BS EN 927-1:2013

BSI Standards Publication

# Paints and varnishes — Coating materials and coating systems for exterior wood

## Part 1: Classification and selection

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**National foreword**

This British Standard is the UK implementation of EN 927-1:2013. It supersedes BS EN 927-1:1997 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee STI/28, Paint systems for non-metallic substrates.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.



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**Compliance with a British Standard cannot confer immunity from legal obligations.**

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English Version

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

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

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

This European Standard was approved by CEN on 5 January 2013.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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



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# Contents

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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of an identical text or by endorsement, at the latest by August 2013, and conflicting national standards shall be withdrawn at the latest by August 2013.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:

$$t_{\mathrm{d}} = \frac{V \times \mathrm{NV_V}}{100}$$

where

$t_{\mathrm{d}}$ dry film thickness, in micrometres;

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

$\mathrm{NV_V}$ 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.

a) minimal: mean thickness less than 5 µm[1)];

b) low: mean thickness 5 µm up to 20 µm;

c) medium: mean thickness greater than 20 µm up to 60 µm;

d) high: mean thickness greater than 60 µm up to 100 µm;

e) very high: mean thickness greater than 100 µm.

The film thickness shall be measured on pine wood which has been planed to a smooth and uniform finish.

NOTE The 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 (see EN 927-3:2012, 6.3.5).

#### 4.3.3 Hiding power

Classification by hiding power shall be in the following categories.

a) opaque: Coating systems that obliterate all substrate colour and pattern but might not hide all surface profile.

b) semi transparent: Coating systems that do not totally obscure the wood surface.

c) transparent: Coating systems that allow the wood surface to remain clearly visible.

#### 4.3.4 Gloss

Classification by specular gloss shall be based on specular reflectance values when tested at 60° by the method described in EN ISO 2813 by the following categories.

a) matt: reflectance up to 10;

b) semi matt (satin): reflectance greater than 10 up to 35;

c) semigloss: reflectance greater than 35 up to 60;

d) gloss: reflectance greater than 60 up to 80;

e) high gloss: reflectance greater than 80.

NOTE In practice, the gloss level achieved will depend on the state and nature of the substrate, the type of system and method of application. See Annex A for further information.

### 4.4 Classification by exposure conditions

Climate varies from one location to another depending on height, solar irradiation, rainfall, humidity and many other factors. Most of these factors are presently difficult to quantify. Therefore the exposure conditions in this standard are described by only three factors. Classification by exposure conditions shall take into account three different factors, the first is a global climatic (macroclimatic) influence, the other two refer to the microclimate, i.e. the conditions immediately at and around the site:

— Macroclimatic: compass orientation.

1) Measurements of film thicknesses less than 5 µm are imprecise.

— Microclimatic: degree of shelter, inclination.

Exposure conditions are categorised, based on the conditions above as:

a) mild;

b) medium;

c) severe.

The interaction between the different macro- and microclimatic factors is complex, and the following suggested procedure combining the three factors into three exposure conditions is a practical, not a scientific approach. Each factor is considered at three different levels, and each level is assigned a score 1, 2 or 3. The higher the number the higher the impact on exposure. For all three factors, the individual score is selected, and finally the resulting three numbers are summed up to a total score. For details see Table 2.

**Table 2 — Determination relative of exposure conditions from some climatic factors**

| **Factor**[a] | **Score** | | | **Total score (sum)** | **Relative exposure condition** |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | | |
| Orientation | North west to north east (moderate) | North east to south east and west north west to north west (hard) | South east to north west (extreme) | 3 | Mild |
| Degree of shelter | Sheltered | Partly sheltered | Unsheltered | 4 to 6 | Medium |
| Inclination | Vertical | ≈ 45° | Horizontal | 7 to 9 | Severe |
| [a] For explanation, see Annex A. | | | | | |

EXAMPLE North facing facade at a multi storey warehouse:

— Orientation North → score 1
— Shelter: none → score 3
— Inclination: vertical → score 1

Total score is 1+3+1 = 5, corresponding to “Medium” exposure condition.

NOTE Constructions will normally involve more than one factor level, e.g. a wooden window where the bottom beads are inclined at approximately 45° whereas the frame and casement is vertical. The bottom beads will wear out first and thus determine the time for maintenance.

## 5 Manufacturer's product information

The manufacturer shall provide product information using the classification system specified in this European Standard.

NOTE An example of how this information may be presented is shown in Annex B and Annex C. This table summarises only the most basic information about the appearance and intended application of a given product. Normally additional information will be available in the form of the manufacturer's product data sheets.

# Annex A
(informative)

# Guidance on selection criteria

## A.1 General

This annex makes some qualitative observations on typical behaviour characteristics of coatings and the factors which influence them. As an aid to initial selection, consideration is given to end use (see A.2), appearance (see A.3) and exposure conditions (see A.4). It is emphasised that the performance of a coating system cannot be predicted from the classification system and it is therefore important that the classification is used in conjunction with appropriate test methods, which will be detailed in other Parts of EN 927. Only performance tests provide the ultimate basis for selection.

## A.2 End use

An important function of any wood coating is to control entry of water and consequent dimensional movement. Different end-use categories have different requirements. For fencing and some types of cladding, dimensional control is less important than for joinery and higher permeability can be beneficial. Protection against water absorption from direct rain is still desirable.

These considerations are reflected in Table 1 by three broad end-use categories, non stable, semi stable and stable, which should determine the selection of a coating system. The suitability of a coating system for a given end-use situation should be confirmed by relevant performance tests, e.g. those specified in EN 927-3 and EN 927-5.

## A.3 Appearance

### A.3.1 General

Appearance has been described in terms of build, hiding power and gloss level (see 4.3). This classification provides a description for currently available coatings and has the provision to describe new categories. The following list illustrates how some typical coating systems might be classified. The terms are descriptions and not precise definitions.

| | | | |
|---|---|---|---|
| Alkyd gloss paint system: | high build | opaque | high gloss |
| Latex gloss system: | medium build | opaque | gloss |
| Alkyd varnish (3 coats): | high build | transparent | high gloss |
| Joinery wood stain: | medium build | semi transparent | semi gloss |
| Fence surface treatment: | minimal build | semi transparent | matt |

### A.3.2 Hiding power

As noted in 4.3.3, hiding power ranges from opaque, through semi transparent to transparent. There is thus a direct influence on the ability to absorb or reflect potentially harmful solar radiation. In general, maintenance intervals for transparent coatings are shorter than for an opaque system, and this should be assumed unless performance tests demonstrate otherwise.

The influence of hiding power on durability will be further modified by the colour of the coating system. Dark colours will show a much higher absorption of solar radiation than light ones. For example, the surface temperature of a black or dark coloured coating system in direct sunlight can reach 80 °C, whereas an equivalent white coating system might only reach 40 °C. Factors affected include wood splitting, resin exudation, rate of deterioration of the coating system, moisture content and fungal growth, though actual performance will be specific to the system.

NOTE Opacity and colour are related and there might be practical differences in opacity within a product range. For example a range of semi transparent wood stains might include dark shades which are effectively opaque.

### A.3.3 Build

Build correlated to the thickness of the given dry coating system and is thus directly related to barrier properties. For a given composition, the water permeability will be controlled by build and lower build systems will have a higher transmission rate.

Minimal build coatings will completely penetrate a wood surface, particularly if it is rough.

### A.3.4 Gloss

The direct influence of gloss on durability is small. Glossy surfaces might pick up less dirt through soiling than matt surfaces, and are generally easier to clean. The gloss of a coating normally decreases upon ageing. In practice, terms such as high gloss are not applicable to minimal or low build coating systems where absorption of the coating material by the wood surface modifies appearance.

## A.4 Exposure conditions

### A.4.1 General remarks

It is important that in selecting a coating system the factors climate and construction are considered.

For convenience, exposure conditions are divided into three classes of mild, medium and severe which combine climatic factors and constructional factors, and which have important practical implications. Coating systems will last longest in a mild situation and require less maintenance. For more exposed situations, a shorter period between maintenance has to be accepted and coating systems with greater durability might therefore be preferred. It is desirable that any evidence of exterior weathering performance has been obtained in a similar climate to that in which the product is to be used.

### A.4.2 Climatic factors

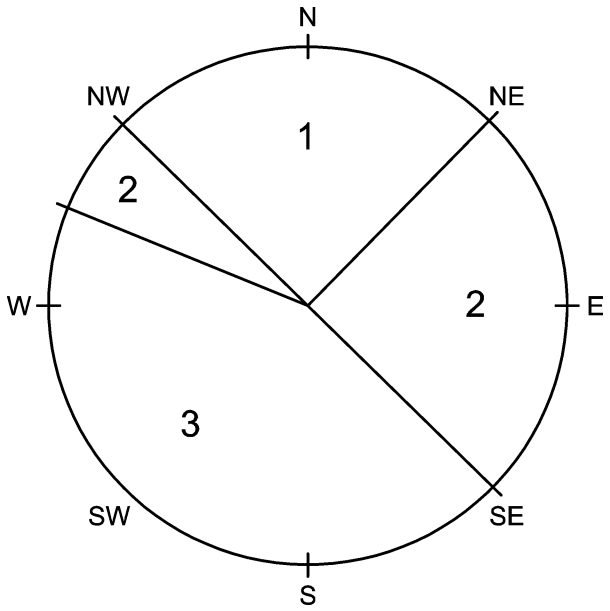
**Direction of exposure:** The levels of solar radiation, humidity, temperature and precipitation vary considerably and will greatly influence the performance of a wood coating system. The impact of these factors are mainly reflected by the direction of exposure. Exposure trails however have only show minor differences in performance between geographically different locations in Europe.

In Europe exposures to west and south are generally more severe for film breakdown than other directions; the risks of mould and algae growth will generally be higher on north facing walls.

Moderate influence from climate: usual on north facing walls (NW – NE).

Hard influence from climate: usual on east facing walls (NE – SE; WNW – NW).

Extreme influence from climate: usual on south, southwest and west facing walls (SE – WNW).




**Key**
1 moderate
2 hard
3 extreme

**Figure A.1 — Direction of exposure**

### A.4.3 Constructional factors

In practice, exposure conditions will depend not only on climate but also on the degree of shelter offered by the construction.

a) Wood construction, sheltered

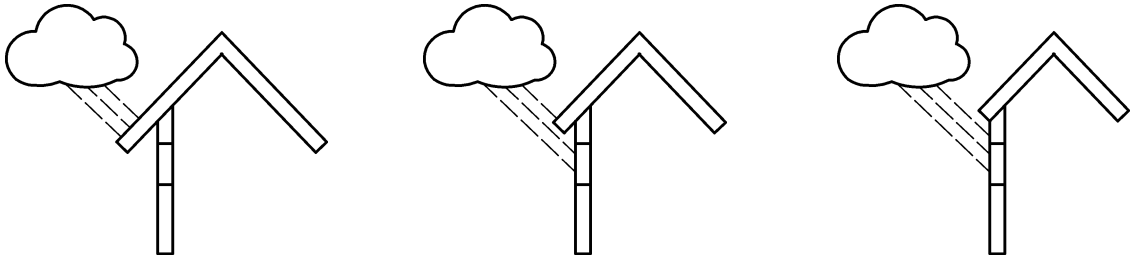
Wood construction is well protected against precipitation, wind and direct sunshine by sufficient eaves. This applies to windows and doors seated under deep eaves or deeply recessed into walls or sheltered by balconies.

b) Wood construction, partly sheltered

Climate impacts on the wood construction, which is only partly protected against precipitation, wind and direct sunshine by small eaves. This applies to windows and doors seated under ordinary eaves or recessed into walls. Another example is a construction made of wood on smaller buildings (maximum three floors) with small eaves.

c) Wood construction, not sheltered

Climate with precipitation, wind and direct sunshine impacts unhindered on the wood construction. This applies to wood construction on smaller buildings (maximum three floors) with small eaves in exposed positions or buildings higher than three floors, particularly windows and doors aligned to facades. It also applies to wood construction without any eaves.



a) sheltered b) partly sheltered c) not sheltered

**Figure A.2 — Degree of shelter**

NOTE The inclination of the weathered surface is also important. Decreasing the angle of exposure from vertical towards horizontal greatly increases the intensity of weathering for sheltered as well as not sheltered parts.

## A.5 Substrate condition

Wood species vary considerably in their receptivity to coating materials and in their influence on performance during service. Most softwoods receive coating materials readily, although occasional problems might be experienced where the wood is abnormally resinous. In general, resistance to water absorption and dimensional movement are wood characteristics that are favourable to the performance of the coating system; over-porous wood caused by wet storage adversely affects the appearance and performance of coating systems. Some hardwoods demonstrate good paint-holding properties, though they can vary considerably. A few hardwoods, for example oak, iroko and teak, require special attention.

Coating system performance is influenced by the surface preparation of the wood; durability is generally higher on sawn surfaces than on planed surfaces.

In practice a wide range of substrate influences might be encountered, including:

— wood species;

— new uncoated wood;

— wood degraded by prolonged exposure;

— preservative treated wood;

— factory primed wood;

— weathered coating in need of redecoration.

For specification purposes, information concerning the condition of the substrate should be supplied. It is essential that flaking or poorly adhering coatings and deteriorated wood are removed prior to maintenance, and maintenance coatings are compatible with previously applied materials.

# Annex B
(informative)

# Example for a manufacturer's product information

| | | | | |
|---|---|---|---|---|
| **Trade name** [a]**:** | | | | |
| **Product description** [a]**:** | | | | |
| **Intended use** [a]**:** | | | | |
| **Appearance coating material** [b] | **Hiding power** | | | |
| | **Colour (range)** | | | |
| | **Gloss** | | | |
| | **Build** | optional information | | |
| | **Coverage** | $m^2/l$ | | |
| **Water absorption in g/m²** [c] | | | | |
| **Build** [c] [d] | | | | |
| **Coating system recommendation** [c] | | | | |
| | product name | spreading rate | | |
| 1st coat: | | | | |
| 2nd coat: | | | | |
| 3rd coat: | | | | |
| 4th coat: | | | | |
| **End use and exposure conditions** [c] | | | | |
| Exposure | | Non stable | Semi stable | Stable |
| Mild | | | | |
| Medium | | | | |
| Severe | | | | |
| **Substrate recommendation** | | The manufacturer should indicate here any special recommendations relating to the substrate, e.g. applicability of the coating system to previously painted or degraded wood, or to wood-based panel products. | | |
| **Additional information at manufacturer´s discretion** | | e.g. description of expected maintenance intervals | | |

[a] Description at manufacturer's discretion.

[b] The classification by appearance relates in this case to a coating material.

[c] Describe the relevant reference coating system which was used to carry out the test according to EN 927-3 and EN 927-5. Use the key: + the product or system is recommended / 0 the product or system is not recommended.

[d] Build of the coating system (see 4.3.1).

# Annex C
(informative)

# Example for a completed manufacturer's product information

<table>
<tr><td colspan="4">SUPERDURABLE Lb</td></tr>
<tr><td colspan="4">Product description: SUPERDURABLE Lb is a semi gloss lasure coating material for exterior wood applications. SUPERDURABLE Lb is a solvent borne coating material based on alkyd resins.</td></tr>
<tr><td colspan="4">Intended use: priming coat for stable end use category (e.g. wood window frames). Priming, intermediate and top coat for non-stable and semi stable end use category.<br><br>SUPERDURABLE Lb is a low-build lasure coating material for exterior wood applications. Together with SUPERDURABLE Hb it is a suitable priming coat for stable end use category. This product will provide protection to timber substrates including all exterior softwood and hardwood joinery but is not suitable for use on timber decking. This product is not suitable for use with bitumen-based adhesives or coatings</td></tr>
<tr><td rowspan="5">Appearance coating material</td><td>Hiding power</td><td colspan="2">Semi transparent</td></tr>
<tr><td>Colour (range)</td><td colspan="2">Pine, light oak, dark oak</td></tr>
<tr><td>Gloss</td><td colspan="2">Semi gloss (35 GU to 60 GU)</td></tr>
<tr><td>Build</td><td colspan="2">Low build; < 20 µm at 60 ml/m$^2$</td></tr>
<tr><td>Coverage</td><td colspan="2">16 m$^2$/l to 17 m$^2$/l, this will vary depending upon the method of application, timber species, moisture content, timber cut and the presence of other coatings</td></tr>
<tr><td colspan="2">Build</td><td colspan="2">medium</td></tr>
<tr><td colspan="4">Water absorption in g/m$^2$: 120 to 130</td></tr>
<tr><td colspan="4">Coating system recommendation</td></tr>
<tr><td colspan="2">product name</td><td colspan="2">spreading rate</td></tr>
<tr><td colspan="2">1st coat: XY Blue stain protection primer</td><td colspan="2">60 ml/m$^2$</td></tr>
<tr><td colspan="2">2nd coat: SUPERDURABLE Lb</td><td colspan="2">60 ml/m$^2$</td></tr>
<tr><td colspan="2">3rd coat: SUPERDURABLE Lb</td><td colspan="2">60 ml/m$^2$</td></tr>
<tr><td colspan="2">4th coat: SUPERDURABLE Lb</td><td colspan="2">50 ml/m$^2$</td></tr>
<tr><td colspan="4">End use and exposure conditions</td></tr>
<tr><td colspan="2">Exposure</td><td>Non stable</td><td>Semi stable</td><td>Stable</td></tr>
<tr><td colspan="2">Mild</td><td>+</td><td>+</td><td></td></tr>
<tr><td colspan="2">Medium</td><td>+</td><td>+</td><td></td></tr>
<tr><td colspan="2">Severe</td><td>+</td><td></td><td></td></tr>
<tr><td colspan="2">Substrate recommendations</td><td colspan="3">Timber surfaces shall be sanded, clean and dry, without any dust, dirt, wax and grease. Mould and algal growth shall be stopped using a suitable fungicide/algicide. The moisture content of the timber shall not exceed 18 %. Any hard crystallised resin on the surface of the timber should be removed with a scraper. Remaining resinous residues may be removed using methylated spirits. We do not recommend the use of “knotting agents”, which are not always fully effective. In addition, the presence of knots is often highlighted, and adhesion of subsequent coatings can be impaired.</td></tr>
<tr><td colspan="2">Additional information at manufacturer´s discretion</td><td colspan="3">Where a superficial application of preservative to softwoods and hardwoods is considered necessary, e.g. at timbers in Durability Classes 4 or 5 (according to EN 351-1:2007), apply two coats of XYZA Wood Preserver to saturation, paying particular attention to end grains, allowing 24 h drying time between coats, and 24 h to 72 h before over coating. Apply a first coat of product XY after the preservative. Preservative pre-treatments shall be fully dry before the application of product XY. Timber treated with product XY should be allowed to dry 12 h to 24 h before application of SUPERDURABLE. Coating system durability can be improved by the use of end grain sealers. Due to of natural ageing processes it is recommended to do regular maintenance work on exterior sites. Expected maintenance intervals are between 2 years and 4 years.</td></tr>
</table>

# Bibliography

[1] EN 351-1:2007, *Durability of wood and wood-based products — Preservative-treated solid wood — Part 1: Classification of preservative penetration and retention*

[2] EN 927-3:2012, *Paints and varnishes — Coating materials and coating systems for exterior wood — Part 3: Natural weathering test*

[3] EN 927-5:2006, *Paints and varnishes — Coating materials and coating systems for exterior wood — Part 5: Assessment of the liquid water permeability*

[4] EN ISO 4618:2006, *Paints and varnishes — Terms and definitions (ISO 4618:2006)*

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