

Wood preservatives — Determination of the preventive efficacy against wood-destroying basidiomycete fungi

Produits de préservation du bois —
Détermination de l'efficacité préventive
vis-à-vis des champignons lignivores
basidiomycètes

Holzschutzmittel — Bestimmung der
vorbeugenden Wirkung gegenüber
holzerstörenden-Basidiomyceten

Cooperating organizations

The European Committee for Standardization (CEN), under whose supervision this European Prestandard was prepared, comprises the national standards organizations of the following countries:

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National foreword

This Draft for Development has been prepared under the direction of the Technical Sector Board for Civil Engineering and is the English language version of ENV 839 *Wood preservatives — Determination of the preventive efficacy against wood destroying basidiomycete fungi*, published by the European Committee for Standardization (CEN). ENV 839 was produced as a result of international discussion in which the United Kingdom took an active part.

CAUTION. Attention is drawn to the Health and Safety at Work etc. Act 1974, and the need for ensuring that the method specified in this Draft for Development is carried out with suitable precautions. In connection with the use of epoxyethane-based sterilization in C.1 attention is drawn to the Control of Substances Hazardous to Health Regulations 1988 and the Health and Safety Commission's Approved Code of Practice COP30 *Control of Substances Hazardous to Health in Fumigation Operations*.

The procedures described in this Draft for Development are intended to be carried out by appropriately qualified and experienced persons or other suitably trained and/or supervised personnel. Normal safety precautions should be used throughout the use of the method. Attention is drawn to the precautions given in the introduction and C.1.

This publication is not to be regarded as a British Standard

It is being issued in the Draft for Development series of publications and is of a provisional nature because there is at present insufficient experience in the use of the test method. It should be applied on this provisional basis, so that information and experience of its practical application may be obtained and reported to the responsible CEN Technical Committee. Users of this Draft for Development are invited to comment on its technical content, ease of use and any ambiguities or anomalies. These comments will be taken into account when preparing the UK national response to CEN on the question of whether the ENV can be converted to an EN. Comments should be sent in writing to BSI, 2 Park Street, London W1A 2BS, quoting this Draft for Development, the relevant clause and a proposed revision, within 2 years of the issue of this Draft for Development.

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English version

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This European Prestandard was approved by CEN on 1993-05-07 as a prospective standard for provisional application. The period of validity of this ENV is limited to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

CEN members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into a EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

Central Secretariat: rue de Stassart 36, B-1050 Brussels



Documents

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Foreword

This European Prestandard has been drawn up by CEN/TC 38 "Durability of wood and derived materials", the secretariat of which is held by AFNOR.

This European Prestandard was approved and in accordance with the CEN/CENELEC Internal Regulations the following countries are bound to announce this European Prestandard: Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

0 Introduction

This European Prestandard specifies a laboratory method of test which gives a basis for the assessment of the preventive action of a wood preservative, when applied mainly as a surface treatment, against basidiomycete fungi. In contrast the method for determining the toxic values against wood rotting fungi (EN 113) provides a mean of determining the loading at which impregnated wood of a susceptible species may be regarded as adequately protected under the test conditions.

This laboratory method provides one criterion by which the effectiveness of a product can be assessed. In making this assessment the methods by which the preservative may be applied should be taken into account. It is further recommended that results from this test should be supplemented by those from other appropriate tests, and above all by comparison with practical experience.

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

1 Scope

This European Prestandard specifies a method for the determination of the preventive action of a wood preservative against basidiomycete fungi when the preservative is applied as a surface treatment to wood.

This method is applicable to formulations of preservatives in a ready to use form as :

- water-insoluble chemicals which are being studied as active fungicides or ;
- organic formulations, as supplied or as prepared in the laboratory by dilution of concentrates or ;
- organic water-dispersible formulations as supplied or as prepared in the laboratory by dilution of concentrates, or ;
- water-soluble materials, for example salts.

NOTE : This method may be used in conjunction with an appropriate ageing procedure, for example EN 73.

2 Normative references

This European Prestandard 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 Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 73:1988	Wood preservatives - Accelerated ageing tests of treated wood prior to biological testing - Evaporative ageing procedure
EN 113:1980	Wood preservatives - Determination of toxic values of wood preservatives against wood destroying basidiomycetes cultured on an agar medium
EN 212:1986	Wood preservatives - Guide to sampling and preparation of wood preservatives and treated timber for analysis
ENV 807:1993	Wood preservatives - Determination of the toxic effectiveness against soft rotting micro fungi and other soil inhabiting micro-organisms
ISO 3969:1987	Water for analytical laboratory use - Specification and test methods

3 Definitions

For the purposes of this standard, the following definitions apply :

3.1 representative sample

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

3.2 supplier

The sponsor of the test.

4 Principle

The test preservative is applied by brushing to the longitudinal faces of a series of test specimens of a susceptible wood species. The treated test specimens are exposed to feeder blocks colonized by pure cultures of basidiomycete fungi. The lateral penetration of the different fungi through the exposed surface of the test specimens is assessed from sawn cross-sections of the test samples at the end of the exposure period.

5 Test materials and apparatus

5.1 Biological material

5.1.1 Obligatory test fungi (brown rots) on Scots pine sapwood

Coniophora puteana (Schumacher ex Fries) Karsten (BAM Ebw. 15).

Gloeophyllum trabeum (Persoon ex Fries) Murrill (BAM Ebw. 109).

Poria placenta (Fries) Cooke sensu J. Eriksson (FPRL 280).

The strains shall be obtained and maintained in accordance with annex B.

5.1.2 Obligatory fungus (white rot) on beech, if tests including a white rot fungus are also to be undertaken

Coriolus versicolor (Linnaeus) Quélet (CTB 863 A).

The strain shall be obtained and maintained in accordance, with annex B.

5.1.3 Additional fungal species

If additional fungi are used, a description of the strain(s) equivalent to that of the obligatory fungi given in annex B shall be recorded in the test report.

5.2 Feeder blocks

5.2.1 Wood species

Scots pine sapwood (*Pinus sylvestris* Linnaeus) shall be used for feeder blocks for brown rot fungi and beech (*Fagus sylvatica* Linnaeus) for white rot fungi.

5.2.2 Wood quality

The wood shall be sound and without knots. The wood shall not have been water-stored, floated, chemically treated or steamed. The Scots pine shall be exclusively sapwood containing little resin.

NOTE : Wood that has been kiln dried at temperatures below 60 °C may be used.

5.2.3 Dimensions

The dimensions of feeder blocks measured at 12 % (*m/m*) moisture content shall be :

(50 ± 0,5) mm x (25 ± 0,5) mm x (15 ± 0,5 mm).

5.2.4 Number of feeder blocks

Four feeder blocks shall be prepared for each test specimen that is to be used (see 7.5).

5.3 Products and reagents

5.3.1 Water complying with grade 3 of ISO 3969:1987

5.3.2 Culture medium for feeder blocks

- Malt extract containing (0,9 ± 0,3) % (*m/m*) nitrogen :

concentrated : 50 g ;

in powder form : 40 g.

- Agar containing approximately 0,3 % (*m/m*) nitrogen and causing no inhibition of growth of fungi : 20 g.

- Water : 1000 ml.

Combine the ingredients and heat to dissolve. Dispense into each culture vessel (5.4.5) a sufficient quantity to give a depth of between 3 mm and 4 mm. Close the vessels and sterilize in the autoclave (5.4.7) at 121 °C for 20 min. Cool to room temperature whilst lying flat.

NOTE : Alternativement, the medium may be sterilized then dispensed into sterile vessels under aseptic conditions.

5.3.3 Test substrate for test specimens

An hydrated, laminar, aluminium-iron-magnesium silicate ¹⁾ exfoliated to yield particles up to 3 mm diameter. Particle less than 1 mm shall be removed by sieving. Before use, thoroughly mix the sample of test substrate.

The test substrate shall be used only once.

5.3.4 Acidifying solution for the test substrate

An acidifying solution shall be prepared with the following composition :

- potassium chloride (KCl) solution, 0,1 mol/l : 950 ml ;
- hydrochloric acid (HCl), 0,1 mol/l : 50 ml

5.3.5 Sealing product

A material resistant to the penetration of the test preservative and the test fungi and without any fungistatic or fungicidal activity within the test specimen.

NOTE : Three coats of a 2-component epoxy lacquer have been found to be suitable.

5.3.6 Fungicidal solution for assessment

Prepare a stock solution of the following composition :

- | | |
|--|--------|
| - phenol | 0,5 g |
| - (methyl-1-(butylcarbamoyl) benzimidazol-2-ylcarbamate) :
active ingredient (benomyl ²⁾) | 0,16 g |
| - 2, 6-dichloro-4-nitroaniline | 0,16 g |
| - 50 % (V/V) ethanol solution | 50 ml |

1) Vermiculite is suitable.

2) Propriety products normally contain 50 % (m/m) benomyl.