SLOVENSKI STANDARD
SIST EN 12490:2004

01-januar-2004

Trajnost lesa in lesnih proizvodov ï Zaġļ iten masivni les ï Ugotavljanje penetracije in retencije kreozota v zaġļ itenem 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 Teerimprägnierölaufnahme in behandeltem Holz

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

Ta slovenski standard je istoveten z: **EN 12490:1998**

ICS:

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

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English version

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 produit de préservation – Détermination des pénétrations et rétentions des créosotes dans le bois traité

Dauerhaftigkeit von Holz und Holzwerkstoffen – Mit Holzschutzmitteln behandeltes Vollholz – Bestimmung der Eindringtiefe und der Aufnahme von Teerimprägnieröl in behandeltem Holz

This European Standard was approved by CEN on 1998-11-08.

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 38 "Durability of wood and derived materials", 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of an identical text or by endorsement, at the latest by May 1999, and conflicting national standards shall be withdrawn at the latest by May 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European standard specifies the reference method 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

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to 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	Water for analytical laboratory use - Specification and test methods (ISO 3696:1987).
ISO 3131	Wood - Determination of density for physical and mechanical tests.

3 Definitions

For the purposes of this European Standard, the following definitions apply :

3.1 analytical zone : The part of the treated wood which is analysed for assessing the retention requirement (3.6).

3.2 batch : Clearly identifiable collection of units of preservative-treated wood manufactured to comply with the same defined penetration and retention requirements.

3.3 charge : All the wood treated together in a single operation.

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.

3.5 penetration requirement : Minimum depth to which the creosote is required to penetrate the wood.

NOTE : The penetration requirement is expressed in millimeters.

3.6 retention requirement : Minimum loading of the creosote that is required in the analytical zone (3.1).

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

3.7 sampling unit : One unit (for example a pole, a sleeper, a board or a fence post) of preservative treated wood taken from a batch (3.2) or charge (3.3) of preservative treated wood.

3.8 test sample : A 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.

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 creeping 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 should be the resultant retention determination.

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 millimeters) 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 : Occasionnally 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.

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.

6.1.2 Chromic acid saturated solution in concentrated sulfuric 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 1000 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.

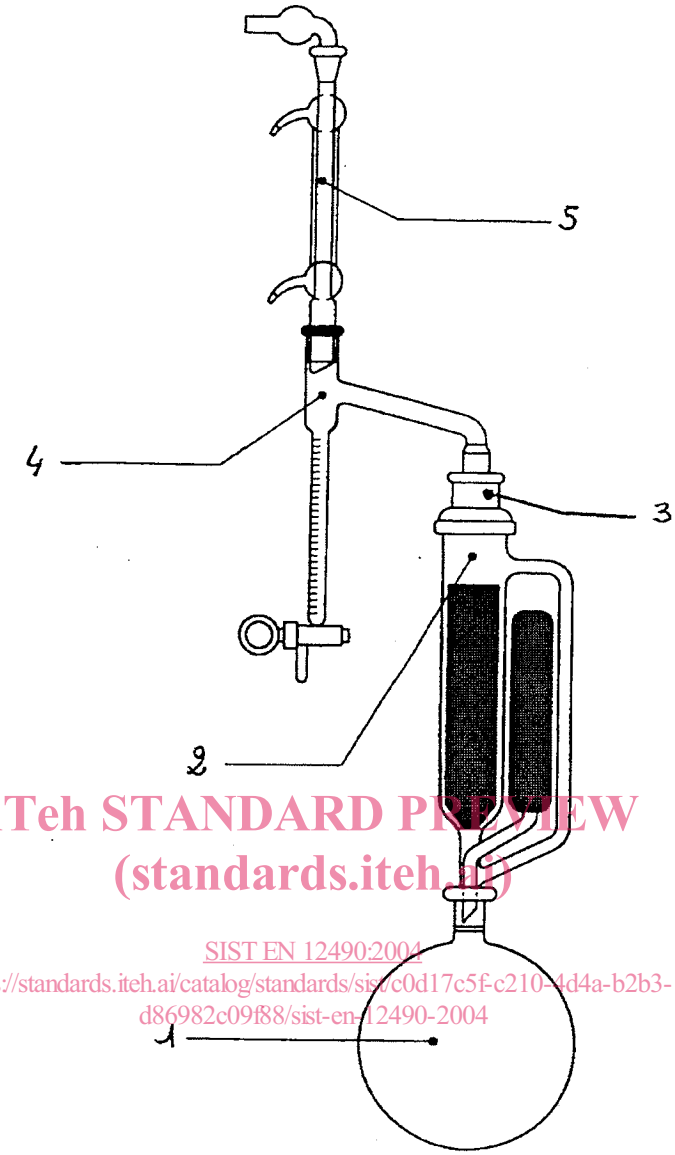
6.2.6 Glass reflux condenser of the “Liebig-West” type.

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).



1 Round bottom flask (6.2.1)
2 Soxhlet-apparatus (6.2.3) and extraction thimble (6.2.4)
3 Adaptor that fits between the Soxhlet (6.2.3) and the water trap (6.2.5)
4 Water trap (6.2.5)
5 Reflux condenser (6.2.6)

Figure 1 : Apparatus