DRAFT FOR DEVELOPMENT

DD CEN/TS
15082:2005

Wood preservatives — Determination of the preventive effectiveness against sapstain fungi and mould fungi on freshly sawn timber — Field test

ICS 71.100.50

Confirmed
March 2010

BSI
British Standards

National foreword

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It is being issued in the Draft for Development series of publications and is of a provisional nature because the Technical Committee wants to assess its usefulness. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion to a European standard. A review of this publication will be initiated 2 years after its publication by the European organization so that a decision can be taken on its status at the end of its 3-year life. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent in writing to the Secretary of BSI Subcommittee B/515/1, Preservative preconditioning and biological testing, at British Standards House, 389 Chiswick High Road, London W4 4AL, giving the document reference and clause number and proposing, where possible, an appropriate revision of the text.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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Summary of pages

This document comprises a front cover, an inside front cover, the CEN/TS title page, pages 2 to 15 and a back cover.

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This Draft for Development was published under the authority of the Standards Policy and Strategy Committee on 12 December 2005

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 46608 6

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15082

July 2005

ICS 71.100.50

English version

Wood preservatives - Determination of the preventive effectiveness against sapstain fungi and mould fungi on freshly sawn timber - Field test

Produits de préservation du bois - Détermination de l'efficacité préventive contre le bleuissement et les moisissures des sciages frais - Essai de champ

Holzschutzmittel - Bestimmung der vorbeugenden Wirksamkeit gegen Schnittholzbläue und Schimmelpilze auf frisch geschnittenem Holz - Feldversuch

This Technical Specification (CEN/TS) was approved by CEN on 1 March 2005 for provisional application.

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Ref. No. CEN/TS 15082:2005: E

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Foreword

This document (CEN/TS 15082:2005) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: 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

This CEN Technical Specification specifies a field test method which gives a basis for assessing the effectiveness of a wood preservative product for the protection of freshly felled timber against colonization by sapstain, mould and other disfiguring micro-organisms. This field test method provides one criterion by which the value of a product can be assessed. If little is known about the activity of a product against sapstain and mould fungi, it is advisable to carry out a preliminary laboratory assessment using a suitable method.

To ensure that colonization of the test specimens will occur, the test should be carried out at sites where sapstain and mould growth occur on untreated susceptible timber species and should be carried out to coincide with the periods of higher fungal activity.

NOTE Periods of highest fungal activity are usually in the spring and autumn. If tests have not been conducted at a location previously, local experience should be sought to determine the most appropriate time of year.

The procedures described in this CEN Technical Specification are intended to be carried out by suitably trained and/or supervised specialists. Appropriate safety precautions should be observed throughout the use of the CEN Technical Specification.

1 Scope

This CEN Technical Specification specifies a field test method for determining the effectiveness of a product in the prevention of the colonization of freshly felled wood by sapstain fungi and mould fungi.

2 Terms and definitions

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

2.1
representative sample
sample having its physical or chemical characteristics identical to the volumetric average characteristics of the total volume being sampled

2.2
supplier
sponsor of the test (person or company providing the sample of wood preservatives to be tested)

3 Principle

Treatment of several series of test specimens of a susceptible wood species with solutions in which the concentrations of the test product are ranged in a given progression. Treatment of two series of similar test specimens with defined concentrations of a reference formulation. Exposure of these test specimens to colonization by the natural microflora. Comparison of the effectiveness of the test product with that of the reference formulation and the untreated control test specimens.

4 Test material and apparatus

4.1 Products and reagents

4.1.1 Diluents

For water-soluble or water-diluable preservatives use water of drinkable quality.

4.1.2 Reference formulation

Copper-8-quinolinolate.

NOTE 1 Details on this wood preservative are given in Annex A.

NOTE 2 If experience with another reference formulation is available in field tests in comparison with copper-8-quinolinolate, then an equivalent reference formulation can be used.

4.2 Apparatus

4.2.1 Dipping tank, suitable for dipping the size of test specimen used (see 6.3) and the volume of solution (see 7.1.1).

4.2.2 Supports, for the test specimens during exposure. The supports shall be made of the same species of timber as the test specimens or any inert material, that it is to say with no risk or interacting with the test specimens or the reference and test preservative treatments. They shall provide support for the test specimens between 100 mm and 200 mm above the level of the surrounding ground.

NOTE It is convenient to use pallets so that complete stacks can be moved mechanically.

4.2.3 Stickers, to separate the test specimens in the top half of each stack. The stickers shall be made of the same species of timber as the test specimens and treated with the same concentration of preservative, or any inert material, that is to say with no risk of interacting with the test specimens or the reference and test preservative treatments. The stickers shall separate the test specimens by (20 ± 5) mm.

4.2.4 Securing bands, to secure the test specimens in the stack during storage.

4.2.5 Exposure site, an open area free from extremes of local environmental influences, especially industrial pollution. The type of surface (e.g. grass, soil or concrete) shall be the same for all stacks in any test and details shall be recorded in the test report. Any vegetation shall be maintained at a level below that of the top of the supports on which the test specimens are stacked (see 4.2.2).

The prevailing meteorological conditions during the test exposure period shall be recorded and included in the test report.

4.2.6 Ordinary laboratory equipment, including a balance capable of weighing to an accuracy of 1 g.

5 Sampling of the preservative

The sample of preservative shall be representative of the product to be tested. Samples shall be stored and handled in accordance with any written recommendations from the supplier.

NOTE For the sampling of preservatives from bulk supplies, the procedure given in EN 212 should be used.

6 Test specimens

6.1 Species of wood

The species of wood to be used shall be susceptible to attack by sapstain and mould fungi.

The reference species should be a susceptible pine species, either Scots pine (*Pinus sylvestris* Linnaeus), Corsican pine (*Pinus nigra* var. *maritime*) or maritime pine (*Pinus pinaster*).

NOTE Tests can be undertaken using other species (e.g. spruce, beech) corresponding to the above characteristics and of particular importance for certain countries, but a reference pine species treated with the reference formulation should also be included to validate the severity of the test. When the test has been conducted using other species (e.g. spruce, beech) the results are only valid for that species.

6.2 Wood quality

The wood shall be free from cracks, stain, decay, insect damage and other defects but sound knots are permitted. The wood shall not have been water-stored, floated, chemically treated or steamed. The wood shall originate from trees felled in spring or autumn. The trees shall be converted within one week of felling.

The wood shall be sapwood containing little resin. A heartwood content of up to 20 % is allowed in each test specimen.

NOTE The heartwood is discounted during evaluation (see 7.4).

6.3 Preparation of the test specimens

Prepare test specimens having a cross-section of 100 mm to 120 mm × 18 mm to 25 mm and with a sawn finish. The longitudinal faces shall be parallel to the direction of the grain. Make transverse cuts to give test specimens at least 1 000 mm long.

Prepare a sufficient stock solution for the whole test and use within 24 h.

6.4 Dimensions of the test specimens

Measure and record the nominal dimensions of at least 10 test specimens per treatment, and calculate the mean surface area of the test specimens.

NOTE It is convenient if the same specimens are used to establish surface area and uptake of preservative solution (see 6.5).

6.5 Number and distribution of the test specimens

Use at least 110 test specimens for each combination of test preservative or reference formulation concentration and as untreated control test specimens.

NOTE Half the test specimens will be tested whilst close-stacked and half whilst open-stacked (see 7.3). The top and bottom layers of each stack are not assessed.

Select the test specimens at random from the stock. Number at least 10 test specimens per treatment, which will be used to assess uptake of preservative solution.

7 Procedure

7.1 Preparation of treatment solutions

7.1.1 General

Prepare sufficient solution of each concentration to treat all test specimens.

Each treating solution shall be freshly prepared from the reference formulation and test preservative. Solutions shall not be prepared by adjusting previously used solutions.

Dip the boards either singly or in batches in sufficient solution to fully cover them. After dipping no more than 20 boards, make up the original volume in the tank with fresh solution.

NOTE It is desirable to sample the solution in the dipping tank at the beginning, middle and end of the dipping process to allow chemical analysis of the active ingredient. For products known to be very stable in use, a dipping treatment solution of at least 40 l for each series of 110 planks can be used.

7.1.2 Reference formulation

When copper-8-quinolinolate is used as reference wood preservative, prepare concentrations of mass fraction of 1,5 % and 3,0 % (Annex A and 4.1.2).

If an alternative reference formulation is used, the two concentrations chosen shall provide a performance equivalent to the specified concentrations of copper-8-quinolinolate.

Evidence of equivalence shall be included in the test report.

7.2 Treatment of test specimens

Within 24 h of the preparation of the test specimens.

Weigh at least 10 randomly selected test specimens per wood species of the numbered test specimens (see 6.5) to the nearest 1 g and record the initial mass, m_0. Using the dipping tank (4.2.1), dip each test specimen in the appropriate treating solution for 15 s to 20 s or for the period specified by the supplier. After treatment, allow each of the numbered test specimens to drain for a few minutes. Reweigh each numbered test specimen to the nearest 1 g and record the mass after treatment, m_1.

Calculate the uptake of treating solution ($m_1 - m_0$) for each numbered test specimen and express it as grams of preservative per square metre of treated surface using the mean surface area of the test specimens (see 6.4).

7.3 Preparation of stacks

Place the test specimens onto the supports (4.2.2), making separate stacks for untreated test specimens and those treated with each concentration of reference or test preservative. Place half the number of replicate test specimens (minimum 55) in close contact with one another in layers of five boards (close-stacked) at the base of each stack (see also 6.5). Place the remaining replicate test specimens (open-stacked) separated by stickers (4.2.3) on top of the close-stacked specimens (see Annex B). Secure each stack with banding (4.2.4).

If necessary, transfer the stacks to the exposure site (4.2.5) and place them separately on the ground with a minimum of 0,5 m between stacks.

7.4 Evaluation

7.4.1 External surfaces

After a minimum of 3 months of exposure, examine the stack of untreated test specimens and those treated with the mass fraction of 1,5 % of the reference formulation. Discard the top layer of test specimens but retain for further use if necessary. Examine each test specimen (50 open-stacked and 50 close-staked) and assign a grading based on the fungal growth (sapstain and mould) visible on the two broad faces using the grading system given in Table 1. If any heartwood is present in a test specimen, the grading shall be based only on the area of sapwood.

Calculate the nominal mean grading value for each set of replicate test specimens (separating open-stacked and close-stacked test specimens). If the mean rating assigned to the test specimens meet the validity requirement in Clause 8, assess the remainder of the test specimens. If the validity requirements are not met, reassemble the stacks, replacing the top layer of test specimens, and examine after a further period of one month. If the validity criteria are not met after a total exposure period of six months, the test is not valid and shall be repeated.

Table 1 — Grading system

Rating	Description	Definition
0	0 %	Clean
1	< 10 % coverage	Slight
2	10 % to 25 % coverage	Medium
3	26 % to 50 % coverage	Heavy
4	> 50 % coverage	Severe
NOTE If the rating that would be assigned to each side of the test specimen is different, take the nominal mean value as the rating for the specimen as a whole.		

7.4.2 Evaluation after planning (optional)

Sets of test specimens with a nominal mean rating of ≥ 2 can be reassessed after planning to remove surface growths. The test specimens shall be planed to a depth of 3 mm on both broad faces and assessed according to the method in 7.4.1.

8 Validity of the test

The test is valid if the nominal mean grading for the external surfaces is equal to or greater than the values given in Table 2.

Table 2 — Validity requirements

Treatment	Close-stacked test specimens	Open-stacked test specimens
Untreated	3,5	2,5
Mass fraction of 1,5 % reference formulation	1,0	0,75

9 Test report

The test report shall include at least the following information[1)]:

a) number and date of this CEN Technical Specification;

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

c) unique name or code for the preservative under test with an indication of whether or not the composition has been declared;

d) name and concentration of the active ingredient;

e) if relevant, the density of the preservative according to data provided by the supplier;

f) date of supply of the preservative;

g) reference formulation used and if not, copper-8-quinolinolate evidence of equivalence should be given;

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1) An example of a test report is given in Annex C.

h) concentrations of the reference formulation used expressed as mass fraction;

i) species of wood used and the nominal dimensions of the test specimens;

j) date of felling, the date of preparation of the test specimens and the storage conditions;

k) concentrations of the preservative tested expressed as mass fraction;

l) quantity of solution, expressed in grams, absorbed by each numbered test specimen, the quantity of solution, expressed in grams per square metre, retained by each test specimen and the mean value for each treatment concentration;

m) date of treatment of the test specimens and the dipping time used;

n) location and characteristics of the exposure site, including the ground conditions under the stacks;

o) prevailing meteorological conditions during the exposure period;

p) date when the test specimens were exposed;

q) date of evaluation of the test specimens and the duration of test;

r) grading system used for the visual inspection;

s) for each test specimen, the rating given;

t) for each treating solution concentration, the nominal mean rating;

u) if the evaluation has been carried out after planning, the rating given for each planed test specimen and the notional mean grading for each treating solution concentration;

v) statement on the validity of the test;

w) any deviation from the standard method and any factors that may have affected the results;

x) name and signature of the officer(s) in charge of testing;

y) following note:

"The interpretation and practical conclusions that can be drawn from a test report demand a specialized knowledge of wood preservation, and for this reason, the test report cannot in itself constitute an approval certificate".

Annex A
(informative)

Reference formulation copper-8-quinolinolate

Chemical name: Bis-(quinolinolate) copper (IUPAC)

CAS RN. 10380-28-6

Formula: $C_{18}H_{12}N_2O_2Cu$

Molecular mass: 351,5 g/mol

Composition of the product (acid solubilized form):

Bis-(quinolinolate) copper	54 g
Dodecyl benzene sulfonic acid	640 g
Propylene glycol	120 g
Ethanol	140 g
Phosphoric acid	55 g
Silicone emulsion	20 g
Water	45 g

Annex B
(informative)

Example of storage conditions

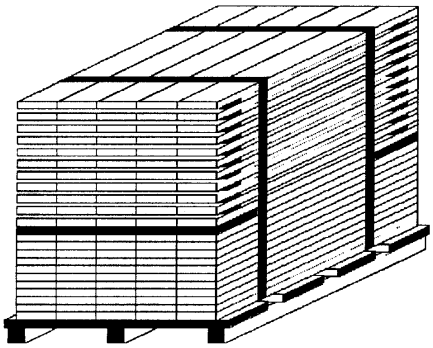

Figure B.1 — Example of storage conditions

Annex C
(informative)

Example of a test report

Number and date of this document	:	CEN/TS 15082:2005
Supplier of preservative	:	Company "CLEAN WOOD"
Unique name or code for the preservative	:	Product STAIN KILL Na
Name and concentration of the active ingredient	:	Component X at 100 %
Date of supply of the preservative	:	2003-03-15
Species of wood used and the nominal dimensions of the test specimens	:	Scots pine (*Pinus sylvestris* Linneaus) Planks of 20 mm thickness, 100 mm width and 1 m length
Date of felling, the date of preparation of the test specimens and the storage conditions of timber tested	:	2003-05-08 2003-05-10 saw-mill South Sweden
Concentrations of the preservative tested expressed as mass fraction	:	0,75 %, 1,5 %, 3,0 %
Quantity of solution absorbed	:	See Table C.1
The date of treatment of the test specimens and the dipping time used	:	2003-05-15 20 s
Location and characteristics of the exposure site, including the ground conditions under the stacks	:	Swedish Agricultural University, Uppsala; stored over hard stand
Prevailing meteorological conditions during the exposure period	:	See Table C.2
Date when the specimens were exposed	:	2003-05-15
Date of avaluation	:	2003-11-15
Rating system used for the visual inspection	:	See Table 1 of CEN/TS 15082:2005
For each test specimen, the rating given	:	See Table C.3
For each treating solution concentration, the notional mean rating	:	0,75 % ; 2,4 1,50 % ; 1,4 3,00 % ; 0,5
A statement on the validity of the test	:	Rating untreated close stack : 4 ; open stack : 3 Rating treated at 1,5 % close stack : 1,5 ; open stack : 1 Test valid

Report prepared by	:	Prof. B. Wood Laboratory B, Anytown, Europe
Name and signature of the officer (s) in charge	:	Mr S. Pine Mrs N. Spruce
Date	:	2004-02-02

NOTE The interpretation and practical conclusions that can be drawn from a test report demand a specialized knowledge of wood preservation, and for this reason, the test report cannot of itself constitute an approval certificate.

Tables C.1, C.2 and C.3 are not included as it is an example.

Bibliography

[1] EN 212, *Wood preservatives - General guidance on sampling and preparation for analysis of wood preservatives and treated timber*.

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