SLOVENSKI STANDARD
SIST EN 1390:2020

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Nadomešča:
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Zaščitna sredstva za les - Ugotavljanje učinkovitosti zatiranja ličink hišnega kozlička Hylotrupes bajulus (Linnaeus) - Laboratorijska metoda

Wood preservatives - Determination of the eradicant action against Hylotrupes bajulus (Linnaeus) larvae - Laboratory method

Holzschutzmittel - Bestimmung der bekämpfenden Wirkung gegenüber Larven von Hylotrupes bajulus (Linnaeus) - Laboratoriumsverfahren

Produits de préservation du bois - Détermination de l'action curative contre les larves d'Hylotrupes bajulus (Linnaeus) - Méthode de laboratoire

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English Version

Wood preservatives - Determination of the eradicant action against Hylotrupes bajulus (Linnaeus) larvae - Laboratory method

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 1390:2020) 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of an identical text or by endorsement, at the latest by October 2020, and conflicting national standards shall be withdrawn at the latest by October 2020.

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

This document supersedes EN 1390:2006.

Significant technical differences between this document and EN 1390:2006 are as follows:

a) introduction of a definition for moribund larvae;

b) because of the changes in a) verification of the conditions of recovered larvae becomes needless and was deleted;

c) alternative coatings for sealing surfaces not to be treated may be used if they have no harmful effect to the test insects and if their performance as sealants has been documented;

d) the following note was added to 8.8 "Examination of the test specimens": It is useful to record the location (distance from the nearest treated surface) of all larvae recovered because it provides valuable information on penetration characteristic of the preservative.

NOTE Test results obtained according to earlier versions of this document and when the tests had started before this version of EN 1390 was published are considered as valid.

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

Introduction

This document describes a laboratory method of testing which gives a basis for the assessment of the eradicant action of fast and slow acting wood preservatives and of deferred acting wood preservatives against *Hylotrupes bajulus*. It allows determination of the lethal effect of a surface application of a preservative product on a population of larvae previously introduced into the test specimens.

The method simulates conditions in practice where a beam is treated, which is only slightly attacked and where cutting away has not exposed insect tunnels. This represents a severe test of the product.

In some particular instances, for example where the preservative is to be used on timbers of large dimensions, laminated beams, blockboard, plywood and other panel products, other test methods can be used to obtain complementary information on the effectiveness of the eradicant action of a product. Such methods lie outside the scope of this document.

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 that 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 document specifies a method for the determination of the eradicant action of a surface application of a fast and a slow acting wood preservative product or a deferred acting wood preservative product on solid wood infested with larvae of *Hylotrupes bajulus* (Linnaeus).

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 products, for example, salts.

NOTE An ageing procedure cannot be combined with this method.

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.

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

ISO 835:2007, *Laboratory glassware — Graduated pipettes*

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 http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp/ui

3.1
moribund larva
larva that is in the state of inactivity or obsolescence due to exposure to the test product but which are considered alive after a specific test period

3.2
representative sample
sample with physical and/or chemical characteristics identical to the volumetric average characteristics of the total volume being sampled

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

3.3
supplier
sponsor of the test (person or company providing the sample of wood preservative to be tested)

[SOURCE: Adapted from EN 1001-2:2005, 4.83]

4 Principle

Insertion of larvae of *Hylotrupes bajulus* into test specimens. After a period of time to allow the larvae to establish themselves in the test specimens, treatment of these test specimens by brushing or pipetting of the test preservative product.

After the time defined by the speed of action of the wood preservative, assessment of the mortality of the larvae compared with that of larvae in untreated control test specimens.

5 Test materials

5.1 Biological material

5.1.1 *Hylotrupes bajulus* (Linnaeus) larvae

5.1.2 Source of larvae

The larvae shall preferably be obtained from cultures reared according to the method described in Annex B.

Larvae can also be taken from naturally infested wood, in which case they should be transferred into sapwood of pine and stored for at least four weeks under the rearing conditions specified in Annex B.

5.1.3 Provision of larvae

Carefully split or crumble infested blocks to extract larvae.

Keep the larvae separate from one another in glass receptacles for two or three days in the culturing chamber (5.3.1) to check they are healthy.

5.1.4 Choice of larvae

Use only healthy larvae in the test.

NOTE A healthy larva can be recognized by ivory-white colour, its firm consistency and rounded appearance, and by the absence of wounds or bites, which show up as dark marks. Healthy larvae react to the touch by vigorous movement and attempts to bite.

Reject any larvae, which are shrunken or aged which have recently moulted, or which are in a pre-pupal stage.

Weigh each larva and place it in a glass receptacle marking the receptacle with the weight of the larva. Make up two groups with the weight ranges:

— 51 mg to 100 mg, and

— 101 mg to 150 mg.

Larvae with a mass larger than 150 mg in mass are unsuitable as they can pupate during the course of the test.

5.2 Products and reagents

5.2.1 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 suitable.

5.2.2 Gelatine, for sealing the relevant surfaces of 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.

5.2.4 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.

5.3 Apparatus

5.3.1 Culturing chamber, with air circulation, controlled at (28 ± 2) °C and at a relative humidity of (70 ± 5) %.

5.3.2 Ventilated fume cupboard, in which the specimens are treated with an input air temperature of (20 ± 5) °C.

The maximum air speed, measured at the input opening with the sash in the approximate operation position should be approx. 0,5 m/s.

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 and controlled at (21 ± 2) °C and at a relative humidity of (75 ± 5) %.

5.3.4 Drill and twist drills, with 3 mm, 4 mm and 5 mm diameters.

5.3.5 Pipettes as specified in ISO 835:2007, Class B - graduated pipette with no waiting time, with a capacity 5 ml and an accuracy of ±0,05 ml.

5.3.6 Brush of appropriate size, to be used when the test substance is applied by brushing (8.5.2).

5.3.7 Safety equipment and protective clothing, appropriate for the test product and the test, to ensure the safety of the operator (see also Annex C).

5.3.8 Ordinary laboratory equipment, including a balance capable of weighing to an accuracy of ±1 mg.

5.3.9 Rectangular cover with sides, constructed either of glass, plastics, plywood and of a height not less than 200 mm and with an open face of sufficient size to cover all the treated specimens from a single test.

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 represent 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 Scots pine (*Pinus sylvestris* Linnaeus).

NOTE In southern European countries the species of pine most frequently infested by *Hylotrupes bajulus* can be used as an alternative, provided that the suitability of the species for use in the tests specified in this standard has been demonstrated in all aspects (development of larvae, resistance to impregnation, etc.).

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

The wood should preferably be felled in winter.

Wood that has been kiln dried at temperatures below 60 °C may be used.

The wood should not have been stored for more than five years.

The wood shall be exclusively sapwood containing little resin and having between two and a half annual rings per 10 mm and eight annual rings per 10 mm. The proportion of latewood in the annual rings shall not exceed 30 % of the whole.

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

7.3 Provision of test specimens

Prepare planed strips having a cross-section of (100 ± 2) mm × (25 ± 2) mm removing a minimum of 2 mm from any surface 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 35 °), (see Figure 1). Make transverse cuts neatly to give sharp edges and a fine-sawn finish to the end-grain surfaces, to make test specimens (150 ± 2) mm long.

The test specimens shall originate from a minimum of three trees or shall be taken at random from a stock originally of more than 100 test specimens.