SLOVENSKI STANDARD
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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 produits à base de bois -Bois massif traité avec produit de préservation - Partie 1 : Classification des pénétrations et rétentions des produits de préservation

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

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This European Standard was approved by CEN on 21 June 2007.

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Foreword

This document (EN 351-1:2007) 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 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of an identical text or by endorsement, at the latest by January 2008, and conflicting national standards shall be withdrawn at the latest by January 2008.

This document supersedes EN 351-1:1995.

Significant technical differences between this edition and EN 351-1:1995 are as follows:

a) introduction of new penetration classes, see Table 1;

b) modification of Figure A.1 to delete the suggested preservative treatments where no other guidance is available.

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, 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 part of EN 351 allows a specifier or user to choose a preservative treatment for a solid wood product taking into a 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 335-1). 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 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 specifically for this purpose exist. 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 analysing 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 350-2 and EN 460). If appropriate treatment is necessary, the specification for appropriate preservatives is defined in EN 599-1.

1 Scope

This part of EN 351 establishes classification for preservative-treated wood in terms of preservative penetration and gives guidance on a classification of retention. These should 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 335-1. 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.

This part of EN 351 does not consider other properties of treated wood, for example odour, corrosiveness and compatibility with other materials, 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 treated with formulations that are applied to timber in service to eliminate or control an existing fungal or insect infestation, or to prevent attack by sapstain fungi, or insects in green timber.

2 Normative references

The following referenced documents are indispensable for the application 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 350-2, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe*

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 — Performance of preventive wood preservatives as determined by biological tests — Part 1: Specification according to hazard 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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1001-2:2005 and the following apply.

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

NOTE Adapted from 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)

NOTE 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.

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

3.3
batch
clearly identifiable collection of units of preservative-treated wood manufactured to conform to the same defined penetration and retention requirements

[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

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

3.5
charge
all the wood treated together in a single operation

[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

[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

NOTE 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.

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

3.8
exposed heartwood
heartwood of a timber component that is not enclosed by sapwood

[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

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

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

[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

NOTE Such processes include, for example, currently practised technologies of diffusion treatment, the double vacuum process and the vacuum/pressure process.

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

3.14
permeable species
wood species having timber comprising of sapwood or both sapwood and heartwood of treatability class 1 as defined in EN 350-2

NOTE Adapted from EN 1001-2:2005, **4.61.**

3.15
resistant species
all wood species having timber not of treatability class 1 as defined in EN 350-2

NOTE Adapted from EN 1001-2:2005, **4.72.**

3.16
retention requirement
loading of the wood preservative product that is required in the analytical zone

NOTE 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 [EN 1001-2:2005, **4.73**].

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

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

3.18
solid wood
wood which has been sawn or otherwise machined

NOTE It may include finger jointed and/or laminated wood.

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

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

NOTE 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.

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

3.20
transition wood
wood in a zone between the true sapwood and the true heartwood

NOTE 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.

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

4 Raw materials

4.1 Wood to be treated

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

NOTE 1 The wood should be free from features which would prevent proper application of the preservative or impair the serviceability of the preservative-treated wood.

NOTE 2 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

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. Lateral penetration requirements can also be supplemented by a requirement for longitudinal penetration, which shall be at least ten times greater than the corresponding lateral penetration requirement.

For penetration classes requiring full sapwood penetration it is occasionally found that small zones of sapwood, for example transition wood, cannot be treated; these shall be ignored for the purpose of assessing sapwood penetration. In glued members untreated zones not exceeding 10 % of the total cross section of the sapwood expected to be treated in each lamination, shall also be ignored in the assessment of penetration.

Penetration shall be determined by detecting the presence of preservative at, or beyond, the limit of the required penetration.

NOTE 1 This should be carried out soon after appropriate post-treatment conditioning.

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.