



SLOVENSKI STANDARD

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Zaščitna sredstva za les - Ugotavljanje učinkovitosti 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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Wood preservatives - Determination of eradicator efficacy in preventing emergence of *Anobium punctatum* (De Geer)

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

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

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prEN 370:2022 (E)

European foreword

This document (prEN 370:2022) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 370:1993.

Significant technical differences between this document and EN 370:1993 are as follows:

- a) Maximum recommended quantity of test solution application was changed from 250 g/m² to 300 ml/m² (8.1.2.2 Note 2);
- b) The count of adults for validity of the test may include those hatching underneath the cover-ups of the end faces (9).

NOTE Test results obtained according to earlier versions of this document and when the tests had started before this version of EN 370 was published are considered as valid.

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Introduction

This document describes a laboratory method of test which gives a basis for assessment of the eradicator 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 has been developed to assess the efficacy of eradicator formulations based on non-penetrating fluids which act only on emerging adult beetles and not at depth on larvae established in the wood.

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 and conditioning chambers as well as special training for personnel.

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prEN 370:2022 (E)

1 Scope

This document 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 can be used in conjunction with an ageing procedure, for example EN 73.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

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

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

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 microscope 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 × 50 mm × 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 can 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 ± 2) °C, and at relative humidity (75 ± 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 ± 2) °C and at relative humidity (75 ± 5) %.

prEN 370:2022 (E)**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 × 30 mm × 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 8: 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.

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.

Additional tests may be done 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).

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.

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 $45^\circ \pm 1^\circ$ with the longitudinal faces (see Figure 1b).

The test specimens shall be planed.

7.4 Dimension of test specimens

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

— $(100 \pm 0,5) \text{ mm} \times (50 \pm 0,5) \text{ mm} \times (30 \pm 0,5) \text{ mm}$.

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 $xx^\circ\text{C}$ 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 .