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Träskydd – Bestämning av skyddsverkan mot mögelröta och andra mikroorganismer

Wood preservatives – Determination of the effectiveness against soft rotting micro-fungi and other soil inhabiting micro-organisms

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EUROPEAN PRESTANDARD
PRÉNORME EUROPÉENNE
EUROPÄISCHE VORNORM

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English version

Wood preservatives - Determination of the effectiveness against soft rotting micro-fungi and other soil inhabiting micro-organisms

Produits de préservation du bois - Détermination de l'efficacité vis-à-vis des micro-organismes de pourriture molle et d'autres micro-organismes du sol

Holzschutzmittel - Prüfverfahren für die Bestimmung der Grenze der Wirksamkeit gegen Moderfäule und andere erdbewohnende Mikroorganismen

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The period of validity of this ENV is limited initially 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.

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Foreword

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

This European Prestandard supersedes ENV 807:1993.

The annexes A, B, C, D, E and F are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This European Prestandard specifies a laboratory method of test which gives a basis for assessing the effectiveness of a wood preservative against micro-fungi (ascomycetes and fungi imperfecti) which cause soft rot of wood in service. The infection source is the natural micro-flora of the soil which may also contain other micro-organisms, such as bacteria and other fungi, such as moulds and basidiomycetes. This laboratory method provides one criterion by which the value of a wood preservative product can be assessed. This information has to be supplemented by data from other relevant tests and from practical experience.

1 Scope

This European Prestandard specifies a method of test for determining the toxic effectiveness of a wood preservative, applied to wood by full impregnation, against the micro-fungi which cause soft rot of wood.

The method is applicable to testing of formulated products or of their active ingredients.

NOTE A method suitable for undertaking screening tests of potential active ingredients is given in annex A.

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 (including amendments).

EN 84, *Wood preservatives — Accelerated ageing of treated wood prior to biological testing — Leaching procedure*

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

3 Terms and definitions

For the purposes of this European Prestandard, the following terms and definitions apply:

3.1

representative sample

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

3.2

supplier

sponsor of the test

4 Principle

A number of small test specimens (as small stakes) are impregnated with the preservative under test at a minimum of three concentrations ranged about the retention expected to provide protection throughout the test period. The test specimens are exposed to leaching according to EN 84. The specimens are partly buried vertically in a microbially active soil. Sets of test specimens are assessed after 8, 16, 24 and 32 weeks of exposure. The performance of the test preservative is evaluated by comparison with the performance of a reference preservative.

5 Test materials

5.1 Biological materials

5.1.1 Soil

Natural top soil or a fertile loam-based horticultural soil ¹⁾ of pH 6 to pH 8 and not containing added agro-chemicals. It shall have a waterholding capacity (WHC) of between 25 % (*m/m*) and 60 % (*m/m*).

NOTE 1 A suitable method for determining WHC is described in annex B.

¹⁾ A horticultural soil of the John Innes No.2 type and with the following composition has been found to be suitable; seven parts by volume loam, three parts by volume sphagnum peat, two parts by volume sharp sand plus 0,6 g chalk and 6,0 g slow release fertilizer per litre of soil mixture. If the WHC is too high, it can be lowered by modifying the soil with the addition of sand.

If a natural soil is used, it shall have the turf or top 50 mm removed and shall not be taken from a depth below 200 mm from the original surface. It shall be passed through a sieve of nominal aperture size 12,5 mm. If it is necessary to store the soil prior to use, it shall be stored in closed moisture-proof containers. Before use, thoroughly mix the sample of soil.

NOTE 2 The soil should only be collected in a moist condition.

If a horticultural soil is used which is sterilized during its preparation, then 20 % (*m/m*) of a natural soil, prepared as above, shall be added and the soils thoroughly mixed prior to the start of the test.

The soil shall be used only once.

NOTE 3 If assurance of the virulence of the soil is required, the test procedure using cotton cloth described in annex C, or a similar standardized procedure, may be used.

5.2 Products and reagents

5.2.1 Solvents and diluents

Water to grade 3 of EN ISO 3696 and, if appropriate, volatile organic liquids leaving in the wood no residue which would have a toxic effect on the soil inhabiting micro-organisms at the end of the post-treatment conditioning period.

NOTE Information on appropriate solvents and diluents should be provided by the supplier.

5.2.2 Reference preservative

A copper/chromium preservative with a composition equivalent to the following :

$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ 50,0 % (*m/m*)

$\text{K}_2\text{Cr}_2\text{O}_7$ 48,0 % (*m/m*)

CrO_3 2,0 % (*m/m*)

The preservative shall be prepared from ingredients of at least 95 % (*m/m*) purity.

5.2.3 Xylene

($\text{C}_6\text{H}_4(\text{CH}_3)_2$) mixed isomers, technical grade.

5.3 Apparatus

5.3.1 Conditioning chamber, well ventilated and maintained at (20 ± 2) °C and (65 ± 5) % r.h.

5.3.2 Ventilated drying oven, capable of being maintained at (103 ± 2) °C.

5.3.3 Desiccators, with efficient desiccant (silica gel for example).

5.3.4 Treatment vessels, of a material that does not react with either the preservative or solvents or diluents, for example of glass for organic products and plastics materials for salts containing fluorine.

5.3.5 Weights, of a material that does not react with the preservative solutions under test, to provide ballast for the test specimens.

5.3.6 Plastics mesh, of a material that does not react with the preservative solutions under test, for retaining test specimens during impregnation.

5.3.7 Vacuum vessels, fitted with stopcocks.

5.3.8 Vacuum pump, fitted with a pressure gauge and capable of maintaining a pressure of 0,7 kPa.

5.3.9 Drying vessels, provided with a cover and containing supports which will give a minimum of contact with the treated test specimens which are to be placed on them. The vessels and supports shall be of a material that does not react with the test solvent or test preservative, for example glass for organic products or of plastic material for salts containing fluorine.

5.3.10 Culture chamber (incubator or room), dark and maintained at $(27 \pm 2) ^\circ\text{C}$ and $(70 \pm 5) \% \text{ r.h.}$

5.3.11 Vacuum filtration apparatus, comprising vacuum flask, 146 mm diameter Buchner funnel and fitting coarse grade filter papers.

5.3.12 Test containers, made of material which does not have a toxic effect on the soil inhabiting micro-organisms and provided with a ventilated lid. The depth shall be at least 150 mm, so as to provide at least 30 mm below the test specimens when inserted in the soil to a depth of 80 mm and adequate clearance above the top of the protruding parts of the test specimens.

NOTE The exact dimensions are not critical but they determine the number of test specimens in each vessel (which should not be less than 10). An example of a suitable test container is described in annex D.

5.3.13 Safety equipment and protective clothing, appropriate for the test product, test solvent and reference preservative, to ensure the safety of the operator.

5.3.14 Ordinary laboratory equipment, including a balance accurate to 0,001 g.

6 Sample 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.

7 Test specimens

7.1 Species of wood

The following species shall be used for the test :

- Scots pine (*Pinus sylvestris* Linnaeus) for products intended to be used on softwoods ;
- beech (*Fagus sylvatica* Linnaeus) for products intended to be used on hardwoods.

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

7.2 Wood quality

The wood shall be free from cracks, stain, decay, insect damage and other defects. The wood shall not have been water-stored, floated, chemically treated or steamed.

NOTE Wood that has been kiln dried at temperatures below $60 ^\circ\text{C}$ may be used.

The Scots pine shall be exclusively sapwood containing little resin and having between 2,5 annual growth rings per 10 mm and eight annual growth rings per 10 mm. The proportion of latewood in the annual rings shall not exceed 30 % of the whole.

The beech shall be even-grained, free from tyloses and discolouration. It shall have between two annual growth rings per 10 mm and six annual growth rings per 10 mm.

7.3 Provision of test specimens

Condition the wood to $(12 \pm 2) \% (m/m)$ moisture content. Prepare planed strips having a cross-section of $(10 \pm 0,1) \text{ mm} \times (5 \pm 0,1) \text{ mm}$. The longitudinal faces shall be parallel to the direction of the grain. The annual rings