SLOVENSKI STANDARD
SIST EN 22:1996

01-marec-1996

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

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

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

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

Ta slovenski standard je istoveten z: **EN 22:1974**

ICS:

71.100.50	Kemikalije za zaščito lesa	Wood-protecting chemicals

SIST EN 22:1996 **en**

EUROPEAN STANDARD
NORME EUROPEENNE
EUROPÄISCHE NORM

EN 22
First edition
September 1974

UDC : 674.048.4:620.1
Descriptors : Wood preservatives, Insecticides, Pesticides, Tests

English version

WOOD PRESERVATIVES
DETERMINATION OF ERADICANT ACTION AGAINST HYLOTRUPES BAJULUS (LINNAEUS) LARVAE
(Laboratory method)

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

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

This standard was accepted by CEN as a European Standard on 20 September 1974, whereby the member organizations which have agreed to adopt it are committed to accord to it, without any change, the status of a national standard, and - within six months of their declared agreement in CEN to adopt it - either to publish or endorse it as a national standard, or to accept versions published by their sister organizations in CEN for use thereof.

Up-to-date lists of the national standards organizations which have adopted this European Standard, and the relevant bibliographical references, may be obtained on application to the CEN Central Secretariat, or to the sales offices of any CEN member.

This European Standard exists in three versions (English, French and German) recognized by CEN as equivalent. National versions in other languages rank as translations, the authenticity of which should, in case of doubt, be checked against one of the recognized versions.

The members of CEN are the national standards organizations of Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

EUROPEAN COMMITTEE FOR STANDARDIZATION
Comité Européen de Normalisation
Europäisches Komitee für Normung

CENTRAL SECRETARIAT : Tour Europe, CEDEX 7, 92080 PARIS LA DEFENSE, France

BRIEF HISTORY

This European Standard was drawn up by working group CEN/WG 38 "Methods of test for wood preservatives", the secretariat of which is held by AFNOR.

Work on this method started in 1964, at the request of its French member-body, but a German counter-proposal made it necessary to conduct comparative tests, following which it was seen to be a large majority preference to retain one method only, based on the principles of the method proposed by the German member body. This method was accepted by CEN/WG 38 in 1971.

The present European Standard was adopted by CEN on 20 September 1974, on the strength of its acceptance by the following member countries:

Belgium, Denmark, Finland, France, Germany, Ireland, Netherlands, Sweden, Switzerland, and United Kingdom.

CONTENTS

. Introduction

This European Standard describes a laboratory method of test which gives a basis for the assessment of the eradicant action of a wood preservative against Hylotrupes bajulus. It allows the determination of the lethal effect of a surface application of the preservative on a population of large larvae previously established in the test specimens.

The method simulates conditions in practice where a beam is treated which is only slightly attacked with few galleries which have not been exposed by cutting away. This represents a severe test of the product.

In particular instances, for example timber of large dimensions, laminated beams, blockboard, plywood, etc., other test methods can be used to obtain complementary information on the effectiveness of the eradicant action of a product. Such methods may be elaborated and used in any country but lie outside the scope of this European Standard.-

During the preparation of this standard, two different techniques were studied, insertion of larvae in the wide face and in the end grain. Both methods were considered satisfactory but insertion in the end grain was preferred by a majority of the member countries of the European Committee for Standardization (CEN).

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.

1. Scope

This European Standard specifies a method for the determination of the eradicant action of a wood preservative against larvae of Hylotrupes bajulus (Linnaeus).

2. Field of application

This method is applicable to:

- either organic water-insoluble formulations, as supplied or as prepared in the laboratory by dilution of concentrates, or
- water-soluble materials, for example salts.

An ageing procedure cannot be used in conjunction with this method.

3. Principle

Insertion of larvae of Hylotrupes bajulus into one or more sets of test specimens of a susceptible wood species.

After establishment of the larvae, treatment of these specimens by brushing or spreading 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 specimens.

4. Test materials

4.1 Biological material. Larvae of Hylotrupes bajulus (Linnaeus).

4.1.1 Source of larvae. Larvae should preferably be obtained from cultures reared as described in Annex A.

Otherwise they can be taken from naturally infested wood, in which case transfer them into sapwood of pine and store for at least 4 weeks under the rearing conditions specified in Annex A before use. Do not use these larvae in the test if they have not fed normally during this storage period.

4.1.2 Provision of larvae. Collect about three times as many larvae as will be used in the test. Carefully extract the larvae by splitting the blocks and then keep them [illegible] for 2 or 3 days under the conditions of the rearing chamber

4.1.3 Choice of larvae. Use only completely healthy larvae in the test. A healthy larva can be recognised by its ivory-white colour, its firm consistency and rounded appearance and by the absence of wounds or bites which show up as dark marks on the body. Healthy larvae react to the touch by vigorous movement and attempts to bite.

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

Weigh each larvae and place separately in small dishes. Make up two groups of 30 larvae each, one of larvae in the range 50 mg to 100 mg and the other in the range 101 mg to 150 mg. Arrange these dishes in increasing order of mass, and number them 1 to 60.

Do not use larvae weighing more than 150 mg as they may pupate and thereby interfere with the test.

4.2 Products and reagents

4.2.1 Pure paraffin wax, setting point 52°C to 53°C, for sealing the nontreated surfaces of specimens to be treated with water-based solutions.

4.2.2 Pure gelatin, for coating the non-treated surfaces of specimens to be treated with water-insoluble formulations.

4.2.3 Water, distilled or de-ionized.

4.3 Apparatus

4.3.1 Culturing chamber, (incubator or room) with air circulation, and controlled at between 27°C and 29°C with a tolerance of ± 1°C and at 85 ± 5% r.h. The chamber, or a section of it, shall allow a relative humidity in the range 70% to 75% to be maintained with a tolerance of ± 5%.

4.3.2 Laboratory work area, well ventilated, where treatment of the test specimens is carried out*.

4.3.3 Testing chamber, (incubator or room), ventilated, and controlled at between 21°C and 23°C, with a tolerance of ± 1°C, and at between 70% and 75% r.h., with a tolerance of ± 5% r.h.

4.3.4 Drill, with twist drills of approximate diameters 3 mm, 3.5 mm, 4 mm and 4.5 mm.

4.3.5 Protective gloves

4.3.6 Ordinary laboratory equipment including two analytical balances.

4.3.7 X-ray apparatus, (if desired) 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

---

* Proper safety procedures for handling flammable and toxic materials shall be followed.

5. Sample of the preservative

The sample shall be representative of the product under test.

6. Test specimens

6.1 Species of wood. The reference species is Scots pine, Pinus sylvestris Linnaeus†.

Additional tests may be made using other species but, if so, this shall be stated in the test report.

6.2 Quality of wood. Use only sound wood, straight-grained, having few knots and with a low resin content.

Cut the specimens from wood of average growth rate (2.5 to 8 annual rings/cm.)

The proportion of summer wood in the annual rings shall not exceed about 30% of the whole.

The wood shall neither have been floated nor subjected to any chemical or heat treatment*. It shall be air-dried and shall not have been stored for more than 5 years.

6.3 Provision of test specimens. Prepare the specimens from scantlings with a wide sapwood and a small central heartwood core sawn down the middle as shown, for example, in Figure 5, Annex D. The test specimens shall be rough-sawn and the heartwood shall lie on one of the wide faces. The thickness of sapwood above the heartwood shall be 50 ± 10 % of the total thickness of the specimen (see figure 1).

On the wide sapwood face, there shall not be more than three knots. These shall be sound and not more than 5 mm in diameter.

Do not take specimens from the base or crown of the tree.

Take the specimens required for one test from three lots, each from a different tree.

6.4 Dimensions of test specimens. The nominal dimensions of each specimen, measured at 12 % moisture content are :

- length: 200 ± 10 mm
- width: 120 mm
- thickness: 60 mm

The total theoretical surface area of the faces exposed to treatment is 480 cm^2 nominal.

Check the size of each specimen to determine the actual area treated. Allow for any possible encroachment of the sealing compound on to the treated faces of the block.

† In Southern European countries, the species of pine 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 the standard has been demonstrated in all aspects (development of larvae, resistance to impregnation, etc.)

* Gentle artificial drying at lower than 60°C is, however, permissible.

6.5 Number of test specimens Use :

(a) for each preservative and for each concentration and for each method of treatment : four treated test specimens (one from each lot, the fourth being taken at random from one of the three lots);

(b) for the whole test of any given preservative : one untreated control specimen (taken at random from one of the three lots).

7. Procedure

7.1 Exposure of the test specimens to the insects. Using the drill (see 4.3.4), prepare six holes in each end-grain surface. The holes shall be about 30 mm deep, parallel to the long axis of the specimen, and their centres shall be 10 mm from the sapwood faces. Drill the holes so that four are spaced equidistantly along the wide sapwood edge and the other two are aligned with the centre of each narrow sapwood edge. (see figure 1).

Obtain the diameter of each hole from the mass of the larva allocated to it, according to the following table.

Mass of larva	: Approximate diameter of drilled hole
mg	: mm
50 to 60	: 3
61 to 90	: 3.5
91 to 130	: 4
131 to 150	: 4.5

Dimensions in millimetres

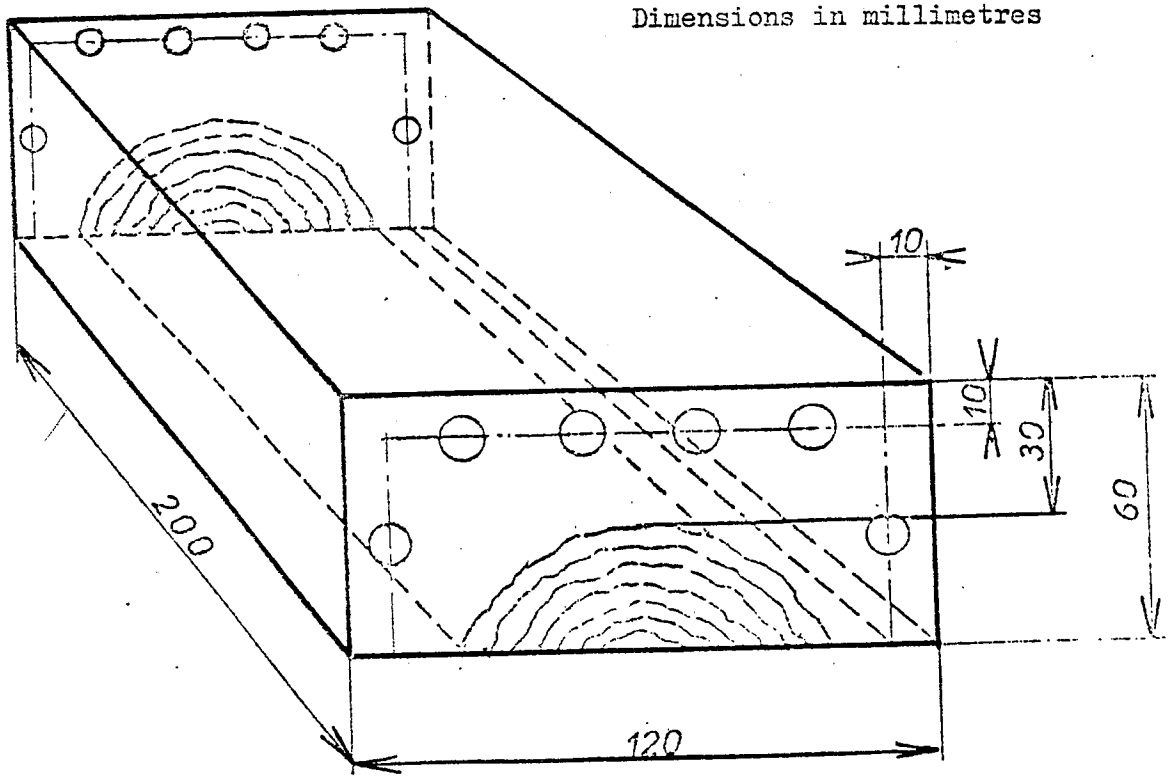

Figure 1 - Example of specimen

Allocate 12 larvae to each of the four test specimens and to the control specimen following the pattern of figure 2. Carefully insert the larvae into their holes, head first. Then close the opening of each hole with a small plug of dried cellulose pulp or cotton wool so that each larva has an air space about equal to half its own length between its body and the plug.

Then store the test specimens, resting on their heartwood faces, in that part of the culturing chamber (see 4.3.1) which is at 70% r.h. to 75% r.h.

After 1 or 2 weeks, check that all the larvae have started boring. If not, replace the failures with other larvae of comparable mass and, in due course, check that these bore normally.

After 3 months the larvae are normally fully established in a natural distribution and the test specimens are then ready for treatment.

If radiographic examination (see 4.3.7) is used, ascertain the position of the larvae in the specimen so that their further tunnelling can be checked in later examinations.

7.2 Preparation of test specimens

7.2.1 Conditioning of specimens prior to treatment. Keep the test specimens in the laboratory work area (see 4.3.2) for 24 h.

7.2.2 Sealing of the non-treated surfaces. Seal the end-grain surfaces and the wide heartwood face as described in 7.2.2.1 and 7.2.2.2.

7.2.2.1 For tests with water-soluble preservatives use three coats of the pure paraffin wax (see 4.2.1) at about 100°C so that the first coating adheres closely to the wood and successive layers bond closely to one another.

7.2.2.2 For tests with organic solvent-based preservatives, which would dissolve paraffin wax, use the pure gelatin (see 4.2.2). Apply the first coat with a 20% aqueous solution at 40°C then, after a short period of drying, apply two further coats of 30% aqueous solution in water at 50 °C.

7.2.3 Treatment of test specimens

7.2.3.1 Preparation of treatment solutions

7.2.3.1.1 Solid water-soluble preservatives. Dissolve the preservative in the distilled or de-ionized water (see 4.2.3) to the predetermined concentration.

7.2.3.1.2 Liquid preservatives. If appropriate, use the preservative without further preparation other than any necessary stirring.

If the preservative is a concentrate, dilute the preservative with the diluent to the required working concentration, as specified by the manufacturer.

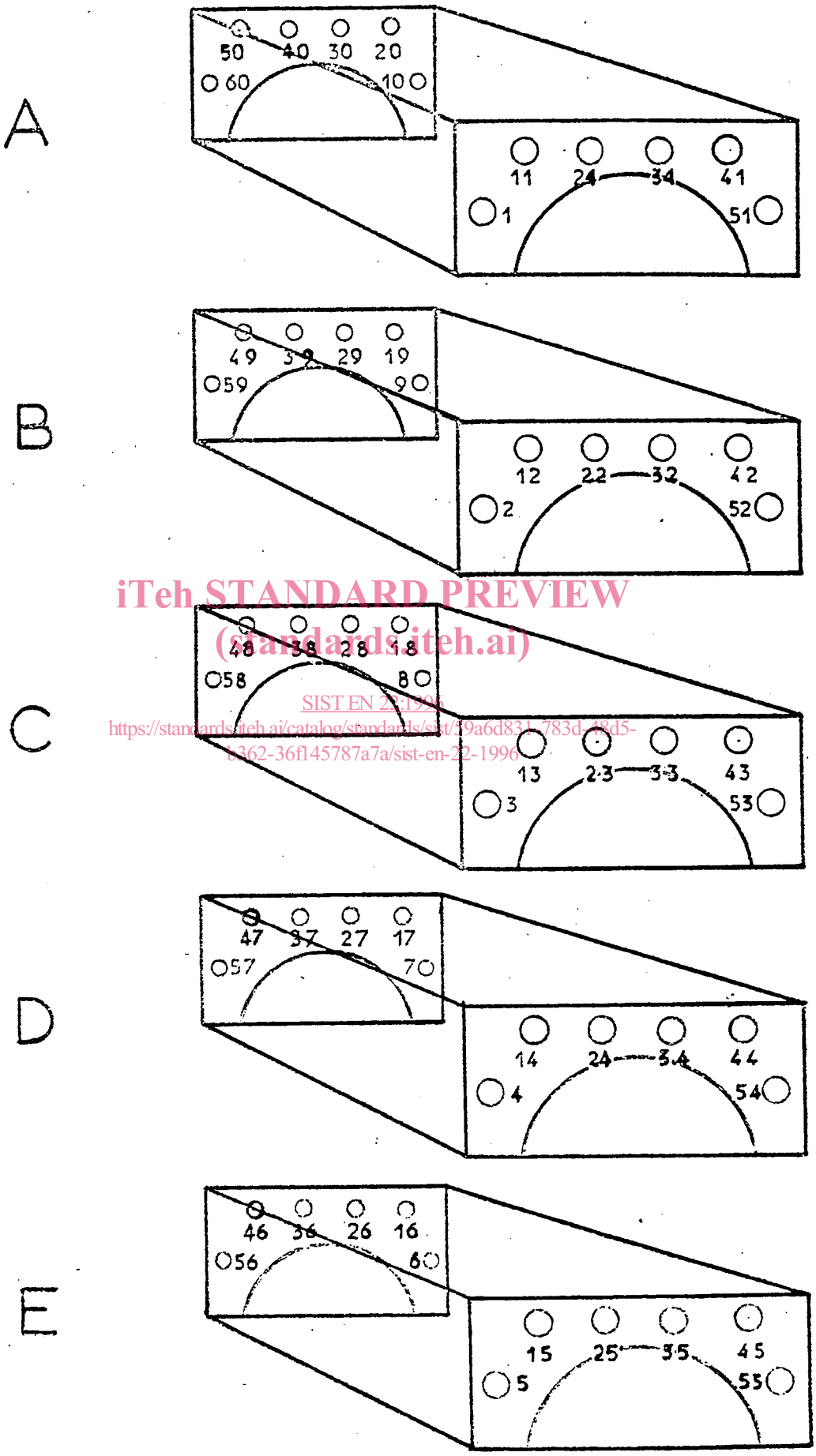

Figure 2 - Allocation of larvae to the test specimens