SLOVENSKI STANDARD
SIST EN 927-1:2013

01-april-2013

Nadomešča:
SIST EN 927-1:1997

Barve in laki - Premazi in premazni sistemi za zaščito lesa v zunanji uporabi - 1. del: Razvrstitev in izbor

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

Beschichtungsstoffe - Beschichtungsstoffe und Beschichtungssysteme für Holz im Außenbereich - Teil 1: Einteilung und Auswahl

Peintures et vernis - Produits de peinture et systèmes de peinture pour le bois extérieur - Partie 1: Classification et sélection

Ta slovenski standard je istoveten z: **EN 927-1:2013**

ICS:

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

SIST EN 927-1:2013 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 927-1

February 2013

ICS 87.040; 71.100.50

Supersedes EN 927-1:1996

English Version

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

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Foreword

This document (EN 927-1:2013) 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of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 927-1:1996.

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* (the present document);

— *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 main technical changes are:

a) the definition "build" was split up into "measured build", "theoretical build" and "subjective build";

b) the classification of build was extended to "very high";

c) the classification by exposure conditions was revised;

d) the exposure conditions in Annex A were revised;

e) the example for a manufacturer's product information was revised.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The names used today to describe coating materials and coating systems pay little regard to technical, functional and end use categories. This makes it difficult to devise an unequivocal simple terminology applicable to all product types. This part of EN 927 attempts to address this problem by separately defining categories of appearance and end use, but with no assumptions as to whether or not a given product, by its appearance alone, will be suitable for a particular use. The objective is to avoid misuse of coating systems by the misunderstanding or over-statement of performance claims. Current experience of characteristic coating behaviour is explained in Annex A so that users can be forewarned of situations requiring specific assurances.

The treatment of exterior wood surfaces has aesthetic and protective functions. The result of such treatments can include the following:

— protection against aesthetic deterioration;

— protection against deterioration due to weathering influences;

— moderation of dimensional change;

— protection against blue stain attack;

— maintaining the function of wood components (including the possibility of renovation).

This part of EN 927 identifies criteria that need to be considered when assessing the suitability of a coating system for a particular end use and provides a framework for communicating this information between manufacturer and user. This should assist in the removal of technical barriers to trade. It is the responsibility of the manufacturer of a coating system to designate the appropriate categories for end use and appearance.

1 Scope

This European Standard specifies a system for the classification of coating systems and coating materials for exterior wood surfaces by categories of end use, appearance and exposure conditions. It also defines several components of a multi coat system (primer, undercoat, top coat, etc.).

It is applicable to all coating materials and coating systems intended for decoration and protection of exterior wood surfaces including those which contain biologically protective ingredients for the protection of coatings and at their surface (film preservation). The coating materials may include biologically active ingredients for the protection of the liquid coating material, for example during storage (in-can preservation) or to protect their interface with the wood (e.g. blue stain protection).

This European Standard is generally not applicable to wood preservatives. Wood preservatives may however be part of a coating system covered by this standard.

Guidance on selection criteria and the procedures for user's selection are given for information in Annex A.

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 ISO 2808:2007, *Paints and varnishes — Determination of film thickness (ISO 2808:2007)*

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813, including Technical Corrigendum 1)*

3 Terms and definitions

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

3.1
ageing
irreversible changes in the properties of a film which occur with the passage of time

[SOURCE: EN ISO 4618:2006, 2.9]

3.2
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, 2.29]

3.3
blue stain in service
surface staining of timber in service by fungi causing blue to black discoloration, often leading to disruption of surface finishes

3.4

build

NOTE In this standard, the term "build" is used when classification refers to the measured dry film thickness of either the whole coating system, or an individual product as appropriate. The dry film thickness is stated in micrometres and refers to the layer on (above) the wood surface. Systems might penetrate the wood material to some extent, but this part is not included in the determination.

3.4.1
measured build
dry film thickness of the coating system measured on planed bare wood according to method 6A of EN ISO 2808:2007

3.4.2
theoretical build
dry film thickness calculated from the spreading rate and the volume of non-volatile matter

Note 1 to entry: The theoretical build, in micrometres, is given by the formula:

$$t_d = \frac{V \times NV_V}{100}$$

where

t_d dry film thickness, in micrometres;

V is the spreading rate, in millilitres per square metre;

NV_V is the non-volatile matter content, expressed as a percentage by volume.

Note 2 to entry: The theoretical build gives an indication of the dry film thickness on a non-absorbent substrate and can be calculated from data optionally supplied by the manufacturer.

3.4.3
subjective build
visual impression of the thickness of a dried film or coating system

Note 1 to entry: The subjective build is governed by several factors including film thickness, gloss and film levelling.

3.5
coating material
product, in liquid or in paste or powder form, that, when applied to a substrate, forms a film possessing protective, decorative and/or other specific properties

[SOURCE: EN ISO 4618:2006, 2.50, modified – Note deleted]

3.5.1
paint
pigmented coating material which, when applied to a substrate, forms an opaque film having protective, decorative or specific technical properties

Note 1 to entry: In some countries the term "opaque wood stain" is also used for an opaque coating applied such that the wood surface structure remains visible.

[SOURCE: EN ISO 4618:2006, 2.167]

3.5.2
clear coating material
coating material which when applied to a substrate forms a solid transparent film having protective, decorative or specific technical properties

Note 1 to entry: In some countries the term “varnish” is used to designate any transparent coating. Varnishes are clear coating materials which dry exclusively by oxidation.

[SOURCE: EN ISO 4618:2006, 2.46, modified – Note replaced]

3.5.3
lasure
coating material containing small amounts of a suitable pigment used to form a transparent or semi transparent film for decoration and/or protection of the substrate

Note 1 to entry: In this standard, the term "lasure" is similar to "exterior wood stain".

Note 2 to entry: In some countries the term “wood stain” or “exterior wood stain” also is used to designate any transparent or semi transparent coating material. Some kinds of (interior) wood stains are not in the scope of EN 927-1 (see EN ISO 4618:2006, 2.251).

3.6
coating system
combination of all coats of coating materials which are to be applied or which have been applied to a substrate

Note 1 to entry: The actual system can be characterised by the number of coats involved.

[SOURCE: EN ISO 4618:2006, 2.53]

3.6.1
primer
paint that has been formulated for use as a priming coat on prepared surfaces

[SOURCE: EN ISO 4618:2006, 2188, modified – Note 1 added]

Note 1 to entry: In this standard, primers could also consist of unpigmented coating materials.

3.6.2
priming coat
first coat of a coating system

[SOURCE: EN ISO 4618:2006, 2.189]

3.6.3
intermediate coat
any coat between the priming coat and the finishing coat

[SOURCE: EN ISO 4618:2006, 2.141]

3.6.4
finishing coat
top coat
final coat of a coating system

[SOURCE: EN ISO 4618:2006, 2.108]

3.7
flexibility
ability of a dry film to follow without damage the deformations of the substrate to which it is applied

Note 1 to entry: The use of the term "elasticity" to describe the flexibility of a film is incorrect.

[SOURCE: EN ISO 4618:2006, 2.116]

3.8
gloss
optical property of a surface, characterised by its ability to reflect light specularly

Note 1 to entry: Examples of degrees of gloss are high gloss, gloss, silkgloss, semigloss, satin, matt and dead matt.

[SOURCE: EN ISO 4618:2006, 2.128]

3.9
hiding power
coverage
opacity
ability of a coating material or a coating to obliterate the colour or the differences in colour of a substrate

[SOURCE: EN ISO 4618:2006, 2.135]

3.10
impregnating material
coating material with low viscosity for the treatment of absorptive substrates to reduce their absorptivity and/or to harden them

Note 1 to entry: An impregnating material may contain a biocide for wood protection.

[SOURCE: EN ISO 4618:2006, 2.139, modified – Note replaced]

3.11
rot
decomposition of timber by fungi resulting in softening, progressive loss of strength and mass and often a change of texture and colour

3.12
water absorption
ability of a coated or uncoated wood panel to absorb water from liquid or vapour

[SOURCE: EN 927-5:2006, 3.1]

3.13
water permeability
ability of a coating system to allow the transmission of water as liquid or vapour

3.14
wood preservative
product, containing a biocide, which is intended to inhibit the development of wood-destroying and/or wood-staining organisms in the wood to which it is applied

[SOURCE: EN ISO 4618:2006, 2.250, modified – Note replaced]

4 Classification

4.1 General

Coating systems for exterior wood shall be classified as specified in 4.2, 4.3 and 4.4.

4.2 Classification by intended end use

Classification by the intended end-use shall be in categories based on the demand for dimensional stability of the wooden construction, as given in Table 1.

There can be no demand for dimensional stability in the "non stable" category. In the two other categories, the coating system should control the dimensional movements of wooden components caused by water-uptake and -release. The suitability of a coating system is related to the barrier properties and water repellency of the film achieved on the actual substrate in its current condition in the specific environment. For example: a coating system can be suited for stable components like impermeable hardwood windows in a particular building, but might not exert sufficient moisture control on pine windows (also "stable" category) at the same site.

Table 1 — Classification by end use

End-use category	Permitted dimensional movement of wood	Typical, non-exclusive examples of end-use categories
Non stable	Free movement permitted	Overlapping cladding, fencing, garden sheds, open cladding ventilated rain screen
Semi stable	Some movement permitted	Tongue and groove cladding, sound absorbing barriers, timber framework
Stable	Minimum movement permitted	Joinery such as windows and doors, shutters, garden furniture
NOTE These examples are for demonstration only. Some wooden constructions will overlap these categories.		

4.3 Classification by appearance

4.3.1 General

Classification by appearance shall be made by the following properties:

a) build;

b) hiding power;

c) specular gloss.

4.3.2 Build

Classification by build shall be based on the measurement of the dry film thickness of the coating system according to EN ISO 2808:2007, method 6A, by the following categories.