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15119:2005

Durability of wood and wood-based products — Estimation of emissions from preservative treated wood to the environment — Wood held in the storage yard after treatment and wooden commodities exposed in Use Class 3 (not covered, not in contact with the ground), and wooden commodities exposed in Use Class 4 or 5 (in contact with the ground, fresh water or sea water) — Laboratory method

ICS 13.020.30; 71.100.50

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National foreword

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— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 15119

May 2005

ICS 13.020.30; 71.100.50

English version

Durability of wood and wood-based products - Estimation of emissions from preservative treated wood to the environment - Wood held in the storage yard after treatment and wooden commodities exposed in Use Class 3 (not covered, not in contact with the ground), and wooden commodities exposed in Use Class 4 or 5 (in contact with the ground, fresh water or sea water) - Laboratory method

Durabilité du bois et des matériaux dérivés - Estimation des émissions dans l'environnement du bois traité avec des produits de préservation - Bois stocké en dépôt après traitement et articles en bois exposés en classe d'emploi 3 (non couverts, non en contact avec le sol) et 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

Dauerhaftigkeit von Holz und Holzprodukten - Abschätzung von Emissionen von mit Holzschutzmitteln behandeltem Holz an die Umwelt - Laborverfahren für Holz auf dem Lagerplatz nach der Behandlung und Holzprodukte in Gebrauchsklasse 3 (nichtabgedeckt, ohne Erdkontakt) sowie in den Gebrauchsklassen 4 und 5 (im Kontakt mit Erde, Süßwasser oder Meerwasser)

This Technical Report was approved by CEN on 3 April 2005. It has been drawn up by the Technical Committee CEN/TC 38.

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Contents

Foreword

This document (CEN/TR 15119:2005) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and derived materials”, the secretariat of which is held by AFNOR.

This Technical Report has been 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. The status of this document as Technical Report has been chosen because this document is still in development in the frame of OECD.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Report: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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 two cases

The first case is the case where the preservative treated wood is not covered and not in contact with the ground or the water. There are two situations in this case where emissions could enter the environment:

1) emissions from preservative treated wood stored outside in the storage yard of a preservative treatment site. Rain falling on the treated wood could produce emissions which run off into surface water and/ or soil;

2) emissions from treated wood used in commodities exposed in Use Class 3. This is the situation in which the wood or wood-based product is not covered and not in contact with the ground. It is either continually exposed to the weather or is protected from the weather but subject to frequent wetting. Use classes are defined in EN 335-1 and categorise the biological hazard to which the treated commodity will be subjected. The Use Classes also define the situation in which the treated commodity is used and determine the environmental compartments (air, water, soil) which are potentially at risk from the preservative treated wood. Rain falling on treated wood in Use Class 3 could produce emissions that run off into surface water and/ or soil.

The second case is the case where the preservative treated wood is not covered and is in contact with the ground, fresh water or sea water. There are three situations in this case where emissions could enter the environment:

3) 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.

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

5) 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 methods are laboratory procedures for obtaining water samples (emissate) from treated wood exposed out of ground contact and 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. The emissate can also be tested for ecotoxicological effects

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

1 Scope

This Technical Report specifies two laboratory methods for obtaining water samples: one from preservative treated wood exposed out of ground contact (wood held in the storage yard after treatment and Use Class 3) and the other from treated wood which has been in continuous contact with ground or water (Use Class 4 or 5), at increasing time intervals after exposure.

2 Method for wood held in the storage yard after treatment and for wooden commodities exposed in Use Class 3 (not covered, not in contact with the ground)

2.1 General considerations

The principal agent for causing emissions from wood during open-air storage in the yard and in Use Class 3 is rainfall. Wood exposed in above ground situations is subjected to the intermittent wetting of rainfall and the drying of the wood surface between the rainfall events. This wetting and drying cycle is simulated in this document. It is assumed that emissions obtained by exposure to rainfall are identical to emissions obtained by immersion in water.

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 test can be applied to wood treated using a penetrating process or superficial application, and to wood which has an additional surface treatment (e.g. paint).

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

The composition, amount, pH value and the physical form of rainfall is important in determining the quantity, content and nature of emissions from wood. However, simulating a realistic rainfall regime in the laboratory is time-consuming, expensive and is likely to lack reproducibility, accuracy, precision and reliability. This method uses a 1 min immersion in water to simulate exposure to a rainfall event. There are three rainfall events per day and days of rainfall events are separated by at least two days without rainfall events.

The duration of the test shall be sufficient to enable a flux profile against time to be determined, (e.g. time necessary to reach steady state or maximum of 30 days) to allow extrapolations of flux for longer periods (e.g. 1 year, 10 years and more).

2.2 Principle

For obtaining water samples from treated wood exposed out of ground contact, at increasing time intervals after exposure, preservative treated wood test specimens are immersed in water for 1 min. The mass of water taken up by the test specimen is equivalent to 720 mm of rain per year. The test specimen is allowed to dry between immersions, simulating the wetting and drying cycle of natural exposure situations. Immersion is repeated at intervals over at least 30 days. The water (emissate) is collected and chemically analysed or tested for ecotoxicity at seven or more sample times over the 30 days. Tests with untreated samples can be discontinued if there is no background detected in the first three data points Emission rates in milligrams per square meter per day are calculated from analytical results.

A system with untreated wood specimens provides background levels for emissates from wood.

2.3 Product and reagent

2.3.1 Water

Deionized water is recommended. The pH value of the water shall be in the range 5 to 7. The pH value shall not be adjusted unless special conditions might justify setting the pH value to a specified value, between 5 and 7.

NOTE 1 Water complying with grade 3 of EN ISO 3696 is ideal but not necessary.

NOTE 2 Artificial rain, according to other OECD test guidelines, can be used.

Water temperature shall be (20 ± 2) °C and the measured 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) with a generic description of the co-formulants (e.g. cosolvent, resin), and the composition in mass fraction of the 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 are supported on an assembly which exposes all of the exposed surfaces of the test specimens to contact with 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 which 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 "plain" 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 specimens 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 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.

2.5.5 End seal

The wood test specimens are end sealed with a substance which prevents penetration of preservative into the test specimens.

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 which 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, which can be by a penetrating treatment process or a superficial application process, which may be a dip, spray or brush.

2.6.3 Treatment process

Penetrating treatment process

Prepare a solution of the preservative, which will achieve the specified uptake or retention when applied using the penetrating treatment process. Weigh the wood test specimen and measure its dimensions. Carry out the penetrating treatment process. The process shall be as specified for the application of the preservative to wood out of ground contact. Weigh the test specimens after treatment. Calculate the retention of the preservative (in kilograms per cubic meter) from the equation:

$$\frac{m_2 - m_1}{V} x \frac{w}{100} \quad (1)$$

where

m_1 is the mass before treatment, in kilograms;

m_2 is the mass after treatment, in kilograms;

w is the solution concentration (mass fraction);

V is the volume of test specimen in cubic meters.

NOTE Timber treated in an industrial treatment plant (e.g. by vacuum pressure impregnation) may be used in this test.

A description of the procedures used shall be stated in the test report.

2.6.3.1 Superficial application processes

Carry out the superficial application process e.g. dip, spray or brush, to the wood test specimens. The process and application rate (e.g. litres per square meter) shall be as specified for the superficial application of the preservative. The procedures used, and the application rate or uptake shall be stated in the test report.

2.6.4 Conditioning(drying) 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.

2.6.5 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 ± 5 % of the mean for the group.

2.6.6 Immersion method

2.6.6.1 Preparation of apparatus

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

2.6.6.2 Obtaining of emissates

2.6.6.2.1 For an immersion event where the emissate will be retained for subsequent chemical analysis or ecotoxicity testing.

Weigh the wood test specimen and record the mass, date and time .Expose the immersion surface of the test specimens to water for 1 min. Remove the test specimens from the water and allow to drain for 10 s, allowing run-off to return to the water. Weigh the test specimens and then allow to dry.

2.6.6.2.2 For an immersion event where the emissate will be not retained.

Record the date and time and expose the immersion surface of the test specimens to water for 1 min Remove the test specimens from the water and allow to drain for 10 s, allowing run-off to return to the water. Allow the test specimens to dry.

2.6.6.3 Test method

There are three immersion events on an ‘immersion day’ (e.g. at 10h 00, 13h 00 and 16h 00). After an immersion day, allow the test specimens to dry for at least two days, but no more than four days, (‘drying days’) before the next immersion day.

NOTE Ideally it should be three rain events every third day.

The immersion regime and sampling regime is stated in the test report.

Maintain the immersion and drying regime for at least 30 days. Retain the "immersion day emissate" for subsequent chemical analysis or ecotoxicity testing on at least seven of the immersion days.

The method allows the individual samples taken on one day to be analysed or tested to give a profile of the quantity of emissions against time.

NOTE Alternatively samples taken on successive immersion days may be bulked. The water may need to be concentrated by an appropriate technique before analysis.

Store samples in a refrigerator in the dark to reduce microbial growth in the sample before analysis.

2.6.6.3.1 Test system: Treated

Collection of the water (emissate) in this system and subsequent analysis allow the estimation of the emission rate of the analysed materials from the preservative treated wood. Collection and analysis of the emissate after increasing time periods of exposure allow the rate of change of the emission rate with time to be estimated.

2.6.6.3.2 Test system: Untreated

Collection of the water (emissate) in this system and subsequent analysis allow the estimation of the emission rate of the analysed materials from untreated wood. Collection and analysis of the emissate after increasing time periods of exposure allow the rate of change of the emission rate with time to be estimated. This system is a control to determine background levels of substances which are then chemically analysed.

2.6.6.4 Water

Samples of the water used and subsequent analysis allow the estimation of the analysed substances in the water. This is a control to determine background levels of substances which are then chemically analysed, or for the presence of substances from water which are toxic in subsequent ecotoxicity tests.

2.7 Expressions of results

2.7.1 Chemical analysis

If the water (emissate) is chemically analysed, express the analytical result in appropriate units e.g. micrograms per millilitre. Convert the analytical result to the quantity in the emissate in milligrams per square meter using the volume of water, the quantity emitted in one immersion event and the surface area of the test specimen in square meters.

Calculate the emission flux for that day by taking the mean of two measurements taken on that day expressed in milligrams per square meter per day.

If the analysis of the samples from the untreated test specimen shows detectable levels of the analysed material, implying a background level obtained from untreated wood, it shall be subtracted from the analytical results for the treated test specimens.

If the analysis of the samples from the water shows detectable levels of the analysed material, implying a background level in the water, it shall be subtracted from the analytical results for the treated test specimens and the untreated test specimens.

2.7.2 Chemical analysis: bulked samples

If the collected samples are bulked to allow chemical analysis, calculate the quantity emitted in milligrams per square meter per day over the corresponding day period.

2.7.3 Recording

Record the results. The mean of the results obtained from the two replicates is the daily emission rate for that product in milligrams per square meter per day.

NOTE The Table A.1 shows an example of a suggested recording form for one set of treated test specimens, and the Table A.2 gives the summary table for calculating the mean daily values of emission .

2.8 Evaluation of samples other than analysis e.g. Ecotoxicity test

The samples can be tested for ecotoxicological effects. A sample is the emission from one immersion event. Bulking the three samples from one day gives a sample of the emissions from one day of exposure of an area of treated wood.

3 Method for wooden commodities exposed in Use Class 4 or 5 (in contact with the ground, fresh water or sea water).

3.1 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 sea water.

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 test can be applied to wood treated using a penetrating process or superficial application, and to wood which has an additional surface treatment (e.g. paint), although these are unlikely to be used in ground contact or in water.

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

The duration of the test shall be sufficient to enable a flux profile against time to be determined, (e.g. time necessary to reach steady state or at least 30 days) to allow extrapolations of flux for longer periods (e.g. 1 year, 10 years and more).

3.2 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 $m^2 \times m^{-3}$). The water (emissate) is collected and chemically analysed or tested for ecotoxicity at seven or more sample times over the 30 days. Emission rates in milligrams per square meter per day are calculated from analytical results. The sampling periods are recorded. Test 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 from wood.

3.3 Product and reagent

3.3.1 Water

Deionized water is recommended. The pH value of the water (other than sea water) shall be in the range 5 to 7. The pH value shall not be adjusted unless special conditions justify setting the pH value to a specified value, between 5 and 7.If demineralised water is used its conductivity shall be stated in the test report.

NOTE1 Water complying with grade 3 of EN ISO 3696 is ideal but not necessary.

NOTE 2 Collected natural rain, or natural surface water, or natural sea water can be used

NOTE3 Artificial rain, according to other OECD test guidelines , can be used.

Water temperature shall be (20 ± 2) °C and the measured pH value and water temperature shall be stated in the test report.

3.3.2 Preservative

See 2.3.2

3.4 Apparatus

3.4.1 Immersion container

See 2.4.1

3.4.2 Assembly for test specimens

See 2.4.2

3.5 Test specimens

3.5.1 Species of wood

See 2.5.1.

3.5.2 Quality of wood and wood moisture content

See 2.5.2

3.5.3 Size of test specimens

See 2.5.3.

3.5.4 Number of test specimens

See 2.5.4.

3.5.5 End seal

See 2.5.5.

3.6 Procedure

3.6.1 General

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

3.6.2 Preparation of the treated test specimens

See 2.6.2.

3.6.3 Treatment process

3.6.3.1 Penetrating treatment process

See 2.6.3.1:

3.6.3.2 Superficial application processes[1]

See 2.6.3.2.

3.6.4 Conditioning (drying) of the test specimens after treatment

See 2.6.4.

3.6.5 Preparation and selection of test specimens

After drying, cut the untreated and treated test specimens to the dimensions required, if necessary. Calculate the mean retention of the group of test specimens and select at least six test specimens with a retention within 5% of the mean for the group.

3.6.6 Immersion method

3.6.6.1 Preparation of apparatus

Fill each immersion container (3.4.1) with the required mass of water (3.3.1).

3.6.6.2 Obtaining of emissates

Immerse the test specimens in the water and record the date and time. Cover the immersion container to reduce evaporation.

Replace the water at a minimum interval of one day and a maximum interval of 7 days.

The time and date of the change of water shall be such to minimise microbiological growth.

Record the time and date of the change of water and the mass of water recovered from the immersion container.

Sample or retain the water in which the test specimens have been immersed for subsequent chemical analysis or ecotoxicity testing on at least seven days.

Continue the immersion test for at least 30 days.

The method allows the water samples taken on one day to be analysed to give a profile of the quantity of emissions against time.

NOTE Alternatively, samples taken on successive water replacement days can be bulked. The water may need to be concentrated by an appropriate technique before analysis

Store samples in a refrigerator in the dark to reduce microbial growth in the sample before analysis.

3.6.6.2.1 Test system: Treated

See 2.6.6.2.1.

3.6.6.2.2 Test system: Untreated

Collection of the water (emissate) in this system and subsequent analysis allow the estimation of the emission rate of the analysed materials from untreated wood. Collection and analysis of the emissate after increasing time periods of exposure allow the rate of change of the emission rate with time to be estimated. This system is a control to determine background levels of substances which are then chemically analysed, or for the presence of substances from untreated wood or soil which are toxic in subsequent ecotoxicity tests.

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[1] In UC 4 or 5, surface application processes are not usually considered appropriate

3.6.6.3 Water

See 2.6.6.3.

3.7 Expressions of results

3.7.1 Chemical analysis

See 2.7.1.

3.7.2 Chemical analysis: bulked samples

See 2.7.2.

3.7.3 Emission flux

Calculate the daily emission flux in milligrams per square meter per day by taking the mean of the measurements from the two replicates and dividing by the number of days of immersion.

3.7.4 Recording

Record the results.

NOTE Table A.3 shows an example of a suggested recording form for one set of treated test specimens, and Table A.4 gives the summary table for calculating the mean daily values of emission.

3.8 Use of the results

3.8.1 Soil

If it is assumed that the water fraction of soil is 0,4, the quantity of analysed material entering the soil from the treated wood can be calculated for the 0 day to 10 days period and for periods greater than 10 days (e.g. 1 year, 10 years).

3.8.2 Fresh water and sea water

The quantity of analysed material entering the water from the treated wood can be calculated for the 0 day to 10 days period and for periods greater than 10 days (e.g. 1 year, 10 years).

4 Precision

4.1.1 Accuracy

The accuracy of the method to estimate emission depends upon the test specimens being representative of commercially treated wood, how representative the water is of realistic rain (Use Class 3) or of real water (Use Class 4 or 5) and how the immersion regime (Use Class 3) or the exposure regime (Use Class 4 or 5) is representative of natural conditions.

The accuracy, precision and repeatability of the analytical method shall be determined. It is likely that the quantity of emissions will be close to the limit of detection for some analytical methods.

4.1.2 Repeatability

Repeatability is the precision under conditions where independent test results are obtained with the same method on identical test items in the same laboratory by the same operator using the same equipment within short intervals

of time. The repeatability of the test within one laboratory depends upon the repeatability of the immersion regime, and the variability of the wood used for the test specimens.

4.1.3 Reproducibility

Reproducibility is the precision under conditions where test results are obtained with the same method on identical test items in different laboratories with different operators using different equipment. The reproducibility of the results in different laboratories depends upon the repeatability of the immersion regime, and the variability of the wood used for the test specimens.

4.1.4 Acceptable range of results

A range of results from this test where the upper and lower values differ by less than one order of magnitude is likely and acceptable.

4.2 Test report

The report shall include at least the following information:

a) The number of this document;

b) The name of the supplier of the preservative under test;

c) The specific and unique name or code of the preservative tested. The trade or common name of the active ingredient(s) with a generic description of the co-formulants (e.g. co-solvent, resin), and the composition in mass fraction of the ingredients;

d) The relevant retention or loading (in kilograms per cubic meter or litres per square meter respectively) specified for wood used out of ground contact;

e) The species of wood used, with its density, sapwood percentage in the wood, growth rate in rings per 10 mm;

f) The loading or retention of the preservative tested and the formula used to calculate the retention, expressed as litres per square meter or kilograms per cubic meter;

g) The method of application of the preservative, specifying the treatment schedule used for a penetrating process, and the method of application if a superficial treatment was used;

h) The date of application of the preservative, and an estimate of the moisture content of the test specimens, expressed as a percentage;

i) Conditioning procedures used, specifying the type, conditions and duration;

j) Specification of the end sealant used and the number of times applied;

k) Specification of any subsequent treatment of the wood, e.g. specification of the supplier, type, characteristics and loading of a paint;

l) The total surface area of the test specimens exposed to water, the nominal volume of water used for each immersion event and the ratio of the volume of water to the surface area in square meters per cubic meter;

m) The time and date of each immersion event, the amount of water used for the immersion of the test specimens at each event, and the amount of water absorbed by the wood during immersion;

n) Identification of the samples, which were subsequently chemically analysed or tested for their ecotoxicological properties.

o) Any variation from the described method and any factors that may have influenced the results.

Annex A
(informative)

Recording forms

Table A.1 — Recording form for one set of treated test specimens (Use class 3)

				Test specimen mass			Test specimen uptake	Water mass	Analytical results	Quantity emitted	Emission rate
	Date	Day	Time	Before Immersion	After Immersion	Days	g	g	µg/ml	mg/m^2	$mg/m^2/day$

Test House : ABC
CEN/TR 15119

Preservative under test Product A

Test Specimen type Treated
Code Number **MP1**

Impregnation treatment
Mass before treatment (g)
Mass after treatment (g)
Test specimen thickness (mm)
Test specimen volume (m^3)
Uptake (kg/m^3)

Superficial application
Mass before treatment (g)
Mass after treatment (g)
Product density (g/cm^3)
Application rate (l/m^2)

Test specimen length (mm)
Test specimen width (mm)
Test specimen area (cm^2)
Test specimen area (m^2)

Table A.2 — Summary table of mean daily values of emission (Use Class 3)

	Test specimen type	Test specimen type			Test specimen type
	Treated	Treated			Untreated
Code	**MP1**	**MP2**			**UNT 1**
Days	Emission rate	Emission rate	Mean Daily Emission rate	% variation of previous emission	Emission rate
	$mg/m^2/day$	$mg/m^2/day$	$mg/m^2/day$		$mg/m^2/day$

Emission rate mean 1 day to 10 days	
Emission rate greater than 10 days	

Test House : ABC

CEN/TR 15119

Preservative under test Product A

Table A.3 — Recording form for one set of treated test specimens (Use Class 4 or 5)

			Mass of water in container	**Mass of water at sample time**		**Specimen uptake**	**Analytical results**	**Quantity emitted**	**Emission rate**
Date		Time	g	g	Days	g	µg/ml	mg/m^2	$mg/m^2/day$

Test House : ABC		
CEN/TR 15119		
Preservative under test	Product A	
Test specimen type	Treated	
Code Number	**MP1**	**Impregnation treatment**
		Mass before treatment (g)
Test specimen length (mm)		Mass after treatment (g)
Test specimen width (mm)		Test specimen thickness (mm)
Test specimen area (cm^2)		Test specimen volume (m^3)
Test specimen area (m^2)		Uptake (kg/m^3)

Table A.4 — Summary table of mean daily values of emission ('Use Class 4 or 5)

	Test specimen type	**Test specimen type**			**Test specimen type**
	Treated	Treated			Untreated
Code	**MP1**	**MP2**			**UNT 1**
Days	Emission rate	Emission rate	Mean emission rate	% variation of previous emission	Emission rate
	$mg/m^2/day$	$mg/m^2/day$	$mg/m^2/day$		$mg/m^2/day$

Emission rate mean 0 day to 10 days	
Emission rate greater than 10 days	

Test House : ABC

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Preservative under test Product A

Bibliography

EN 335–1:1992*, Durability of wood and wood-based products - Definition of hazard classes of biological attack-Part1: General.*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987).*

98/8/EC-*Directive of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market.*

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