SLOVENSKI STANDARD
oSIST prEN 20-1:2022

01-december-2022

Zaščitna sredstva za les - Določanje učinkovitosti preventivne zaščite proti rjavemu parketarju Lyctus brunneus (Stephens) - 1. del: Površinsko nanašanje (laboratorijska metoda)

Wood preservatives - Determination of the protective effectiveness against Lyctus Brunneus (Stephens) - Part 1: Application by surface treatment (laboratory method)

Holzschutzmittel - Bestimmung der vorbeugenden Wirkung gegenüber Lyctus Brunneus (Stephens) - Teil 1: Oberflächenbehandlung (Laboratoriumsverfahren)

Produits de préservation du bois - Détermination de l'efficacité protectrice vis-à-vis de Lyctus Brunneus (Stephens) - Partie 1 : Application par traitement de surface (Méthode de laboratoire)

Ta slovenski standard je istoveten z: **prEN 20-1**

ICS:

71.100.50	Kemikalije za zaščito lesa	Wood-protecting chemicals

oSIST prEN 20-1:2022 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 20-1

October 2022

ICS 71.100.50

Will supersede EN 20-1:1992

English Version

Wood preservatives - Determination of the protective effectiveness against Lyctus Brunneus (Stephens) - Part 1: Application by surface treatment (laboratory method)

Produits de préservation du bois - Détermination de l'efficacité protectrice vis-à-vis de Lyctus Brunneus (Stephens) - Partie 1: Application par traitement de surface (Méthode de laboratoire)

Holzschutzmittel - Bestimmung der vorbeugenden Wirkung gegenüber Lyctus Brunneus (Stephens) - Teil 1: Oberflächenbehandlung (Laboratoriumsverfahren)

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 38.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of 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, Türkiye and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword

This document (prEN 20-1:2022) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 20-1:1992.

Significant technical differences between this document and EN 20-1:1992 are as follows:

a) the source of peptone is no longer specified (5.2.6);

b) other wood species than oak may be used for the test under certain circumstances (7.1);

c) tests with solvent control may be omitted, when the solvent is water (7.5);

d) new pictures were used for Figure B.1, Figure B.2, and Figure B.3.

NOTE Test results obtained according to earlier versions of this document and when the tests had started before this version of EN 20-1 was published are considered valid.

Introduction

This Part of the EN 20 series describes a laboratory method of test which gives a basis for assessment of the protective effectiveness of a wood preservative, when applied as a surface treatment, against *Lyctus brunneus*. It allows the deternination 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 species *Lyctus brunneus* is chosen because of its particular practical relevance and because it can be used easily in laboratory tests. The method can be used with other lyctid species, but the results might not be comparable with those obtained with *Lyctus brunneus*.

The test specimens are enriched with a defined nutrient solution, before exposure to egg-laying, in order to ensure uniformity of nutrient quality of test specimens between different laboratories.

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 appropriates 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 and conditioning chambers as well as special training for personnel.

1 Scope

This part of the EN 20 series specifies a method for the determination of the protective effectiveness or the toxic values of a wood preservative against infection by *Lyctus brunneus* (Stephens) when the product is applied as a surface treatment to wood.

This method is applicable to:

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

— organic formulsation, 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 salts.

NOTE This method can be used in conjuction with ageing procedures, which do not remove the added nutrient.

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.

ISO 835-1:1981, *Laboratory glassware — Graduated pipettes — Part 1: General requirements*

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

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 https://www.electropedia.org/

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

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

4 Principle

Depending on the test being carried out either:

— a set of test specimens of a susceptible wood species is impregnated with nutrient solution and then surface treated with a solution of the preservative; or

— if toxic values are to be determined, several sets of tests specimens of a susceptible wood species are impregnated with a nutrient solution and then 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 adult *Lyctus brunneus* and the resulting attack compared to that in untreated controls. If the preservation 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 controls.

5 Test materials and apparatus

5.1 Biological material

Lyctus brunneus (Stephens), insects emerged from cultures not more than 48h before use in the test.

NOTE The culturing of *Lyctus brunneus* requires care in order to obtain a regular supply of adults which have not already laid eggs. The culturing technique, which experiences has shown to be suitable, is described in Annex B.

5.2 Products and reagents

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

NOTE Paraffiin 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 surfaces of 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 *Lyctus* and insoluble in the product under test

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

5.2.4 Water, complying with grade 3 of 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 effet on the insects

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

5.2.6 Peptone

5.2.7 D (+)-glucose

5.2.8 Filter paper ordinary quality, medium-fast grade

5.2.9 Fine cloth of cotton of linen, with a mesh aperture of less than 0,3 mm

5.3 Apparatus

5.3.1 Culturing chamber, with air circulation, controlled at (26 ± 2) °C, and at relative humidity (75 ± 5) %

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

The conditioning of 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 Drying chamber, well ventilated, controlled at (30 ± 2) °C

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 of their vapours.

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

5.3.6 Vacuum vessel(s), fitted with stopcocks

5.3.7 Vaccum pump, fitted with a pressure gauge and capable of maintaining a pressure of 700 Pa[1]

5.3.8 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

5.3.9 Pipette, of the specified in ISO 835-1

5.3.10 Safety equipment and protective clothing, appropriate for the test product and the test solvent, to ensure the safety of the operator

5.3.11 Test container, suitable for holding the test specimens and of material resistant to the solvents used

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

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

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

— 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 test shall be carried out on European oak. This shall comprise sessile oak, *Quercus petraea* (Mattuschka) Lieblin, and pedunculate oak, *Quercus robur* Linnaeus.

[1] 100 Pa = 1 mbar.

Other wood species, with demonstrated susceptiblity to *Lyctus brunneus* (Stephens), like *Triplochiton scleroxylon*, may be used instead of European oak.

7.2 Quality of wood

Use only sound sapwood with between 2 annual growth rings per 10 mm and 10 annual growth rings per 10 mm, straight-grainded without knots. The wood, having few tyloses, shall not have been floated or subjected to any chemical treatment and shall be dried without delay as described in 7.3.

7.3 Provision of the test specimens

Remove the bark from the freshly cut billets and then cut them into lengths (from which strips 25 mm × 15 mm in cross-section will be cut). Immediately place the billets in the drying chamber (5.3.3) stacked with spaces between individual billets so as to allow movement of air through the stack. Retain the billets in the drying chamber until their moisture contents are reduced to 15 % (m/m)[2].

NOTE Moisture meters of the two-pronged electrical conductivity type are suitable for assessing moisture content.

Cut the sapwood of the dried billets into planted strips 25 mm × 15 cross section and with the wide longitudinal faces oriented tangentially. Cut the specimens for test from the planed strips. The individual specimens for test shall be cut cleanly and shall have sharp edges.

The specimens required for a test shall be taken from at least tow lots each corresponding to a different tree or two sapwood strips taken diametrically opposed positions in the same log. The specimens from the two sources shalle be combined and the test specimens taken at random from them.

7.4 Dimensions of test specimens

The dimensions of each specimen after one week in the conditioning chamber (5.3.2) shall be:

— (50 ± 0,5) mm × (25 ± 0,5) mm × (15 ± 0,5) mm

NOTE The total surface area of the longitudinal faces is theoretically 40 cm².

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

7.5 Number of test specimens

Use:

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

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

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

Control test specimens under c) may be omitted if the solvent or diluent is water accoding to 5.2.4.

[2] As determined in accordance to ISO 3130.

8 Procedure

8.1 Prior impregnation of the test specimens with a nutrient solution

8.1.1 Composition of the nutrient solution

Dissolve 2 g of the peptone (5.2.6) and 10 g of the glucose (5.2.7) in 100 ml water (5.2.4).

8.1.2 Method of impregnation of nutrient solution

Weigh each test specimen, place them in a beaker and ballast hem with weights (5.3.8) to prevent them floating. Place the beaker in the vacuum vessel (5.3.6), and reduce the pressure using the vaccum pump (5.3.7) to 700 Pa. Hold the specimens at this pressure far 15 min. Allow the rutrient solution (8.1.1) into the beaker so as to cover the specimens. Bring the specimens back to atmospheric pressure, adding further solution if necessary to keep the specimens covered.

Leave the specimens immersed for 1 h in the solution and then reweigh them after draining for 1 min.

Determine the uptake of nutrient solution for each test specimen.

Retain for testing only test specimens absorbing between 300 kg/m^3 and 600 kg/m^3 of nutrient solution.

8.1.3 Drying of test specimens

Dry the specimens in the drying chamber (5.3.3) at (30 ± 2) °C for on week.

8.2 Conditioning of specimens before end sealing

Transfer the dried test specimesn to the conditioning chamber (5.3.2) and condition them for one week.

8.3 Preparation of test specimens

8.3.1 Sealing of transverse surfaces

Seal the end-grain surfaces as follows:

8.3.1.1 For test with solutions in which water is the continuous phase, apply three coasts of the paraffin wax (5.2.1) at about 90 °C so that the first coat adheres closely to the wood and the successive coatings bond to one another. Condition the sealed specimens in the conditioning chamber (5.3.2) for at least on day.

8.3.1.2 For tests with preservative solutions in which the continuous phase is an organic solvent, that dissolves paraffin wax, use the gelatin (5.2.2): apply the first coat with an aqueous solution of 200 g/l at 40 °C, then after a minimum of 8 h of drying, apply two further coats of an aqueous solution of 300 g/l at 50 °C. Condition the sealed specimens in the conditioning chamber (5.3.2) for at least one day.

8.3.2 Treatment of test specimens

8.3.2.1 Preparation of treatment solution

8.3.2.1.1 Solid preservatives

— water-soluble preservatives:

  Dissolve the preservative in the water (5.2.4) to the required concentration, or to a series of concentrations of toxic values are to be determined.