SLOVENSKI STANDARD

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Trajnost lesa in lesnih izdelkov - Doloļanje emisij iz zaġļitenega lesa v okolje - 2. del: Lesni izdelki izpostavljeni 4. ali 5. razredu uporabe (v stiku z zemljo, sladko ali morsko vodo) - Laboratorijska metoda.

Durability of wood and wood-based products - Determination of emissions from preservative treated wood to the environment - Part 2: Wooden commodities exposed in Use Class 4 or 5 (in contact with the ground , fresh water or sea water) - Laboratory method

Dauerhaftigkeit von Holz und Holzprodukten - Abschätzung von Emissionen von mit Holzschutzmitteln behandeltem Holz an die Umwelt - Teil 2: Holzprodukte in Gebrauchsklasse 4 und 5 (im Kontakt mit Erde, Süßwasser oder Meerwasser) - Laborverfahren

Durabilité du bois et des matériaux a base de bois - Estimation des émissions dans l'environnement du bois traité avec des produits de préservation - Partie 2 : Articles en bois exposés en classe d'emploi 4 ou 5 (en contact avec le sol, l'eau douce ou l'eau de mer) - Méthode de laboratoire

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This draft Technical Specification is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee CEN/TC 38.

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Foreword

This document (prCEN/TS 15119-2:2007) 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 document is currently submitted to the Formal Vote.

This document is derived from a Technical Report (CEN/TR 15119), submitted to OECD as a draft Test Guideline, following a request from OECD for the development of an OECD wide environmental exposure scenario document for wood preservatives in the framework of the EU Biocides Directive 98/8/EC.

Introduction

The emissions from preservative treated wood to the environment need to be quantified to enable an environmental risk assessment of the treated wood. This document describes a laboratory method for the estimation of emissions from preservative treated wood in the case where the preservative treated wood is not covered and is in contact with the ground, fresh water or seawater. There are three situations in this case where emissions could enter the environment:

a) emissions from preservative treated wood in contact with the ground. Use Class 4A. Emissions from the surface of the treated wood could enter the soil via the soil water;

b) emissions from treated wood in contact with fresh water. Use Class 4B. Emissions from the surface of the treated wood could enter the water;

c) emissions from treated wood in contact with sea water. Use Class 5. Emissions from the surface of the treated wood could enter the sea.

The method is a laboratory procedure for obtaining water samples (emissate) from treated wood exposed in contact with ground, surface water or sea water, at increasing time intervals after exposure. The quantities of emissions in the emissate are related to the surface area of the wood and the length of exposure, to estimate a flux in milligrams per square meter per day. The flux after increasing periods of exposure (e.g. 1 year, 10 years) can be estimated.

NOTE The emissate can also be tested for eco-toxicological effects.

The quantity of emissions can be used in an environmental risk assessment of the treated wood.

1 Scope

This Technical Report specifies a laboratory method for obtaining water samples from treated wood which has been in continuous contact with the ground or with water (Use Class 4 or 5), at time intervals after exposure.

2 Description of the test method

2.1 General considerations

The principal agent for causing emissions from wood exposed to soil is the soil water. The mechanism of leaching at the wood surface by the soil water is assumed to be identical in nature and severity to leaching from a wood surface in continuous contact with water.

The mechanism of leaching at the wood surface by fresh water is assumed to be identical in nature and severity to leaching from a wood surface by seawater.

The wood, in the case of wood treated with a wood preservative, shall be representative of commercially used wood. It shall be treated in accordance with the preservative manufacturer's instructions and in compliance with appropriate standards and specifications. The parameters for the post-treatment conditioning of the wood prior to the commencement of the test shall be stated.

The wood samples used shall be representative of the commodities used.

The composition, amount, pH value of water are important in determining the quantity, content and nature of emissions from wood.

Water samples will be taken at a minimum interval of one day and a maximum interval of 7 days, on a sampling scheme covering at least 19 days.

2.2 Principle

For obtaining samples of water from treated wood which has been in continuous contact with water, at increasing time intervals after exposure, preservative treated wood test specimens are immersed in water. The ratio of the volume of water to the surface area exposed to the water is equivalent to the ratio found in wood exposed in service in some Use Class 4 situations (40 m^2 per m^3). The water (emissate) is collected and is chemically analysed at seven or more sample times over the 19 days; it is suitable for ecotoxicity testing. Emission rates in milligrams per square meter per day are calculated from analytical results. The sampling periods are recorded. Tests with untreated samples can be discontinued if there is no background detected in the first three data points

A system with untreated wood provides background levels data from wood.

2.3 Product and reagent

2.3.1 Water

Water complying with grade 3 of EN ISO 3696 or water especially designed for environmental investigations is ideal. Deionised water can also be used. The pH value shall be in the range 5 to 7. The pH value shall not be adjusted unless special conditions might justify setting the pH to a specified value between 5 and 7.

Water temperature shall be (20 ± 2) °C.

The pH value and water temperature shall be stated in the test report.

2.3.2 Preservative

The identity of the preservative product for treatment shall be stated in the test report. It shall state the name and other designation of the preservative, and the trade or common name of the active ingredient(s), substances of concern (as defined in the EU Directive 98/8/EC) or a generic description of co-formulants and the composition of the product in mass fraction of these ingredients.

2.4 Apparatus

2.4.1 Immersion container

The container is made of an inert material and is large enough to allow the test specimens to have all their faces exposed to water and to contain sufficient water for the ratio of the exposed surface area of the test specimen to the volume of water to which it is exposed, to be 40 (i.e. 40 $m^2 \times m^{-3}$ or 0,4 $cm^2 \times cm^{-3}$).

NOTE For example, for five wood test specimens 25 mm wide by 50 mm long, 15 mm thick, end sealed, where the surface area exposed to water is 200 cm^2 the volume of water required is 500 ml.

2.4.2 Assembly for test specimens

The test specimens should be weighted down in such a way so that all of the surfaces of the test specimens are immersed in the water.

2.5 Test specimens

2.5.1 Species of wood

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

NOTE Additional tests may be made using other species but, if so, this should be stated in the test report.

2.5.2 Quality of wood and wood moisture content

Use straight grained wood without knots. Material of a resinous appearance shall be avoided.

NOTE The wood should be typical of wood that is available commercially.

The source, density and number of annual growth rings per 10 mm shall be stated in the test report.

2.5.3 Size of test specimens

Wood test specimens have minimum dimensions of 25 mm wide by 50 mm in length, 15 mm thick, with the longitudinal faces parallel to the grain of the wood. Test specimens shall consist of 100 % sapwood. Each test specimen is marked so that it can be identified throughout the test.

The wood test specimens shall be planed sawn and the surfaces shall not be sanded.

2.5.4 Number of test specimens

Two sets of treated test specimens in two immersion containers (2.4.1) are used and the mean value taken as the emission value. One set of untreated test specimens in one immersion container is also used. The number of wood test specimens depends on the specimen's size. The total surface of wood test specimens to be immersed in one immersion container is at least 200 cm^2, and the minimum number of test specimens per immersion container is three. For one test there is at least nine (three sets of three) test specimens: six test specimens are treated with preservative, three test specimens are untreated. Sufficient test specimens are prepared to allow a selection of six which are within 5% of the mean value of the retentions of the group of test specimens, and one for the estimation of the oven dry moisture content of the test specimens before treatment.

NOTE For the minimum size of specimens given in 2.5.3., the number of specimens to obtain 200 cm^2 is 5; the total number of specimens needed is therefore 15:10 treated and 5 untreated.

2.5.5 End seal

The wood test specimens are end sealed with a substance that prevents penetration of preservatives into the test specimens. The specimens will be sealed before treatment in case of surface application. Specimens have to be end sealed after conditioning in case of penetrating treatments.

NOTE Two coats of a silicone sealant have been found to be suitable.

2.6 Procedure

2.6.1 General

The test shall be carried out in a room that has a temperature of (20 ± 2) °C. The air humidity of the laboratory shall also be monitored.

2.6.2 Preparation of the treated test specimens

The wood test specimen to be treated with the preservative under test is treated by the method specified for the preservative

2.6.3 Conditioning of the test specimens after treatment

After treatment, condition the treated test specimen in accordance with the recommendations made by the supplier of the test preservative. A description of the procedures used shall be stated in the test report.

2.6.4 Preparation and selection of test specimens

After post treatment conditioning, calculate the mean retention of the group of test specimens and select at least six representative test specimens with a retention within ± 15% of the mean for the group.

2.6.5 Immersion method

2.6.5.1 Preparation of apparatus

Fill each immersion container (2.4.1) with the required mass of water (2.3.1).