SLOVENSKI STANDARD
SIST EN 49-1:2016

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Nadomešča:
SIST EN 49-1:2005

Biocidni proizvodi za zaščito lesa - Ugotavljanje učinkovitosti preventivne zaščite proti navadnemu trdoglavcu Anobium punctatum (De Geer) glede na število položenih jajčec in preživelih ličink - 1. del: Površinsko nanašanje (laboratorijska metoda)

Wood preservatives - Determination of the protective effectiveness against Anobium punctatum (De Geer) by egg-laying and larval survival - Part 1: Application by surface treatment (Laboratory method)

Holzschutzmittel - Bestimmung der vorbeugenden Wirkung gegenüber Anobium punctatum (De Geer) durch Beobachten der Eiablage und des Überlebens von Larven - Teil 1: Oberflächenverfahren (Laboratoriumsverfahren)

Produits de préservation du bois - Détermination de l'efficacité protectrice vis-à-vis d'Anobium punctatum (De Geer) par l'observation de la ponte et du taux de survie des larves - Partie 1: Application par traitement de surface (Méthode de laboratoire)

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71.100.50	Kemikalije za zaščito lesa	Wood-protecting chemicals

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English Version

Wood preservatives - Determination of the protective effectiveness against Anobium punctatum (De Geer) by egg-laying and larval survival - Part 1: Application by surface treatment (Laboratory method)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Contents

Page

European foreword

This document (EN 49-1:2016) 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of an identical text or by endorsement, at the latest by December 2016, and conflicting national standards shall be withdrawn at the latest by December 2016.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 49-1:2005.

Significant technical differences between this document and EN 49-1:2005 are as follows:

a) generalization of material for preparing the egg-laying zones;

b) introduction of new harmonized specifications for wood quality.

This document consists of two parts, Part 1 is required to enable effectiveness assessments of wood preservatives that are intended to be applied by surface treatment and Part 2 those that are intended to be applied by impregnation.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document describes a laboratory method of testing which gives a basis for assessment of the effectiveness of a wood preservative, when applied as a surface treatment, against *Anobium punctatum.* It allows the determination of the concentration at which the product prevents the development of infestation from egg laying. It can also be used with formulations ready for use.

The method simulates conditions that can occur in practice on timber which has been treated some time previously with wood preservative applied by dip, brush or spray and on which eggs of *Anobium punctatum* are laid.

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 D for environmental, health and safety precautions).

1 Scope

This European Standard specifies a method for the determination of the protective effectiveness or the toxic values 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:

— water-insoluble chemicals that are being studied as active insecticides;

— organic formulations, as supplied or as prepared in the laboratory by dilution of concentrates;

— organic water-dispersible formulations as supplied or as prepared in the laboratory by dilution of concentrates;

— water-soluble materials, for example salts.

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 835, *Laboratory glassware — Graduated pipettes (ISO 835)*

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

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

[SOURCE: EN 1001-2:2005, 4.71]

3.2
supplier
sponsor of the test (person or company providing the sample of wood preservative to be tested)

Note 1 to entry: Adapted from EN 1001–2:2005, 4.83.

4 Principle

Depending on the test being carried out either:

— on a set of test specimens of a susceptible wood species that is surface treated with a solution of the preservative, or

— if toxic values are to be determined, on several sets of test specimens of a susceptible wood species that are surface treated with a series of solutions in which the concentration of preservative is ranged in a given progression.

The treated test specimens are exposed to gravid females of *Anobium punctatum.* The number of eggs laid, the number of eggs hatched and the numbers of surviving larvae are observed and compared with those in untreated control test specimens. If the preservative has been prepared in the laboratory by dilution of a concentrate or by dissolution of a solid, the resulting attack is also compared to that in solvent or diluent treated control test specimens.

5 Test materials

5.1 Biological material

***Anobium punctatum* (De Geer)**

Adult males and females in good condition.

Adults to be used in the test shall be collected at daily intervals from naturally infested wood or laboratory culture (see Annex C).

Use recently emerged adults which have been recently collected; kept overnight in quarantine (see C.6); and then checked to ensure that they are undamaged, active and free from any infestation by mites. Determine the sex (see Annex B) of the collected and checked adults and place the males and females in separate containers.

NOTE The proportion of males and females varies during the emergence period.

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 point of 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 Paste, for securing filter paper. The paste shall be starch-free, non-toxic to *Anobium punctatum* and insoluble in the product under test.

NOTE Sodium carboxy methyl cellulose, food grade, has been found to be suitable.

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

5.2.5 Solvent or diluent, a volatile liquid that will dissolve or dilute the preservative but does not leave a residue in the wood at the end of the post-treatment conditioning period that has a toxic effect on the insects.

CAUTION — Do not use benzene or other solvents which pose a health risk.

5.2.6 Filter paper, ordinary quality, medium-fast grade.

5.2.7 Fine cloth of a suitable material with a mesh aperture of 0,3 mm to 0,6 mm for the preparation of the egg-laying zones.

NOTE Cotton, linen and polyamide-gauze have been proven as suitable.

5.3 Apparatus

5.3.1 Culturing chamber, with air circulation, controlled at (21 ± 2) °C, and at relative humidity (80 ± 5) %.

5.3.2 Conditioning chamber, well ventilated, controlled at (20 ± 2) °C and at relative humidity (65 ± 5) %.

The conditioning of test specimens may be carried out in the laboratory work area (see 5.3.4) provided that this has the conditions specified for the conditioning chamber (see 5.3.2).

5.3.3 Treatment vessel, of a material that does not react with the preservative under test, for example of glass for organic products and of polyethylene for salts containing fluorine.

5.3.4 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.

5.3.5 Testing chamber, with conditions identical to those of the culturing chamber (see 5.3.1).

5.3.6 Pipette, of type specified in EN ISO 835, Class B: graduated pipette with no waiting time. Capacity 1 ml with an accuracy of ± 0,01 ml.

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 Test containers, suitable for holding the test specimens and of material resistant to the solvents used, and fitted with perforated covers to provide a good exchange of air.

NOTE Jars of approximately 60 mm diameter and 100 mm height have been found to be suitable.

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

5.3.10 X-ray apparatus, (optional) with tungsten target and beryllium window, with voltage and current continuously variable in the ranges:

— voltage: 10 kV to 50 kV;

— current: 0 mA to 15 mA.

5.3.11 Protective gloves

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 reference species is European oak. This shall be either sessile oak (*Quercus petraea* (Mattuschka) Lieblin) or pedunculate oak (*Quercus robur* Linnaeus).

Additional tests may be carried out using other species[1)] but, if so, this should be stated in the test report.

7.2 Wood quality

The wood shall be free from visible cracks, stain, decay, insect damage and other defects. The wood shall not have been water-stored, floated, chemically treated or steamed. The wood shall originate from trees preferably felled in winter. The trees shall be cut immediately after felling and the timber rapidly air-dried or kiln dried at temperatures below 60 °C. The wood shall not be stored for more than five years.

The wood shall be exclusively sapwood[2)] and having between 2 annual rings per 10 mm and 10 annual rings per 10 mm.

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

7.3 Provision of test specimens

Prepare planed strips having a cross-section of (25 ± 0,5) mm x (15 ± 0,5) mm[3)] removing a minimum of 2 mm from any surfaces exposed during drying. The longitudinal faces shall be parallel to the direction of the grain. The annual rings shall be parallel to the broad faces (contact angle of less than 5°). Make transverse cuts, neatly to give sharp edges and a fine-sawn finish to the end-grain surfaces, to give test specimens (50 ± 0,5) mm long.

The specimens shall originate from a minimum of three trees or shall be taken at random from a stock originally of more than 500 test specimens.

7.4 Dimensions of test specimens

The dimensions of each test specimen after reaching equilibrium in the conditioning chamber (5.3.2) shall be (50 ± 0,5) mm x (25 ± 0,5) mm x (15 ± 0,5) mm.

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

7.5 Number of test specimens

Use:

a) five test specimens (see 7.4) for each preservative and each concentration;

b) five untreated control test specimens (see 7.4) for a complete test of any given preservative;

c) five control test specimens (7.4) treated with that solvent or diluent (5.2.4 or 5.2.5) if a solvent or diluent (water included) is used.

When dipping is to be used (8.1.3.2.1) it is advisable to treat more than the specified number of test specimens so that, after weighing, any test specimens with abnormally high or low retentions can be rejected from the batch.

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1) The growth of young larvae of *Anobium punctatum* is slow in specimens from resinous wood. Results from test specimens in resinous wood should be compared with those obtained from oak specimens.

2) It is not essential in this test for the starch content of the wood to be high.

3) These test specimens may be taken from the trunk of the tree or the large branches.