SLOVENSKI STANDARD
SIST EN 370:2004

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Zaġļitna sredstva za les ï Ugotavljanje uļinkovitosti preventivnega delovanja proti navadnemu trdoglavcu Anobium punctatum (De Geer)

Wood preservatives - Determination of eradicant efficacy in preventing emergence of Anobium punctatum (De Geer)

Holzschutzmittel - Bestimmung der auf Schlupfverhinderung beruhenden bekämpfenden Wirksamkeit gegenüber Anobium punctatum (De Geer)

Produits de préservation du bois - Détermination de l'efficacité curative contre l'émergence d'Anobium punctatum (De Geer)

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English version

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CEN

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

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

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Foreword

This European Standard was drawn up by the "Anobium" Expert Group of CEN/TC 38 "Durability of wood and wood-based products", the secretariat of which is held by AFNOR.

The method is new and has been developed to assess the efficacy of eradicant formulations based ou non-penetrating fluids which act only on emerging adult beetles and not at depth on larvae established in the wood.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 1993, and conflicting national standards shall be withdrawn at the latest by October 1993.

This European Standard has been approved by CEN, and in accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

INTRODUCTION

This European Standard describes a laboratory method of test which gives a basis for assessment of the eradicant efficacy of a wood preservative, in preventing emergence of Anobium punctatum. It determines the lethal effects,of an insecticidal product, deposited by surface application, on beetles attempting to emerge through treated wood surfaces.

The method simulates conditions which can appear in practice where a length of timber infested with Anobium punctatum is treated on all the sides from which emergence of beetles is possible.

This laboratory method provides one criterion by which the value 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.

When products which are very active at low concentrations are used it is very important to take suitable precautions to isolate and separate, as far as possible, operations involving chemical products, other products, treated wood, laboratory apparatus and clothing. Suitable precautions should include the use of separate rooms, areas within rooms, extraction facilities, conditioning chambers and special training for personnel.

1 SCOPE

This European standard specifies a method for the determination of the curative action of a wood preservative against infestation by Anobium punctatum (De Geer) when the product is applied as a surface treatment to wood.

This method is applicable to any surface applied treatment that is intended to prevent emergence of adult beetles but not intended to kill larvae in infested timber.

NOTE 1 : This method may be used in conjunction with an ageing procedure, for example EN 73.

NOTE 2 : Products intended to kill larvae should be tested by the method described in EN 48.

2 NORMATIVE REFERENCES

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

ISO 835-1:1981 Laboratory glassware – Graduated pipettes – Part 1 : General requirements

ISO 3696:1987 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

Preservative is applied by brush or pipette onto test specimens of a susceptible timber. After drying the test specimens are cut into two sub-specimens and larvae of Anobium punctatum are introduced into the freshly-cut end grain surfaces.

After allowing larvae to establish, the untreated faces are sealed and insects are induced to pupate and emerge. The numbers of beetles that emerge and the population that remains within the specimens are compared with those in untreated controls.

5 TEST MATERIALS AND APPARATUS

5.1 Biological material

5.1.1 Anobium punctatum (De Geer) larvae

NOTE : The culturing technique, which experience has shown to be suitable, is described in annex B

5.1.2 Provision of larvae

Carefully split or crumble infested small branchwood to extract larvae. Examine them under a binocular miscroscope and destroy any that show injury or mite infestation or that do not respond by movement when touched.

Weigh the larvae and keep those that have a mass between 7 mg and 12 mg, and are in perfect condition. Keep them, for between 12 h and 60 h, separately from one another in glass receptacles in the culturing chamber (5.3.1). Re-examine them and reject any which do not show movement in response to stimulation with a fine brush.

5.1.3 Choice of larvae

Select sets of 12 larvae so that the total mass of each set is between 100 mg and 125 mg.

The numbers of larvae required are shown in Table 1.

Table 1 : Numbers of larvae

Number of formulations to be tested	Number of test specimens (100 mm x 50 mm x 30 mm) required		Total number of larvae required
	Untreated controls	Treated specimens	
1	3	3	144
2	3	6	216
3	6	9	360
4	6	12	432

Note : Additional larvae may be required to replace larvae which do not establish in the test sub-specimens.

5.2 Products and reagents

5.2.1 Water, complying with grade 3 of ISO 3696.

5.2.2 Gelatin, for sealing the relevant surfaces of specimens to be treated with solutions in which an organic solvent is the continuous phase.

5.2.3 Paraffin wax, for sealing the relevant surfaces of specimens to be treated with solutions in which water is the continuous phase.

NOTE : Paraffin wax with a setting point of 52 °C to 54 °C has been found to be suitable.

5.3 Apparatus

5.3.1 Culturing chamber, with air circulation, controlled at (21 ± 1)°C, and at relative humidity (80 ± 5)%.

5.3.2 Laboratory work area, well ventilated, where treatment of the test specimens is carried out.

CAUTION : It is essential to follow safety procedures for handling flammable and toxic materials. Avoid excessive exposure of operators to solvents or their vapours.

5.3.3 Testing chamber, ventilated, controlled at (21 ± 1) °C and at relative humidity (70 ± 5) %.

5.3.4 Low temperature regime chamber,

Either :

Ventilated and controlled to provide a continuous temperature regime with consecutive cycles of 12 h at (6 ± 1) °C and 12 h at (13 ± 1) °C

or :

Ventilated and controlled at (6 ± 1) °C and relative humidity (70 ± 5) %.

5.3.5 Drill, provided with bits capable of drilling smooth cylindrical holes of 2 mm diameter in wood.

5.3.6 Plastic plates of opaque unplasticised PVC, 50 mm x 30 mm x 1 mm.

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

5.3.8 Pipette, of type specified in ISO 835, Part 1, Class B : graduated pipette with no waiting time. Capacity from 0,5 ml to 25 ml with an accuracy of $\pm$ 0,01 ml.

5.3.9 Ordinary laboratory equipment, including a balance capable of weighing to an accuracy of 0,01 g.

6 SAMPLING

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 test shall be carried out on Pinus sylvestris (Linnaeus) European redwood, Scots pine.

NOTE : Additional tests may be made with other species such as beech (Fagus sylvatica) (Linnaeus) but, if so, this should be stated in the test report.

7.2 Quality of wood

Use only sound sapwood, straight–grained and without knots and bark.

The wood shall have an average growth of between 2 annual growth rings per 10 mm and 8 annual growth rings per 10 mm,(two annual growth rings per 10 mm to six annual rings per 10 mm for beech)

NOTE 1 : It is recommended to use test specimens of similar growth rate within a single test.

Only sapwood with a low resin content shall be used.

The proportion of summer wood in the annual rings shall not exceed 30 % of the whole.

The wood shall have been neither floated nor subjected to chemical or heat treatment. It shall be air dried and shall not have been stored for more than five years.

NOTE 2 : Gentle artificial drying at below 60 °C may be used.

7.3 Provision of test specimens

Select the test specimens (which are subsequently cut into two sub-specimens) for each test from three trees. For each test the test specimens from each tree shall all be selected from within a 1 m length of the tree measured in the direction of the grain.

Select the specimens as shown in Figure 1a.

Cut the test specimens from scantlings or beams, so that, on the transverse cross section, the annual growth rings form an angle of 45° ± 10° with the longitudinal faces (see Figure 1b).

The test specimens shall be planed.

7.4 Dimensions of test specimens

The dimensions of each test specimen, measured at 12 % (m/m) moisture content shall be :

(100 ± 0,5) mm x (50 ± 0,5) mm x (30 ± 0,5) mm

NOTE : Moisture meters of the two pronged electrical conductivity type are suitable for assessing moisture content.

Mark each specimen so that it can be identified throughout the test.

7.5 Number of test specimens

Use, for a single preservative,applied at a single concentration, by a single method of treatment :

- 3 treated test specimens (one per tree)
- 3 untreated control specimens (one per tree).

If the examination involves several preservatives, concentrations or methods of treatment at the same time, three untreated control specimens shall be used for two sets of three treated test specimens. (see figure 1a)

8 PROCEDURE

8.1 Preparation of the test specimens

8.1.1 Sealing of the transverse faces

Seal the transverse cross sections :

8.1.1.1 For tests with solutions in which water is the continuous phase, apply three coats of the paraffin wax (5.2.3) at about 90°C so that the first coat adheres closely to the wood and the successive coatings bond to one another.

8.1.1.2 For tests with preservative solutions in which the continuous phase is an organic solvent, that dissolves paraffin wax, use the gelatin (5.2.2) : apply the first coat with an aqueous solution of 200 g/l at 40°C, then after a minimum of 8 h of drying, apply two further coats of an aqueous solution of 300 g/l at 50 °C.

8.1.2 Treatment of test specimens

8.1.2.1 Preparation of treatment solution

8.1.2.1.1 Solide preservatives - Water soluble preservatives :

Dissolve the preservative in the water (5.2.1) to the required concentrations

8.1.2.1.2 Liquid preservatives

If appropriate, use the preservative without further preparation other than any necessary stirring. If it is a concentrate, dilute it with the diluent to the required working concentration, using the procedure specified by the supplier.

All treatment solutions shall be freshly prepared.

8.1.2.2 Application of the treatment solution

Determine the actual area of each unsealed surface to be treated taking into account any possible encroachment of the sealing compound.

NOTE 1 : The area to be treated is theoretically 160 cm^2.

Determine the volumes or masses of the treatment solution (8.1.2.1) to be applied to each unsealed face to give the application rate specified by the supplier.

NOTE 2 : The quantity of treatment solution to be applied should be realistic in view of the field of application and the supplier's instructions. Normally the quantity should not exceed 250 g/m^2.

In the laboratory work area (5.3.2), using either the pipette (5.3.8) or a brush apply respectively the calculated volume or mass of the treatment solution (8.1.2.1) to each of the unsealed faces as uniformly as possible and measured to the nearest 0,01 ml or 0,01 g. When applying by pipette (5.3.8) use pen-like zig-zag movements across each surface. Apply the treatment solution to each face whilst keeping that face in a horizontal and upward facing position. Allow any surface liquid to be absorbed into each face before treating the next face.

NOTE 3 : If the required quantity cannot be applied in one application the treatment solution may be applied in successive applications at appropriately close intervals so as to avoid solidification of any substances hindering the penetration of the subsequent applications.

If brush application is used, weigh the specimens before and immediately after each brush application to determine the mass applied.

From the quantity of treatment solution applied to each face of each treated test specimen, determine and record the application rate in grams per square metre (brush application) or millilitres per square metre(pipette application) of the treated test specimens.

8.1.2.3 Conditioning of the test specimens after treatment

After treatment, condition the specimens for four weeks in the laboratory work area (5.3.2). Arrange the specimens on their narrow faces, resting on glass rods, not touching one another. Invert the specimens twice a week.

If the test specimens shall be subjected to an ageing procedure (e.g EN 73) this shall be carried out after this conditioning procedure.

8.2 Exposure of the test specimens to the insects