SLOVENSKI STANDARD

SIST EN 12490:2010

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Nadomešča:

SIST EN 12490:2004

Trajnost lesa in lesnih proizvodov - Zaščiten masivni les - Ugotavljanje penetracije in navzema kreozotnega olja v zaščitenem lesu

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

Dauerhaftigkeit von Holz und Holzwerkstoffen - Mit Holzschutzmitteln behandeltes Vollholz - Bestimmung der Eindringtiefe und der Aufnahme von Kreosot (Teerimprägnieröl) in behandeltem Holz

Durabilité du bois et des matériaux dérivés du bois - Bois massif traité avec un produit de préservation - Détermination des pénétrations et des rétentions des créosotes dans le bois traité

Ta slovenski standard je istoveten z: **EN 12490:2010**

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EUROPEAN STANDARD

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

Durabilité du bois et des matériaux dérivés du bois - Bois massif traité avec un produit de préservation - Détermination de la pénétration et de la rétention de créosote dans le bois traité

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Foreword

This document (EN 12490:2010) 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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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1 Scope

This European Standard specifies the reference methods for determining the penetration and retention of creosote in timber freshly treated with creosote, principally in order to ascertain whether the treated timber conforms to specifications written in terms of EN 351-1. It also provides guidance on the acquisition of test samples and their handling between sampling and analysis.

NOTE In the day-to-day practice at the plant, other methods (e.g. weighing the charge before and after treatment) can be used for determining the retention, provided that a significant relationship can be established with this method.

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

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 ISO 3696:1995, *Water for analytical laboratory use — Specification and test methods (ISO 3696:1987)*

ISO 3131, *Wood — Determination of density for physical and mechanical tests*

3 Terms and definitions

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

3.1
analytical zone
part of the treated wood which is analysed for assessing compliance with the retention requirement

[Adapted from EN 1001-2:2005, 4.03]

NOTE For definition of "retention requirement", see 3.6.

3.2
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]

3.3
charge
all the wood treated together in a single operation

[EN 1001-2:2005, 4.13]

3.4
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]

3.5
penetration requirement
minimum depth to which the creosote is required to penetrate the wood

[Adapted from EN 1001-2.2005, 4.59]

3.6
retention requirement
loading of the creosote that is required in the analytical zone

[Adapted from EN 1001-2:2005, 4.73]

NOTE 1 For definition of "analytical zone" see 3.1.

NOTE 2 The retention requirement is expressed in kilograms of creosote per cubic metre of treated wood.

3.7
sampling unit
unit (for example a pole, a sleeper, a board or a fence post) of preservative treated wood taken from a batch or charge of preservative treated wood

[Adapted from EN 1001-2:2005, 4.75]

NOTE For definition of "batch" see 3.2. For definition of "charge" see 3.3.

3.8
test sample
portion of preservative treated wood taken from a sampling unit, in accordance with the recommendations of EN 351-2

3.9
transition wood
wood in a zone between the true sapwood and the true heartwood

[Adapted from EN 1001-2:2005, 1.45]

NOTE This is distinguishable only in a very few wood species. In general its treatability is similar to that of heartwood.

4 Sampling of creosote-treated wood for the determination of penetration and retention

4.1 General requirements

The acquisition of sampling units and test samples shall follow the procedures established in EN 351-1 and EN 351-2. Additionally, when sampling from a freshly treated batch, the wood shall be allowed to cool to ambient temperature before taking test samples.

4.2 Specific requirements for test samples for the determination of penetration

The penetration of creosote in each of the test samples shall be determined immediately after sampling, according to Clause 5, in order to avoid creosote migration from the treated to the untreated area.

4.3 Specific requirements for test samples for the determination of retention

A batch to be sampled for the determination of retention shall be sampled at a time less than 30 days after the treatment.

NOTE 1 The retention requirements defined by the specifier are only applicable to treated wood as produced, not to the treated wood in service.

The composite sample for a batch or charge shall comprise test samples taken in accordance with the chosen sampling plan. Sufficient test sample material shall be taken to ensure that at least 1 g of creosote is contained in the composite sample.

NOTE 2 Wood treated with creosote by vacuum/high pressure processes can normally be expected to contain more than 10 % by mass of creosote. Therefore, it will require approximately 10 g to 12 g of creosoted wood to obtain at least 1 g of creosote in the composite sample.

NOTE 3 The larger the number of test samples included in the composite sample, the more accurate the resultant retention determination should be.

As soon as possible after the test samples have been obtained, and the penetration measured the wood not included in the specified analytical zone of the test samples shall be removed. The remaining wood constitutes the composite sample for the determination of retention.

NOTE 4 If the penetration and retention are determined from the same test samples, the penetration should be determined before any wood is removed from the test samples.

The composite sample shall be stored in a stoppered glass bottle to prevent any free creosote being lost before the analysis.

5 Determination of the penetration of creosote in treated wood

For each of the test samples, measure and record the penetration of creosote in the treated wood, as the distance, in millimetres (mm), of the furthest point from the surface to which creosote can be seen to be present in the wood, in accordance with the general recommendations in EN 351-2.

NOTE 1 Penetration should be assessed visually from a freshly cut test sample, the colour of the creosote clearly indicating its extent in the treated timber.

NOTE 2 In some cases the creosote may not penetrate continuously through the early and late wood of the treated timber.

NOTE 3 If the boundary between the sapwood and the heartwood cannot be distinguished visually, in some cases a chemical method can be used to distinguish between them. Some examples are given in Annex A. Where no distinction is possible, all the wood is regarded as sapwood.

NOTE 4 Occasionally small zones of sapwood adjacent to the heartwood cannot be treated, for example transition wood. These should be ignored for the purposes of assessing sapwood penetration.

NOTE 5 Creosote treated zones can be subsurfaced by migrating creosote during sampling. To fully visualize creosote treated zones within taken voluminous drilling cores from sampling units, a final cut through the centre of the core, direction from the untreated to the treated zone and therefore surface, should be made. The inner untreated zone cannot be subsurfaced.

6 Determination of the retention of creosote in treated wood

6.1 Reagents

6.1.1 Water of grade 3, according to EN ISO 3696:1995.

6.1.2 Chromic acid saturated solution in concentrated sulphuric acid.

6.1.3 Toluene, $C_6H_5CH_3$, analytical grade.

6.1.4 Suitable detergent solution in water.

6.2 Apparatus

Ordinary laboratory apparatus and the following (see Figure 1).

6.2.1 Glass round-bottomed flask, capacity 500 ml or 1 000 ml.

6.2.2 Heating mantle for the glass round-bottomed flask (6.2.1).

6.2.3 Glass Soxhlet-apparatus, capacity 60 ml.

6.2.4 Cellulose extraction thimble (28 mm diameter and 80 mm height).

6.2.5 Glass water trap, Dean and Stark type, with a capacity of 10 ml, fitted with a stopcock and marked in graduations of 0,1 ml.

6.2.6 Glass reflux condenser of the "Liebig-West" type.

6.2.7 Balance with an accuracy of 0,01 g.

6.2.8 Glass rod, or rod made of another inert material, with a diameter of about 3 mm and as long as the condenser (6.2.6) and the water trap (6.2.5) together.

6.2.9 Vented drying oven, that can be maintained at (115 ± 5) °C and operated in a fume cupboard.

6.2.10 Desiccator with a drying agent of the indicating type (e.g. silica gel).