
Trajnost lesa in lesnih izdelkov - Določanje emisij iz zaščitene lesa v okolje - leseni izdelki, izpostavljeni 3. razredu uporabe (nepokrita uporaba, ni v stiku z zemljo) - Delno terenska metoda

Durability of wood and wood-based products - Determination of emissions from preservative treated wood to the environment - Wooden commodities exposed in Use Class 3 (Not covered, not in contact with the ground) - Semi-field method

Dauerhaftigkeit von Holz und Holzprodukten - Bestimmung von Emissionen von mit Holzschutzmitteln behandeltem Holz an die Umwelt - Holzprodukte in Gebrauchsklasse 3 (nicht abgedeckt, ohne Erdkontakt) - Semi-Feldverfahren

Durabilité du bois et des matériaux dérivés du bois - Détermination des émissions dans l'environnement du bois traité avec des produits de préservation - Produits de base en bois exposés à la classe d'emploi 3 (dans un endroit non abrité, n'étant pas en contact avec le sol) - Méthode semi-terrain

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English Version

**Durability of wood and wood-based products -
Determination of emissions from preservative treated
wood to the environment - Wooden commodities exposed
in Use Class 3 (Not covered, not in contact with the
ground) - Semi-field method**

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ohne Erdkontakt) - Semi-Feldverfahren

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European foreword

This document (prEN 16663:2024) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by SIS.

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Introduction

The leaching from preservative treated wood into the environment needs to be quantified to enable an environmental risk assessment to be made of the treated wood, e.g. according to the Biocidal Products Regulation, 528/2012. This document describes a semi-field method for the determination of leachate from wood treated with preservatives where the treated wood is not covered and not in contact with the ground or water (Use Class 3 according to EN 335).

The method is a semi-field procedure for obtaining water samples (leachate) from treated wood exposed out of ground contact, during natural exposure. The quantities of emissions in the leachate are related to the surface area of the wood and can be used in scenarios for the environmental risk assessment of the treated wood.

NOTE The leachate can also be tested for eco-toxicological effects (example: OECD 202 testing on *Daphnia* sp.).

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1 Scope

This document specifies a method for determining the leaching of active ingredients or other compounds from preservative treated wood by a semi-field method for Use Class 3 (outdoor above ground). The preservative treated wood can be tested with or without subsequently surface coating or other water-repellent treatment. The method is applicable to the testing of commercial or experimental preservatives or paint systems applied to timber by methods appropriate to commercial practice.

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 ISO 5667-3, *Water quality — Sampling — Part 3: Preservation and handling of water samples (ISO 5667-3)*

3 Terms and definitions

No terms and definitions are listed in this document.

4 Description of the test method

4.1 Principle

Panels are treated, assembled and placed outdoors, out of ground contact and exposed to the normal environmental and ecological factors which affect preservative treated wood so exposed in practice. The rainwater is retained and the leachate is monitored by chemical analyses of the active ingredients and/or other compounds.

4.2 Quality criteria

The validity of the analytical method for the substances in question should be determined before conducting the test:

- a) accuracy;
- b) specificity;
- c) limit of detection (LOD);
- d) limit of quantification (LOQ);
- e) precision.

NOTE 1 EN ISO 5667-3 can give guidance on the preservation and handling of water samples.

NOTE 2 This can include CAS no or chemical formulation.

4.3 Wood preservative

The test report shall state the name and other designation of the tested product, and the trade or common name of the active ingredient(s).

NOTE Definitions can be found in the regulation n°528/2012.

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Use of a coating is possible (identity and amount of coating used shall be stated in the test report).

4.4 Apparatus

4.4.1 Vessel for receiving water

Laboratory brown glass flask or plastic jars with no impurities that can influence the active ingredient.

NOTE EN ISO 5667-3 gives the good practices to preserve water samples.

The brown glass flask or plastic jars shall be protected from heat and sunlight.

The capacity of the vessels depends on the exposure scenario. If the expected annual precipitation is approximately 700 mm and the test set-up is placed horizontal 25 l containers are recommended. If the test set-ups are exposed vertically 5 l containers are recommended.

4.4.2 Gutter, screws, hooks

All materials used to fix and support the panels and collect the rainwater shall be made of inert materials. Stainless steel has been found to be suitable (see Annex A).

4.4.3 Weather station

A weather station capable of monitoring the quantity of rainfall, the wind direction and wind speed at the test site shall be used.

4.4.4 Wood working equipment

Equipment capable of producing the desired finish of the surface; e.g. fine sawn or planed.

4.4.5 Condition chamber

Conditioning chamber, well ventilated, controlled at (20 ± 2) °C and (65 ± 5) % relative humidity.

4.4.6 Mixing vessel

4.4.7 Preservative treatment

Equipment suitable for carrying out vacuum, vacuum-pressure, immersion or surface treatment of specimens.

4.4.8 Balance

A balance capable of weighing to the nearest 0,1 g.

4.4.9 Kiln

A kiln suitable to dry the preservative treated timber after treatment and post treatment conditioning, if required. The drying procedure shall follow recommendations from the supplier of the product under test.

4.4.10 Safety equipment and protection clothing

Appropriate for the test product, to ensure the safety of the operator.

4.4.11 Refrigerator/Freezer

A refrigerator or freezer (minimum -18°C) to store the leachate at low temperature to reduce degradation of the substances to be analysed and the growth of microorganisms in the leachate. The

storage procedure shall follow recommendations from the supplier of the product under test or EN ISO 5667-3.

4.4.12 Chemical analysis equipment

Analytical equipment appropriate to determine the compounds of interest to be analysed in the leachate at the desired concentration.

4.4.13 Exposure site

An open area, free from tall vegetation and not excessively influenced by industrial or agricultural pollution and no obstacle to the rain. Distance to building should be specified in the test report.

4.4.14 Exposure weathering racks

The exposure racks, to which the panels are attached, should be robust to maintain the panels in the required orientation for the duration of the test. Racks that have been found to be suitable are illustrated in Annex A.

4.5 Test specimens

4.5.1 General

The test specimens that make up the test panel are representative or typical of commercial timber, and exposed to mimic service exposure (e.g. vertical spruce shiplap cladding). Alternatively, the test specimens may be selected to be a 'realistic worst case' estimation of the emission for a wood preservative in Use Class 3.

4.5.2 Species of wood

The wood species shall be typical of the wood species used for the efficacy testing of wood preservatives, e.g. sapwood of *Pinus sylvestris* (L) (Scots pine).

Additional tests may be made using other species; this should be stated in the test report.

4.5.3 Quality of wood and wood moisture content

The quality of wood and wood moisture content shall be typical of the wood used commercially or use sound straight-grained wood. Material of resinous appearance shall be avoided. Use wood with between 2 annual growth rings per 10 mm and 10 annual growth rings per 10 mm in case of Scots pine. The proportion of latewood in the annual rings shall not exceed 30 % of the whole cross-section for Scots pine sapwood.

When penetrating processes are being used for the treatment the specimens shall consist of sapwood only when using Scots pine. For superficial treatments some heartwood is permitted on the back of the specimens. An example is given in Annex C.

In a batch of specimens to be treated, the density of an individual is permitted to differ from the mean value of the batch by $\pm 15\%$. The mean density of the treated specimens used for the test shall be recorded in the test report.

Knots are permitted to a limited extent. One knot less than 2 cm in diameter and maximum 3 knots of less than 1 cm are permitted in each board.

If other wood species are used the number of annual rings and density shall be stated in the report.

The density of the panels for each test setup is distributed evenly. Knots and other defects are evenly distributed over the 3 replicas. Annex C gives guidance to the preferred orientation of the growth rings.

prEN 16663:2024 (E)**4.5.4 Preparation of test specimens**

The timber is conditioned to 12 ± 2 % mass fraction moisture content.

Prepare test specimens of (100 ± 2) mm \times (25 ± 2) mm cross section of sawn timber. The length of the panel is (760 ± 5) mm. Panels of other sizes can be prepared and used in this test.

Alternatively, the test specimens can be planed or prepared in a way typical of commercial practice. The actual dimensions of the test specimens shall be stated in the report.

Individual test specimens shall be assigned unique identification number in such a way that these numbers are retained through all preparation operations.

4.5.5 Number of test specimens

Prepare at least 21 panels for each combination of test parameters. Seven panels are used for one test set-up. Three replicas for each combination of test parameters are prepared.

4.5.6 End seal

The wood panels are end-sealed after preservative treatment by a material, which prevents water entry as well as microbial infection. The end-sealer shall remain effective during long-term exposure to the weather and shall not contain biocides.

4.6 Procedure**4.6.1 Product under test**

The sample of preservative shall be representative of the product to be tested. The product shall be analysed for active ingredient content prior to use.

If a particular coating or water-repelling system is specified by the preservative supplier as an integral part of the protection system, it shall be included in the test.

Samples shall be stored and handled in accordance with any written requirements from the supplier.

4.6.2 Treatment and handling of test specimens

Determine and record the volume of each panel at 12 % moisture content. Prior to product treatment determine the mass to the nearest 0,1 g.

Apply the test preservative to the test specimen panels using the process specified by the supplier of the preservative/protection system.

A list of model treatments is given in Annex B.

After treatment, excess solution on the surface of the test specimens shall be allowed to drip off or be removed with a cloth. Reweigh each test specimen immediately and record the mass after treatment to the nearest 0,1 g. Calculate the uptake of preservative solution and active ingredients for each test specimen and express the result in kilograms of preservative/ active ingredients per cubic metre of wood for penetration processes and in grams of preservative per square metre of wood for superficial application methods.

Reject any test specimen with retention deviating by more than 15 % from the average for that type of test specimen and substitute an appropriate alternative which falls within this range.

Determine the average preservative uptake of 7 test specimens for one panel. The average preservative uptake between the 3 panels shall be minimized and shall not exceed 15 %.

The preservative supplier's instructions for the drying and post treatment conditioning process should be followed. A process which has been found to be suitable is to dry the treated panels in a well-ventilated area protected from rain and frost and a temperature of max 30°C. Ensure free ventilation when storing