
Cracking	0,7	1,7	3
Flaking	0,3	0,7	1,3
Adhesion	1	1	1
Maximum sum value	7	12	19
Maximum difference to qualify as valid test	2	3	4
EN 927-5, water absorption value	≤175 g/m ² ^a	≤ 250 g/m ² ^a	no limit
^a Non-mandatory values which will be revised/ratified in the light of ongoing work in CEN/TC 139/WG 2.			

NOTE Test precision

An estimate of the standard deviation of the weathering test method was made in a large comparative exercise carried out by members of the CEN Working Group. The findings of this exercise have been incorporated into the criteria matrix so that the underlying target values incorporate a tolerance to allow for variation in the performance of panel replicates. Attention has also been given to the expected distribution of results for a given test. Thus for example an arithmetic mean criterion of 1,3 for 'cracking' could be achieved as (1,1,2), (0,1,3) or (0,0,4). The 'Maximum difference' criteria considers the probability of such scores occurring, and rules out those which are well outside the expected distribution.

4.1.3 Exposure conditions

If the internal comparison product (ICP – see EN 927-3) meets the weathering criteria for the 'stable' end-use category the exposure conditions are rated as 'medium'. If it does not meet these criteria the conditions are rated 'severe' (see EN 927-1).

Exposure conditions during the test are recorded in the 'Expression of results' (Clause 6).

4.1.4 Water permeability

Water permeability shall be assessed in accordance with EN 927-5 and expressed as a 'water absorption value'. The criteria for each end-use category are given in Table 1.

5 Optional tests

The test methods listed in Table 2 are recommended where additional information is required from the supplier of the coating system to meet specific end-user needs. They are not required for compliance with this European Standard, nevertheless when carried out they shall be reported in the format prescribed in Clause 6.

Table 2 — Additional optional tests

Test description	Test method
Blister box test	any test method can be agreed, e.g. BS 7956:2000, Annex C
Blocking	any test method can be agreed
Stackability	EN ISO 4622
Compatibility with glazing (sealing) compounds and profiles	Overcoat following suppliers recommendations
Blue stain in service	EN 152-1 and EN 152-2
Mould resistance value	EN 927-3 and 6.2.1
Natural weathering with water trap	EN 927-3:2000, Annex F
Natural weathering with alternative substrates	EN 927-3:2000, Annex F

6 Expression of results and interpretation

6.1 Mandatory tests

The ratings achieved in the weathering and permeability tests shall be reported and expressed according to the conventions listed in Table 3 or Table 4. Manufacturers claiming conformity with this European Standard for a specified coating system shall on request supply a data sheet containing the results in this format.

Manufacturers may at their discretion expand the table format to include information from Table 5.