

Wood preservatives — Determination of eradicator action against larvae of *Anobium punctatum* (De Geer) (laboratory method)

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National foreword

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The UK participation in its preparation was entrusted by Technical Committee B/515, Wood preservation, to Subcommittee B/515/1, Preservative preconditioning and biological testing, which has the responsibility to:

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- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
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Foreword

This document (EN 48:2005) has been prepared by Technical Committee CEN/TC 38 “Durability of wood and wood-based products”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This document supersedes EN 48:1988.

Significant technical differences between this document and EN 48:1988 are as follows:

- a) introduction of a new harmonised specification for the test specimens used in the diverse biological tests;
- b) acknowledgement of the terms given in EN 1001-1;
- c) introduction of an informative Annex to take account of consideration for minimisation of environmental and health hazards caused by the use of this biological test.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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 United Kingdom.

Introduction

This document describes a laboratory method of testing which gives a basis for the assessment of the eradicator action of a wood preservative against *Anobium punctatum*. It allows the determination of the lethal effect of a surface application of the preservative on a population of larvae already established in the test specimens.

The method simulates conditions in practice where a length of wood such as an affected stair tread is treated, which is still free from exit holes and in which certain of the faces are inaccessible, thus constituting severe test conditions.

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. (see also Annex E for environmental, health and safety precautions).

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1 Scope

This document specifies a method for the determination of the eradicator action of a wood preservative against the larvae of *Anobium punctatum* (De Geer).

This method is applicable to:

- 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.

2 Normative references

The following referenced document is indispensable for the application 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.

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

3 Terms and definitions

For the purposes of this document, 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 (person or company providing the sample of wood preservative to be tested)

4 Principle

Insertion of larvae of *Anobium punctatum* into one or more sets of test specimens of a susceptible wood species.

After establishing the larvae, treatment of these test specimens by brushing or spreading of the preservative.

After the time necessary for the preservative to take effect, estimation of the mortality of the larvae compared with that in untreated control test specimens.

5 Test material

5.1 Biological material

5.1.1 General

Anobium punctatum (De Geer) larvae.

5.1.2 Source of larvae

Obtain the larvae from cultures reared as described in Annex D.

Cut up this wood and extract the larvae in an area separate from the test environments (5.3.1 to 5.3.3) so as to avoid the risk of introducing mites.

Prepare the storage blocks from Scots pine sapwood of dimensions (50 x 25 x 15) mm, each with 10 evenly spaced holes (see 8.1) drilled into one of the wide longitudinal faces with the drill (5.3.4).

Before inserting the larvae into the storage blocks, keep them overnight in small glass receptacles.

Then sort the larvae into small, medium and large sizes.

Do not use the large larvae, with a mass greater than 5 mg, for this test¹⁾.

The larvae shall be distributed as evenly as possible according to their mass. For example, for a single test the 216 larvae shall be distributed in 18 groups each of 12 larvae; the mean mass of the larvae in each group shall be approximately 3,5 mg²⁾.

Examine all the other larvae under a binocular microscope and destroy those which are damaged or infested with mites, keeping only those that are in perfect condition.

Insert the small and medium larvae into separate sets of storage blocks, placing each larva head first into a drilled hole.

Keep these filled storage blocks, holes uppermost, in glass containers covered with filter paper fixed with adhesive. Keep the larvae in the storage blocks in the culturing chamber (5.3.1) for not less than 2 months before using them in a test.

5.1.3 Provision of larvae

Carefully split the storage blocks, extract the larvae and examine them under a binocular microscope. Destroy any larvae that show injury or mite infestation, or that do not respond by movement when touched. It is particularly important to avoid including mite-infested larvae (see Annex C).

Keep those larvae that are between 2 mg and 5 mg¹⁾ in mass and in perfect condition overnight, separate from another, in clean receptacles in the culturing chamber (5.3.1).

Then re-examine them, and again reject any which do not show normal movements.

1) Experienced operators can judge the sizes well enough by eye.

2) The mass may be judged by eye by comparison with larvae of known mass.

5.1.4 Choice of larvae

The larvae used in the test shall be between 2 mg and 5 mg in mass, and the 12 larvae placed in each test specimen shall have a mean mass of approximately 3,5 mg²⁾.

The numbers of larvae required are indicated in Table 1.

Table 1 — Number of larvae and test specimens

Type of test specimen	Number of preservative concentrations or methods of treatment	Number of test specimens	Number of larvae
<i>Treated test specimen</i>			
Softwood	1	6	72
	2	12	144
	3	18	216
Hardwood	1	6	72
	2	12	144
	3	18	216
<i>Untreated control test specimen</i>			
Softwood	1	3	36
	2	3	36
	3	6	72
Hardwood	1	3	36
	2	3	36
	3	6	72
Total for one preservative with one concentration and method of treatment			216
Total for two preservatives with one concentration and method of treatment			360
Total for three preservatives with one concentration and method of treatment			576

5.2 Products and reagents

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

NOTE Paraffin wax with a setting range from 52 °C to 54 °C has been found to be suitable.

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

5.2.3 Water, complying with grade 3 of EN ISO 3696.

5.3 Apparatus

5.3.1 Culturing chamber, with air circulation, controlled at $(21 \pm 2) ^\circ\text{C}$, and at relative humidity $(80 \pm 5) \%$.

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.