



SLOVENSKI STANDARD

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Nadomešča:
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Trajnost lesa in lesnih proizvodov - Masivni les, zaščiten z biocidnimi proizvodi - 2. del: Navodilo za vzorčenje za analizo lesa, zaščitenega z biocidnimi proizvodi

Durability of wood and wood-based products - Preservative-treated solid wood - Part 2: Guidance on sampling for the analysis of preservative-treated wood

Dauerhaftigkeit von Holz und Holzprodukten - Mit Holzschutzmitteln behandeltes Vollholz - Teil 2: Leitfaden zur Probenahme für die Analyse des mit Holzschutzmitteln behandelten Holzes

Durabilité du bois et des matériaux dérivés du bois - Bois massif traité avec produit de préservation - Partie 2 : Guide d'échantillonnage pour l'analyse du bois traité avec un produit de préservation

Ta slovenski standard je istoveten z: EN 351-2:2023

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

EN 351-2

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English Version

Durability of wood and wood-based products - Preservative-treated solid wood - Part 2: Guidance on sampling for the analysis of preservative-treated wood

Durabilité du bois et des matériaux dérivés du bois -
Bois massif traité avec produit de préservation - Partie
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Dauerhaftigkeit von Holz und Holzprodukten - Mit
Holzschutzmitteln behandeltes Vollholz - Teil 2:
Leitfaden zur Probenahme für die Analyse des mit
Holzschutzmitteln behandelten Holzes

This European Standard was approved by CEN on 17 July 2022.

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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 CEN-CENELEC Management Centre has the same status as the official versions.

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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 (EN 351-2:2023) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by SIS.

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 2023, and conflicting national standards shall be withdrawn at the latest by October 2023.

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

This document supersedes EN 351-2:2007.

The main changes compared to the previous edition are listed below:

- the sampling procedure for determination of longitudinal penetration has been deleted;
- a new clause on retention measurements has been introduced;
- the sampling plans in Annex A have been updated;
- a new annex showing examples on retention measurements has been introduced.

The EN 351 series consists of two parts. Part 1 gives guidance on the specification of penetration and retention requirements for preservatives in preservative-treated solid wood. Part 2 gives guidance on the general procedures to be followed in the sampling and analysis of preservative-treated solid wood.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

EN 351-2:2023 (E)

1 Scope

This part of the EN 351 series gives guidance for the general procedures to be used in obtaining samples of preservative-treated wood for the determination of penetration and retention of wood preservative. It also gives guidance on the measurement of penetration and retention of a wood preservative in the treated wood.

This part of the EN 351 series is applicable to the production of preservative-treated solid wood, including glued laminated timber, suitable for use in those service conditions defined within the use classes in EN 335.

NOTE Glued laminated timber is not suitable for use in fresh or sea water.

This part of the EN 351 series is not applicable to preservative-treated wood in service. However, the sampling guidance provided within this part of the EN 351 series can be applied for the subsequent examination of treated wood in service.

Annex A (informative) provides a selection of number of sample units.

Annex B (informative) provides examples of retention measurements.

2 Normative references

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 1001-2:2005, *Durability of wood and wood based products - Terminology - Part 2: Vocabulary*

EN 12490, *Durability of wood and wood-based products - Preservative-treated solid wood - Determination of the penetration and retention of creosote in treated wood*

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 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Selection of batch

For the selection of batch, the following shall be considered:

- The batch shall be selected with respect to the aim of the subsequent sampling and analysis.

NOTE 1 In practice, the selection of a batch is the result of a compromise between the aim of the inspection and the quality of the analysis in terms of technical and financial considerations.

- The batch is selected in such a way that the subsequent selection of sample units is representative for the batch.

- A batch can consist of one charge or several charges treated on different occasions.
- If sampling is to be carried out from the same commodity manufactured at different plants at the same site, the batch is selected in such a way that commodities from the different plants, treated according to the same specification, are represented in the batch.

NOTE 2 For continuous processes, e.g. treating wood components in a spray tunnel, a batch can be defined as the number of components treated during a specified period.

- A batch shall not consist of different commodities.
- A batch shall not consist of a mixture of round and sawn wood.
- The way the batch has been selected is described in the report from the sampling and analysis of the preservative-treated wood.

NOTE 3 For example, a batch can be identified by wood treated during a certain time period or by charge numbers.

5 Selection of sample units from a batch

Sample units shall be selected to be representative of the entire batch being considered. In order to be representative, sample units shall be selected to take account the sources of variation that occur in the batch.

This can include variation in cross-section in treated components and their relative proportions in the batch. Selection should also take into account the number of packages of treated wood that make up the batch, where relevant.

The number of sample units shall be in accordance with the guidance in ISO 2859-1. See Annex A for guidance.

If sapwood penetration is to be determined, units consisting entirely of heartwood should be avoided.

A true random sampling is difficult to achieve, but it should be as random as reasonably practical; see also Clause 4, Note 1.

Individual techniques for the determination of penetration and retention could impose special requirements for sampling and subsequent handling which shall be reported.

6 Selection of test samples from a sample unit

Test samples shall be selected from the sample units according to the following principles:

- If penetration and retention can be determined from a single test sample, only one test sample per sample unit is necessary. Otherwise, at least two test samples shall be taken per sample unit for the separate determination of penetration and retention;
- For assessment of retention and penetration, test samples shall be taken from clear, straight-grained wood, away from splits, checks or other defects and at least 100 mm away from knots, midway between ends or greater than or equal to 300 mm from the end;
- For superficial treatments, the requirement on sampling ≥ 300 mm from the end does not apply when determining the retention unless an erroneous value can be expected owing to end grain penetration;

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- Test samples shall be taken as borings, cross-sections, or thin sections (see Clauses 7 and 8) as appropriate with respect to the commodities to be sampled and the methods to determine the penetration and retention;
- Some preservatives undergo a fixation process after wood treatment. When sampling, it is particularly important that the wood preservative fixation process is complete. Guidance on the fixation should be found in wood preservative manufacturers' data sheets.

7 Test samples for determination of penetration**7.1 General**

The penetration of wood preservative shall be determined for each sample unit sampled from the batch. Sampling of creosote-treated wood shall be carried out according to EN 12490.

7.2 Borings**7.2.1 General**

Borings are normally restricted for commodities for which sampling by cross-sections is considered highly unsuitable.

NOTE Examples of such commodities are round wood of poles and piles as well as thicker dimensions of sawn timber such as railway sleepers.

Borings shall be taken with a sharp increment borer which extracts a core of minimum diameter of 5 mm. If any part of the sample is lost the whole sample shall be rejected and a new one taken.

If material is incised, borings shall be taken at a point midway between adjacent incisions.

When borings are taken from timber to be used in UC4 according to EN 335, they shall be taken above the point that will be in ground contact.

All borer holes should be promptly plugged with tight fitting wooden plugs pre-treated with an appropriate preservative.

7.2.2 Round and part round wood

For round wood, the borer shall be directed towards the pith from any point on the surface.

For part-round wood, the borer shall be directed towards the pith (or the point where the pith would have been in the original log) from a point on the curved surface which is furthest away from the cut surface(s).

If a penetration depth less than complete penetration is specified, the borer shall penetrate to a depth greater than the penetration measured (see Figure 1).

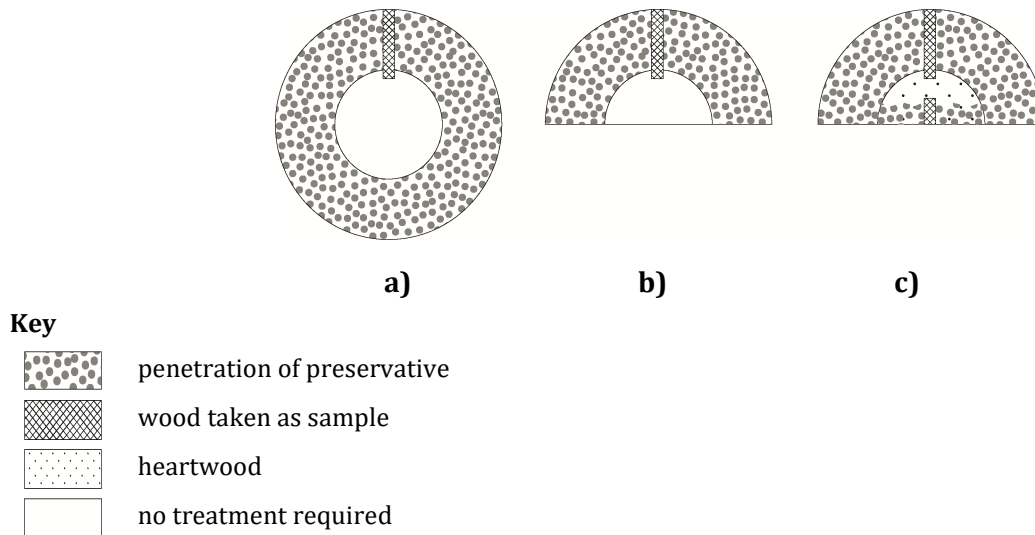


Figure 1 — Sampling location in (a) round and (b and c) part-round wood if a defined penetration depth is required

If the requirement is for complete penetration, it is necessary for the borer to penetrate to the geometrical centre of the cross-section (see Figure 2).

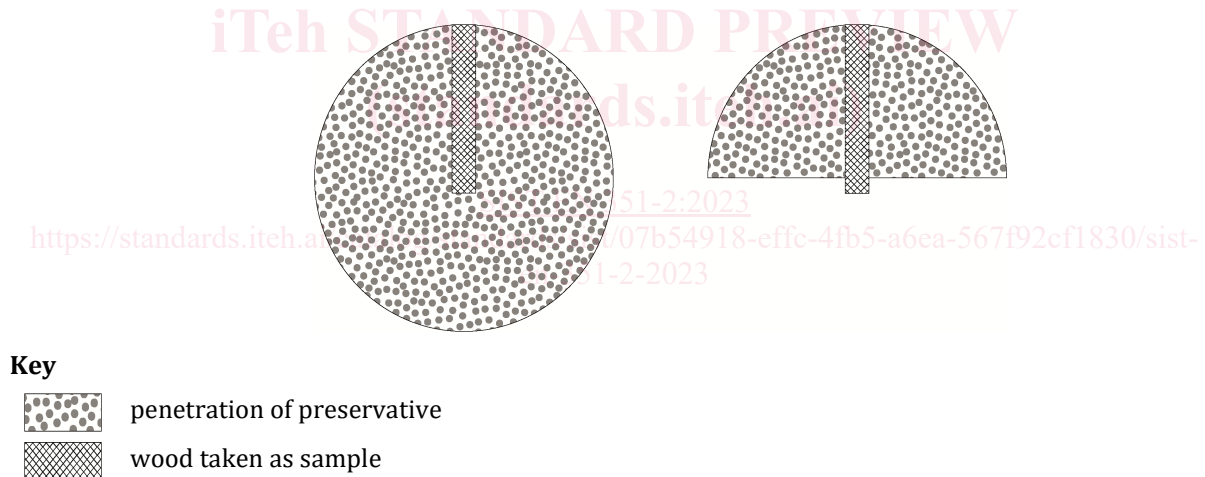
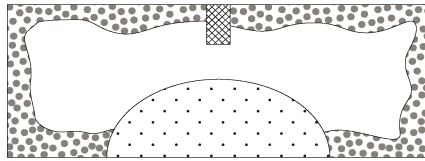


Figure 2 — Sampling location in round and part-round wood if complete penetration is required

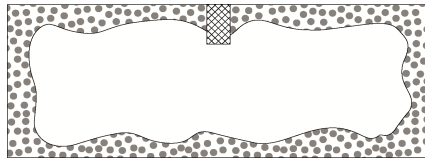
7.2.3 Sawn and profiled wood

If a penetration depth less than full sapwood penetration is specified, borings shall be taken, as far as possible, equidistant from the sides and perpendicular to the face being sampled to a depth greater than the penetration being measured (see Figure 3).

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a) Sampling location in samples containing both sapwood and heartwood



b) Sampling location in samples consisting entirely of sapwood or if it is impossible to identify any heartwood before sampling

Key





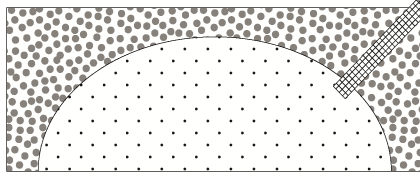
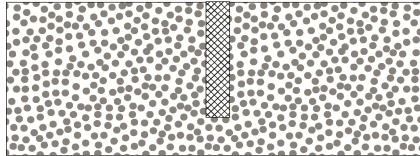
	penetration of preservative
	wood taken as sample
	heartwood
	no treatment required

Figure 3 — Sampling location in sawn and profiled wood if a penetration depth is specified

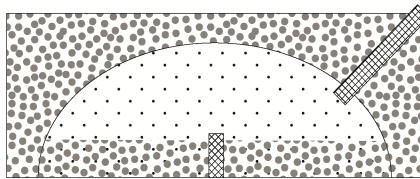
If full sapwood penetration is required, borings shall be taken, as far as possible, in the radial direction and where the depth of sapwood is greatest. From sample units consisting entirely of sapwood, or if it is impossible to identify any heartwood before sampling, the boring shall be taken equidistant from the sides and perpendicular to the face being sampled to a depth of half the thickness of the sample units (see Figure 4). <https://standards.iteh.ai/catalog/standards/sist/07b54918-efc-4fb5-a6ea-567f92cf1830/sist-en-351-2-2023>



a) Sampling location in samples containing both sapwood and heartwood

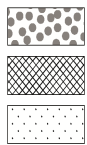


b) Sampling location in samples consisting entirely of sapwood or if it is impossible to identify any heartwood before sampling



c) Sampling locations in samples containing both sapwood and heartwood and where a penetration depth is specified in the heartwood

Key



penetration of preservative

wood taken as sample

heartwood

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[https://standards.iteh.ai/catalog/standards/sist/07b54918-efc-4fb5-a6ea-567f92cf1830/sist-](https://standards.iteh.ai/catalog/standards/sist/07b54918-efc-4fb5-a6ea-567f92cf1830/sist-07b54918-efc-4fb5-a6ea-567f92cf1830)

Figure 4 — Sampling locations in sawn and profiled wood if full sapwood penetration is required

7.3 Cross section

Cross-sections are normally restricted for sawn timber but may also be used for sampling from round wood.

For the determination of penetration, a complete cross-section test sample shall be obtained from the sample unit by making two saw cuts completely through the test sample and perpendicular to the surfaces of the wood (see Figure 5).