



**SLOVENSKI STANDARD**  
**oSIST prEN 351-1:2020**

**01-september-2020**

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**Trajnost lesa in lesnih proizvodov - Zaščiten masivni les - 1. del: Razvrščanje biocidnih proizvodov glede na penetracijo in navzem**

Durability of wood and wood-based products - Preservative-treated solid wood - Part 1: Classification of preservative penetration and retention

Dauerhaftigkeit von Holz und Holzprodukten - Mit Holzschutzmitteln behandeltes Vollholz - Teil 1: Klassifizierung der Schutzmitteleindringung und -aufnahme

Durabilité du bois et des matériaux dérivés du bois - Bois massif traité avec produit de préservation - Partie 1 : Classification des pénétrations et rétentions des produits de préservation

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**ICS:**

71.100.50	Kemikalije za zaščito lesa	Wood-protecting chemicals
79.040	Les, hlodovina in žagan les	Wood, sawlogs and sawn timber

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 351-1**

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## Durability of wood and wood-based products - Preservative-treated solid wood - Part 1: Classification of preservative penetration and retention

Durabilité du bois et des matériaux dérivés du bois -  
Bois massif traité avec produit de préservation - Partie  
1 : Classification des pénétrations et rétentions des  
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Dauerhaftigkeit von Holz und Holzprodukten - Mit  
Holzschutzmitteln behandeltes Vollholz - Teil 1:  
Klassifizierung der Schutzmitteleindringung und -  
aufnahme

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 38.

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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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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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 351-1:2020) has been prepared by Technical Committee CEN/TC 38 “Durability of Wood and Wood-based products”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association.

This document will supersede EN 351-1:2007.

Significant technical differences between this edition and EN 351-1:2007 are as follows:

- optional requirement on longitudinal penetration has been deleted;
- compliance with penetration and retention requirements have been further elaborated;
- clause on marking has been updated;
- Figure A.1 has been updated;
- Annex C, showing penetration classes according to EN 351-1:1995, has been deleted.

This document consists of two parts. Part 1 is concerned with defining the penetration requirements and gives guidance on the retention requirements for preservatives in preservative-treated solid wood and Part 2 gives guidance on the general procedures to be followed in the sampling for analysis of preservative-treated solid wood.

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**prEN 351-1:2020 (E)****Introduction**

This part of EN 351 allows a specifier or user to choose a preservative treatment for a solid wood product taking into account its intended service or the needs of different regional or traditional practices throughout Europe and the use class conditions to which the solid wood products will be exposed (see EN 335). In addition, it provides the basis on which treatments for timber in European product standards are to be defined. No attempt has been made to quantify the working life that could be expected from a particular preservative treatment as this will also depend on the geographical location and the associated climate of the service environment. The performance of treated wood cannot be assessed directly, for example by field tests or bioassay, as no agreed documents exist specifically for this purpose. As a consequence the penetration and retention of a preservative in treated wood are used to define quality of treatment. The penetration and retention values are measured by analysis of the active ingredient(s) in the treated wood.

Preservative treatment for certain wood species used in the different use classes might be unnecessary owing to their natural durability (see EN 350 and EN 460). If preservative treatment is necessary, preservatives with appropriate efficacy against wood destroying organisms as specified in EN 599-1 need to be chosen.

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## 1 Scope

This part of EN 351 establishes a classification of preservative-treated wood in terms of preservative penetration and gives guidance on a classification of retention. These shall be used as a basis for specifying preservative treatments for particular products.

This part of EN 351 provides terminology to be used by the specifier when preparing a preservative treatment specification or product standard. It is not a treatment specification in itself.

This part of EN 351 is applicable to the production of preservative-treated solid wood, including glued laminated timber, suitable for use in those service conditions defined by the use classes in EN 335. It does not apply to any subsequent examination of treated wood in service.

This part of EN 351 is applicable to the protection of wood against attack by wood-destroying and wood-disfiguring fungi, insects and marine organisms.

NOTE Protection against wood-disfiguring fungi is an optional property verified by testing in accordance with EN 599-1.

This part of EN 351 does not consider other properties of treated wood, for example odour, compatibility with other materials, such as corrosivity of fasteners. Nor does it consider any properties from the health, safety and environmental point of view.

This part of EN 351 does not apply to wood to be treated with formulations which are applied to timber in service to eliminate or control an existing fungal or insect infestation, or the prevention of attack by sapstain fungi, or insects in green timber.

Annex A (informatives) provides a decision process for defining preservative treatment requirements.

Annex B (informative) gives an example of the marking system.

## 2 Normative references

- <https://standards.iteh.ai/catalog/standards/sist/72e3644-241d-45e7-987d-706d84b01785/osist-pren-351-1-2020>
- 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 335, *Durability of wood and wood-based products — Use classes: definitions, application to solid wood and wood-based products*
- EN 351-2, *Durability of wood and wood-based products — Preservative-treated solid wood — Part 2: Guidance on sampling for the analysis of preservative-treated wood*
- EN 599-1, *Durability of wood and wood-based products — Efficacy of preventive wood preservatives as determined by biological tests — Part 1: Specification according to use class*
- EN 1001-2:2005, *Durability of wood and wood based products — Terminology — Part 2: Vocabulary*
- ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

**prEN 351-1:2020 (E)****3 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 1001-2:2005 and the following 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****active ingredient(s)**

individual chemical compound or compounds included in a wood preservative product to give it specific activity against biological agents of deterioration

[Source: EN 1001-2:2005, 4.01]

**3.2****analytical zone**

that part of the treated wood which is analysed for assessing compliance with the retention requirement (see 3.16)

[Source: EN 1001-2:2005, 4.03]

Note 1 to entry: The analytical zone is taken from the lateral surfaces of the treated wood. The depth to which sampling is required will depend upon the species of wood being analysed and the treatment level concerned.

**3.3****batch**

clearly identifiable collection of units of preservative-treated wood manufactured to conform to the same defined penetration and retention requirements

[Source: EN 1001-2:2005, 4.04]

**3.4****biological reference value**

amount in grams per square metre or kilograms per cubic metre of a wood preservative (as product) found to be effective in the test in preventing attack by the particular biological agent being tested

[Source: EN 1001-2:2005, 4.06]

**3.5****charge**

all the wood treated together in a single operation

[Source: EN 1001-2:2005, 4.13]

**3.6****composite sample**

collection of all test samples derived from the sampling units taken from the batch in accordance with the chosen sampling plan for the determination of retention

[Source: EN 1001-2:2005, 4.15]



**3.7****critical value**

value equivalent to the highest biological reference value (in grams per square metre or kilograms per cubic metre) obtained from all the biological tests carried out in accordance with EN 599-1 for any given use class

[Source: EN 1001-2:2005, 4.18]

Note 1 to entry: The critical value will vary according to use class, method of application, and organisms against which the preservative is to provide protection and whether it is to be applied to softwood or hardwood.

**3.8****exposed heartwood**

heartwood of a timber component that is not enclosed by sapwood

[Source: EN 1001-2:2005, 1.14]

**3.9****glued laminated timber (glulam)**

structural member formed by the lateral surfaces of timber laminations with the grain running essentially parallel

**3.10****incising**

procedure of puncturing the lateral surfaces of wood as an aid in securing deeper and more uniform penetration of wood preservative (standards.iteh.ai)

[Source: EN 1001-2:2005, 4.38]

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**3.11****lamination**

layer of wood in glued laminated timber (see 3.9) formed from one or several boards, usually end jointed, but sometimes side jointed or both so as to extend to the full width and length of the member

**3.12****penetration requirement**

minimum depth to which the active ingredient(s) (3.1) of the wood preservative is (are) required to penetrate the wood

[Source: EN 1001-2:2005, 4.59]

**3.13****penetrating treatment process**

process which includes features or procedures intended to overcome the natural resistance of wood to penetration by a wood preservative product in its ready for use form

[Source: EN 1001-2:2005, 4.58]

Note 1 to entry: Such processes include, for example, currently practised technologies of diffusion treatment, the double vacuum process and the vacuum/pressure process.

**prEN 351-1:2020 (E)****3.14****permeable species**

wood species having timber comprising of sapwood or both sapwood and heartwood of treatability class 1 as defined in EN 350

[Source: EN 1001-2:2005, 4.61]

**3.15****resistant species**

all wood species having timber not of treatability class 1 as defined in EN 350

[Source: EN 1001-2:2005, 4.72]

**3.16****retention requirement**

loading of the wood preservative product that is required in the analytical zone

[Source: EN 1001-2:2005, 4.73]

Note 1 to entry: The retention requirement is expressed in grams of product per square metre for superficial application processes (see 3.19) and kilograms of product per cubic metre for penetrating treatment processes (see 3.13). It is derived from the critical value in different ways depending upon the particular test involved.

**3.17****sampling unit**

one unit (for example a pole, a board, a fence post) of preservative-treated wood taken from a batch (see 3.3) of preservative-treated wood

[Source: EN 1001-2:2005, 4.75]

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**3.18****solid wood**

wood which has been sawn or otherwise machined

[Source: EN 1001-2:2005, 1.39]

Note 1 to entry: It may include finger jointed and/or laminated wood.

**3.19****superficial application process**

process which does not include particular features or procedures intended to overcome the natural resistance of wood to penetration of a wood preservative product in its ready to use form

[Source: EN 1001-2:2005, 4.82]

Note 1 to entry: Such processes include for example brush and spray techniques and short-time immersion (dipping) processes in which the wood normally has only a few minutes contact with the wood preservative.

**3.20****transition wood**

wood in a zone between the true sapwood and the true heartwood

[Source: EN 1001-2:2005, 1.45]

Note 1 to entry: This is only distinguishable in very few wood species. In general its durability is intermediate between that of sapwood and heartwood, whereas its treatability is similar to that of heartwood.

## 4 Raw materials

### 4.1 Wood to be treated

The quality of the wood to be treated shall comply with relevant product specification or standard to which this document is to be applied.

The wood should be free from features which would prevent a proper application of the preservative or impair the serviceability of the preservative-treated wood.

The moisture content of the wood should be at a level appropriate to the wood preservative and method of treatment used. All machining of the wood should be carried out before treatment.

### 4.2 Wood preservatives

The wood preservatives used shall comply with the requirements of EN 599-1 concerning their efficacy against wood-destroying organisms.

## 5 Preservative-treated solid wood

### 5.1 General

Preservative-treated solid wood shall be defined in terms of a penetration and retention requirement.

### 5.2 Penetration

#### 5.2.1 Penetration requirements

This document describes six penetration classes, NP1 to NP6. These penetration classes, together with their associated analytical zones for retention measurements, are presented in Table 1.

The penetration requirement relates to the lateral penetration of the sapwood but includes the heartwood where the sapwood and heartwood cannot be distinguished by eye, and in certain specified instances where the heartwood has been exposed by sawing.

NOTE For penetration class NP1 there is no requirement on the penetration. An analytical zone is defined for the measurement of retention, see 5.3.2.

#### 5.2.2 Compliance with penetration requirements

For compliance with the penetration requirement it is accepted that a certain number of units in a batch are not conforming to the penetration requirement. This is expressed as the maximum acceptable quality levels (AQLs) according to ISO 2859-1, and the maximum percentage of units in the batch not conforming to the penetration requirement are expected to be:

- |                                  |      |
|----------------------------------|------|
| — Permeable species              | 10 % |
| — Resistant species, sawn timber | 25 % |
| — Resistant timbers, round wood  | 10 % |

Lower percentages of non-conforming units may be agreed between purchaser and producer.