SLOVENSKI STANDARD
SIST EN 46-1:2016

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Nadomešča:
SIST EN 46-1:2010

Biocidni proizvodi za zaščito lesa - Ugotavljanje preventivnega delovanja proti hišnemu kozličku Hylotrupes bajulus (Linnaeus) - 1. del: Ugotavljanje učinkovitosti proti ličinkam (laboratorijska metoda)

Wood preservatives - Determination of the preventive action against recently hatched larvae of Hylotrupes bajulus (Linnaeus) - Part 1: Application by surface treatment (laboratory method)

Holzschutzmittel - Bestimmung der vorbeugenden Wirkung gegenüber frisch geschlüpften Larven von Hylotrupes bajulus (Linnaeus) - Teil 1: Anwendung durch Oberflächenverfahren (Laboratoriumsverfahren)

Produits de préservation des bois - Détermination de l'action préventice contre les larves récemment écloses d'Hylotrupes bajulus (Linnaeus) - Partie 1 : Application par traitement de surfave (Méthode de laboratoire)

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71.100.50	Kemikalije za zaščito lesa	Wood-protecting chemicals

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EUROPEAN STANDARD
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English Version

Wood preservatives - Determination of the preventive action against recently hatched larvae of Hylotrupes bajulus (Linnaeus) - Part 1: Application by surface treatment (laboratory method)

Produits de préservation du bois - Détermination de l'action préventive contre les larves récemment écloses d'Hylotrupes bajulus (Linnaeus) - Partie 1: Application par traitement de surface (Méthode de laboratoire)

Holzschutzmittel - Bestimmung der vorbeugenden Wirkung gegenüber frisch geschlüpften Larven von Hylotrupes bajulus (Linnaeus) - Teil 1: Anwendung durch Oberflächenverfahren (Laboratoriumsverfahren)

This European Standard was approved by CEN on 5 January 2017.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 46-1:2016) 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 46-1:2009.

Significant technical differences between this document and EN 46-1:2009 are as follows:

a) introduction of new harmonized specifications for wood quality;

b) option to omit control test specimens treated with the solvent or diluents only when the solvent or diluents is water of drinking quality;

c) determination of validity of the test by using an X-ray apparatus added in 8.4.2.

The standard EN 46 is composed of two parts:

— EN 46-1, *Wood preservatives — Determination of the preventive action against recently hatched larvae of Hylotrupes bajulus (Linnaeus) — Part 1: Application by surface treatment (laboratory method)*

— EN 46-2, *Wood preservatives — Determination of the preventive action against recently hatched larvae of Hylotrupes bajulus (Linnaeus) — Part 2: Ovicidal effect (laboratory method)*

EN 46 consists of two parts to enable preventive action of wood preservatives, against recently hatched larvae of *Hylotrupes bajulus*, which are intended to be applied by surface treatment; Part 1 is required to determine the larvicidial effect of preservatives and Part 2 is required to determine the ovicidal action of the preservatives after egg-laying of young females.

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 European Standard describes a laboratory method of testing which gives a basis for the assessment of the preventive action of a wood preservative, when applied as a surface treatment, against recently hatched larvae of *Hylotrupes bajulus,* whereas the method for determining the toxic values against *Hylotrupes bajulus* (EN 47) provides a means of checking whether a preservative prevents attack by these larvae and prevents their survival within totally impregnated wood.

This method makes it possible to determine whether recently hatched larvae are capable of boring through the treated surface of a susceptible wood species and of surviving in the untreated part of the test specimen. For this purpose, the procedure seeks to reproduce normal egg-laying conditions existing in cracks in wood, which provide the principal egg-laying sites. It takes account of the fact that, if larvae pass through the treated surface, they will then tunnel in the direction of the least protected regions of the wood.

This laboratory method provides one criterion by which the value of a preservative can be assessed. In making this assessment, the methods by which the preservative may be applied should be taken into account. This test is of particular interest when applied to test specimens which have been subjected to an ageing procedure. It is further recommended that results from this test should be supplemented by those from other appropriate tests and, above all, by 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 preventive action of a wood preservative against recently hatched larvae of *Hylotrupes bajulus* (Linnaeus) when the preservative is applied as a surface treatment to wood.

This method is applicable to:

— water-insoluble chemicals which 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; and

— water-soluble materials, for example salts.

The method is applicable whether or not the test specimens have been subjected to appropriate ageing procedures.

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 73, *Wood preservatives — Accelerated ageing of treated wood prior to biological testing — Evaporative ageing procedure*

EN 84, *Wood preservatives — Accelerated ageing of treated wood prior to biological testing — Leaching procedure*

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 and/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 recently hatched larvae of *Hylotrupes bajulus.* The resulting attack is 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

5.1.1 ***Hylotrupes bajulus*** **(Linnaeus)** larvae, within three days of hatching.

5.1.2 **Source of larvae**. Obtain the larvae from cultures reared, e.g. as described in Annex B.

5.1.3 **Provision of larvae**. Collect larvae from eggs laid by different females.

5.1.4 **Choice of larvae**. Use a mixed batch of these larvae for the test. Use ten larvae per treated test specimen or control test specimen.

5.2 Products and reagents

5.2.1 **Paraffin wax**, for fixing the glass plate and for sealing the end faces of test specimens to be treated with solutions in all cases 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 end 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.

5.2.4 **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, and controlled at (28 ± 2) °C and at a relative humidity of (70 ± 5) %.

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

The conditioning of test specimens may be carried out in the laboratory work area (see 5.3.3) provided that this has the conditions specified for the conditioning chamber (see 5.3.2).

5.3.3 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.

5.3.4 Testing chamber, ventilated and air conditioned, controlled at (22 ± 2) °C and at a relative humidity of (70 ± 5) %.

5.3.5 Treatment vessels 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.

5.3.6 Weights, to provide ballast for the test specimens.

The weights shall not react with any materials with which they come into contact during the test.

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 Glass plates, (48 ± 1) mm long and (25 ± 1) mm wide, intended to provide a lateral slit on the test specimens.

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

5.3.10 Protective gloves

5.3.11 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.

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 Scots pine (*Pinus sylvestris* Linnaeus)[1)].

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

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

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 have been stored for more than five years.

The wood shall be exclusively sapwood containing little resin and having between 2,5 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 similar growth rate within a single test.

7.3 Provision of test specimens[2)]

Prepare planed strips having a cross-section of (25 ± 0,5) mm × (15 ± 0,5) mm removing a minimum of 2 mm from any faces exposed during drying. The longitudinal faces shall be parallel to the direction of the grain. The annual rings shall have a contact angle of 45° ± 15° to the broad faces. 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 test 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 × (25 ± 0,5) mm × (15 ± 0,5) mm.

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

7.5 Number of test specimens

a) Six treated test specimens (no more than two originating from the same tree unless taken at random from a stock of more than 500) for each preservative, each concentration and each duration of treatment;

b) Three untreated control test specimens (each originating from a different tree unless taken at random from a stock of more than 500) for a complete test of any given preservative;

c) Three control test specimens treated with the solvent or diluent (5.2.3 or 5.2.4) (each originating from a different tree unless taken at random from a stock of more than 500) if a solvent or diluent (including water) is used.

Control test specimens under c) may be omitted if the solvent or diluents is water of drinking quality.

When dipping is to be used (8.1.3.3) 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.

NOTE To gain further information on a formulation the manufacturer may find it useful to test a version of the preservative where the active ingredient(s) has been removed.

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2) For special tests, test specimens may be obtained according to a given series. As a result, it may be preferable to take test specimens from pretreated strips. Where pretreated strips are used details should be included in the test report.