SLOVENSKI STANDARD
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Trajnost lesa in lesnih proizvodov - Preskusna metoda proti glivam prostotrosnicam, ki uničujejo les - 3. del: Ocenjevanje trajnosti lesenih plošč

Durability of wood and wood-based products - Test method against wood destroying basidiomycetes - Part 3: Assessment of durability of wood-based panels

Dauerhaftigkeit von Holz und Holzprodukten - Prüfverfahren in Bezug auf Holz zerstörende Basidiomyceten - Teil 3: Bewertung der Dauerhaftigkeit von Holzwerkstoffen

Durabilité du bois et des matériaux dérivés du bois - Méthode d'essai contre les champignons basidiomycètes lignivores - Partie 3 : Évaluation de la durabilité des panneaux à base de bois

Ta slovenski standard je istoveten z: **prEN 113-3**

ICS:

79.060.01	Lesne plošče na splošno	Wood-based panels in general

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EUROPEAN STANDARD

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ICS 79.060.01

Will supersede ENV 12038:2002

English Version

Durability of wood and wood-based products Test method against wood destroying basidiomycetes - Part 3: assessment of durability of wood-based panels

Durabilité du bois et des matériaux dérivés du bois - Méthode d'essai contre les champignons basidiomycètes lignivores - Partie 3 : Évaluation de la durabilité des panneaux à base de bois

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

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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.

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

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Contents

Page

European foreword

This document (prEN 113-3:2021) 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 ENV 12038:2002.

Test results obtained with earlier versions of ENV 12038 are still valid.

Compared to current EN 113, the following modifications are:

— A third part has been included.

— The three parts of the new EN 113 deal with similar testing but relate to a different scope.

Compared to the ENV 12038:2002 version the following major changes have been introduced:

— Change of the title;

— The methods for sterilization are updated;

— All annexes are informative;

— Some additional validity requirements are introduced for control specimens.

Introduction

This document describes a laboratory test method in which small samples of the wood-based panel product under test are exposed to attack by a range of wood-destroying basidiomycete fungi in pure culture. The thickness of the test specimens varies, since it is dictated by the thickness of the wood-based panel product under test. The effect of constituents giving temporary protection is avoided by testing after pre-conditioning of the cut specimens in a freely ventilated environment. The test method also includes a minimum moisture uptake requirement.

The procedures described in this document method are intended to be carried out by suitably trained and/or supervised specialists. Appropriate safety precautions should be observed throughout the use of this standard.

1 Scope

This document describes a method for assessing the durability of wood-based panels or analogous wood products to attack by wood-destroying basidiomycete fungi growing in pure culture.

The test method described in this document is intended to complement EN 113-2 with focus on specific aspects of wood-based panels or analogue wood products. This document is not intended to determine the effectiveness of wood preservatives used to prevent decay which is covered by EN 113-1.

NOTE 1 Determining the efficacy of wood preservatives used to prevent decay is the scope of EN 113-1.

NOTE 2 This method may be used in conjunction with an ageing procedure, for example EN 73 or EN 84.

NOTE 3 Complementary to EN 113-2 this part focusses on specific test procedure for wood-based panels or analogous wood products.

The method is applicable to uncoated, rigid wood-based panel products. It is applicable to the determination of the decay resistance of wood-based panel products:

— made from naturally durable materials;

— made from materials treated with preservatives prior to manufacture;

— treated with a preservative which is introduced during manufacture, for example as an additive to the adhesive;

— specific treatments to increase durability of wood-based panels, e.g. wood modification

NOTE 4 This method can be used in conjunction with an appropriate ageing procedure, for example EN 73 or EN 84.

Annex A (informative) contains a guidance on sampling.

Annex B (normative) contains some methods of sterilization.

Annex C (informative) contains information on the culture vessels.

Annex D (informative) contains an example of a test report.

Annex E (informative) contains information on the test fungi.

Annex F (informative) contains the assessment of the results.

Annex G (informative) contains extra info on moisture dynamics, coatings, composites and impact of dimensions

2 Normative references

There are no normative references in this document.

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 http://www.iso.org/obp

3.1
supplier
sponsor of the test, person or company providing the sample of wood/timber (wood-based panel) to be tested

4 Principle

Specimens prepared from the wood-based panel product(s) under test, after pre-conditioning, and control specimens of defined function are exposed to attack by pure cultures of wood-destroying basidiomycete fungi.

After a prescribed period of incubation under defined conditions, the loss in dry mass of the specimens is used as the criterion for determining the extent of attack.

5 Test material and apparatus

5.1 Biological material

5.1.1 Test fungi

The test fungi to be used are as follows and relate to corresponding virulence control specimens.

It is required that the reference timber virulence control specimens provide a median mass loss of at least 30 % with one of the test fungi.

5.1.1.1 Obligatory test fungi for all types of panel products

— *Coniophora puteana* (Schumacher ex Fries) Karsten (BAM Ebw. 15)

  Loss in mass of Scots pine sapwood virulence control specimens in 16 weeks: a mass fraction of minimum 20 %

— *Pleurotus ostreatus* (Jacquin ex Fries) Quélet (FPRL 40C)

  Loss in mass of beech virulence control specimens in 16 weeks: a mass fraction of minimum 20 %

5.1.1.2 Species to be used compulsorily on the nature of the test product

For test products made only from softwood:

— *Gloeophyllum trabeum* (Persoon ex Fries) Murrill (BAM Ebw. 109)

Loss in mass of Scots pine sapwood virulence control specimens in16 weeks: a mass fraction of minimum 20 %

For test products made only from hardwood:

— *Trametes versicolor* (Linnaeus) Quélet (CTB 863A)

Loss in mass of beech virulence control specimens in 16 weeks: a mass fraction of minimum 20 %

For test products made from a mixture of softwood and hardwood, both *Gloeophyllum trabeum* and *Trametes versicolor* shall be used.

5.1.1.3 Additional obligatory test fungus for modified wood

— *Rhodonia placenta* (Fr.) Niemelä, K.H. Larss. and Schigel (FPRL 280) for softwoods.

Loss in mass of Scots pine sapwood in 16 weeks: a mass fraction of minimum 20 %.

5.1.1.4 Optional test fungi

For specific regional uses or conditions, it is also possible to choose other fungi on an optional basis[1)].

5.1.1.5 Maintenance of fungal strains

The strains shall be maintained and treated (frequency of subculturing, alternation of culture media etc.) in accordance with the instructions from their laboratory of origin (see Annex E). The parent strain shall be maintained in the laboratory of its origin, so as to conserve and ensure its vigour.

If tests are not undertaken regularly, or if a strain shows signs of degeneration, a new standard culture of the strain shall be obtained from the laboratory of origin for each test. When new strains are received, the virulence shall be tested to ensure that the mass loss achieved is above the minimum value given in Annex E.

5.1.2 Solid wood stock

5.1.2.1 Wood species

The following species shall be used for the test:

— Scots pine sapwood (*Pinus sylvestris* Linnaeus)

— European beech (*Fagus sylvatica* Linnaeus)

5.1.2.2 Quality of the wood

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

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

The Scots pine shall be exclusively sapwood containing little resin and having between 2,5 and 8 annual growth rings per 10 mm. The proportion of latewood in the annual rings shall not exceed 30 % of the whole.

The beech shall be even grained, free from tyloses and discoloration. It shall have between 2 and 6 annual growth rings per 10 mm.

[1)] See Annex E for a non-comprehensive list of recommended optional fungi.

5.1.2.3 Virulence control specimens

Prepare planed strips from the solid wood stock having a cross-section (25 ± 0,5) mm x (15 ± 0,5) mm. The longitudinal faces shall be parallel to the direction of the grain. The annual rings shall not be parallel to the faces (contact angle greater than 10°) but otherwise can run in any direction. Make transverse cuts, neatly to give sharp edges and a fine-sawn finish to the end-grain surfaces, to give virulence control specimens (50 ± 0,5) mm long.

The dimensions of each virulence control specimen at a mass fraction of (12 ± 2) % moisture content[2)] shall be (50 ± 0,5) mm × (25 ± 0,5) mm × (15 ± 0,5) mm.

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

5.2 Products and reagents

5.2.1 Culture medium

The culture medium shall be a malt agar medium with the following composition:

— malt extract: in concentrated form: (50 ± 0,5) g; in powder form: (40 ± 0,5) g;

— agar causing no inhibition of growth of fungi: (20 ± 0,5) g to (30 ± 0,5) g;

— de-ionized water; quantity to make up to 1000 g.

NOTE 1 Preferably use water conforming to grade 3 of ISO 3696.

Place in each culture vessel (5.3.1) a sufficient quantity of the medium to provide a minimum depth of 3 mm to 4 mm when in its in-use position. Close the vessels as specified in 5.3.1 and sterilize in an autoclave at 121 °C for 20 min. Let the vessels cool in their in-use position.

NOTE 2 The quantity of culture medium required in each culture vessel varies with the thickness of the test product (see 8.4).

5.2.2 Additive for white rot fungi

Anhydrated, laminar, aluminium-iron-magnesium silicate[3)] exfoliated to yield particles up to 3 mm diameter. Particles less than 2 mm diameter shall be removed by sieving. Before use, mix the sample of additive well. The additive shall be used only once.

This 'vermiculite' additive is always required in combination with the test fungus *Pleurotus ostreatus.*

This 'vermiculite' additive is also required for *Trametes versicolor* when thicker panels (>20 mm) are under test.

Maximum thickness of panels that can be tested is 20 mm for brown rot fungi and 40 mm for white rot fungi (see Annex G).

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2) A moisture meter of the two pronged electrical conductivity type is suitable for assessing moisture content.

3) Vermiculite is suitable.

5.3 Apparatus

5.3.1 Conditioning supports

Made of glass, stainless steel or any other inert material, that is to say with no risk of having any effect on the test specimens. The supports shall provide free circulation of air around the test specimens whilst having a minimum of contact with the test specimens.

5.3.2 Conditioning room

Well ventilated and controlled at (20 ± 2) °C and (65 ± 5) % relative humidity.

5.3.3 Culture chamber

Incubator or room, dark and controlled at (22 ± 2) °C and (70 ± 5) % relative humidity.

5.3.4 Culture vessels

Kolle flasks or equivalent vessels with a capacity of between 400 ml and 650 ml providing a flat surface area of between 85 cm^2 and 120 cm^2 for the medium and close with a material that allows for air exchange.

NOTE 1 Examples of suitable vessels are given in Annex C.

NOTE 2 Kolle flasks are usually plugged with a wad of cotton wool. Other culture vessels are usually fitted with leakproof lids, the centres of which are pierced with a round hole of up to 15 mm diameter and plugged with a wad of cotton wool.

5.3.5 Ventilated drying oven

Capable of being controlled at (103 ± 2) °C.

5.3.6 Desiccators

With an efficient desiccant, for example silica gel.

5.3.7 Test specimens supports

Made of glass, stainless steel or any other inert material, that is to say with no risk of having any effect on the culture medium, the fungus, the wood, or of modifying itself. The supports are used to prevent direct contact of the specimens with the culture medium, but shall not separate them from it by more than 3 mm.

If abnormally high moisture contents are experienced consistently, use of specimen supports of approximately 5 mm thick may help to control the problem. If thicker specimen supports are used, this should be recorded in the test report. Abnormally high moisture contents are those values of final moisture content that are greater than 100 % (m/m).

5.3.8 Safety equipment and protective clothing

Appropriate for the test procedures, to ensure the safety of the operator.

5.3.9 Equipment for steam sterilization or access to a radiation source

See Annex B.

5.3.10 Ordinary laboratory equipment

Including a balance capable of weighing to an accuracy of 0,01 g.