

# **SLOVENSKI STANDARD**

## **SIST EN 113-3:2023**

**01-junij-2023**

**Nadomešča:**

**SIST-TS ENV 12038:2004**

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**Trajnost lesa in lesnih proizvodov - Preskusna metoda proti glivam  
prostotrošnicam, ki uničujejo les - 3. del: Ocenjevanje odpornosti 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: EN 113-3:2023**

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**ICS:**

79.060.01	Lesne plošče na splošno	Wood-based panels in general
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**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

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

This European Standard was approved by CEN on 25 December 2022.

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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.....	4
Introduction .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	7
4 Principle .....	7
5 Test material and apparatus.....	7
5.1 Biological material.....	7
5.1.1 Test fungi.....	7
5.1.2 Solid wood stock.....	8
5.2 Products and reagents.....	9
5.2.1 Culture medium .....	9
5.2.2 Additive for white rot fungi .....	9
5.3 Apparatus.....	10
5.3.1 Conditioning supports.....	10
5.3.2 Conditioning room.....	10
5.3.3 Culture chamber.....	10
5.3.4 Culture vessels .....	10
5.3.5 Ventilated drying oven.....	10
5.3.6 Desiccators .....	10
5.3.7 Test specimens supports.....	10
5.3.8 Safety equipment and protective clothing.....	10
5.3.9 Equipment for steam sterilization or access to a radiation source .....	10
5.3.10 Ordinary laboratory equipment.....	10
6 Test specimens.....	11
6.1 General.....	11
6.2 Test specimen preparation.....	11
7 Numbers of test specimens.....	11
7.1 Test product specimens.....	11
7.1.1 Test specimens.....	11
7.1.2 Moisture content check specimens.....	11
7.1.3 Wetting check specimens.....	11
7.2 Virulence control specimens .....	11
8 Procedure.....	12
8.1 Pre-conditioning.....	12
8.2 Initial dry mass .....	12
8.2.1 Test product specimens.....	12
8.2.2 Virulence control specimens .....	13
8.3 Sterilization of test specimens .....	13
8.4 Preparation of the culture vessels .....	13
8.5 Inoculation.....	13
8.6 Exposure of test specimens .....	13
8.6.1 Preparation of additive for white rot fungi .....	13

8.6.2	Test specimens .....	14
8.6.3	Virulence control specimens .....	14
8.6.4	Wetting check specimens .....	14
8.7	Culture conditions and duration of the test .....	14
8.8	Assessment of the test .....	14
8.8.1	Examination of the test specimens .....	14
8.8.2	Final dry mass .....	14
8.8.3	Validity of results .....	15
9	Validity of the test .....	15
10	Assessment of results .....	15
11	Test report .....	16
Annex A (informative) Guidance on sampling .....		18
Annex B (normative) Methods of sterilization .....		19
B.1	Ionizing radiation .....	19
B.2	Steam .....	19
Annex C (informative) Culture vessels .....		20
Annex D (informative) Example of a test report .....		23
Annex E (informative) Test fungi .....		26
E.1	General information on maintaining and acquisition of test strains .....	26
E.2	Maintenance and treatment of test fungi .....	26
E.3	Information regarding obligatory test fungi .....	27
E.3.1	<i>Coniophora puteana</i> (Schumacher ex Fries) Karsten [Synonym: <i>Coniophora cerebella</i> (Persoon) Duby] .....	27
E.3.2	<i>Pleurotus ostreatus</i> (Jacquin ex Fries) Kummer .....	27
E.3.3	<i>Gloeophyllum trabeum</i> (Persoon ex Fries) Murrill [Synonyms: <i>Lenzites trabea</i> (Persoon ex Fries) Fries - <i>Trametes trabea</i> (Persoon ex Fries) Bresadola] .....	27
E.3.4	<i>Trametes versicolor</i> (Linnaeus ex Fries) Pile [Synonyms: <i>Polyporus versicolor</i> Linnaeus ex Fries - <i>Polystictus versicolor</i> (Linnaeus) Saccardo - <i>Coriolus versicolor</i> (Linnaeus) Quelet] .....	27
E.3.5	<i>Rhodonía placenta</i> (Fr.) Niemelä, K.H. Larss. and Schigel [Synonym: <i>Poria placenta</i> (Fries) Cooke <i>sensu</i> J. Eriksson - <i>Poria monticola</i> Murrill] .....	28
E.4	Information regarding optional test fungi .....	28
Annex F (informative) Assessment of results .....		31
Annex G (informative) Moisture dynamics, coatings, composites and impact of dimensions .....		33
G.1	General information on moisture dynamics .....	33
G.2	Coated wood-based panels .....	33
G.3	Wood polymer composites and natural fibre composites .....	33
G.4	Impact of dimensions .....	34
Bibliography .....		35

**EN 113-3:2023 (E)****European foreword**

This document (EN 113-3:2023) 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 August 2023, and conflicting national standards shall be withdrawn at the latest by August 2023.

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 ENV 12038:2002.

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

Compared to current EN 113, modifications are the following:

- A third part has been included.
- The three parts of the new EN 113 deal with similar testing but relate to a different scope.

EN 113-3:2023 includes the following significant technical changes with respect to ENV 12038:2002:

- Change of the title;
- The methods for sterilization are updated;
- All annexes are informative, except Annex B on sterilization methods;
- Some additional validity requirements are introduced for control specimens;
- Number of test specimens per fungus doubled;
- Number of virulence control specimens increased from 6 to 10;
- Size control specimens deleted;
- Assessment of results changed.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, Türkiye and the United Kingdom.

## 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 document.

iTeh STANDARD PREVIEW  
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SIST EN 113-3:2023

<https://standards.iteh.ai/catalog/standards/sist/bd375136-a5ff-4cfl-8cb9-41c23df5c3bf/sist-en-113-3-2023>

# EN 113-3:2023 (E)

## 1 Scope

This document describes a method for assessing the durability of wood-based panels or analogue 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** This method can be used in conjunction with an appropriate ageing procedure, for example EN 73 or EN 84.

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.

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

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 84, *Durability of wood and wood-based products - Accelerated ageing of treated wood prior to biological testing - Leaching procedure*



### 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

##### **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

###### 5.1.1.1 General

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.

###### 5.1.1.2 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: minimum 20 % (*m/m*).

- *Pleurotus ostreatus* (Jacquin ex Fries) Kummer (FPRL 40C)

Loss in mass of beech virulence control specimens in 16 weeks: 20 % (*m/m*).

###### 5.1.1.3 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 in 16 weeks: minimum 20 % (*m/m*).

**EN 113-3:2023 (E)**

For test products made only from hardwood:

- *Trametes versicolor* (L.) Lloyd<sup>1</sup> (CTB 863 A)

Loss in mass of beech virulence control specimens in 16 weeks: minimum 20 % (m/m).

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

**5.1.1.4 Additional obligatory test fungus for modified wood**

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

Loss in mass of Scots pine sapwood in 16 weeks: minimum 20 % (m/m).

**5.1.1.5 Optional test fungi**

For specific regional uses or conditions, it is also possible to choose other fungi on an optional basis<sup>2</sup>.

**5.1.1.6 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* L.)
- European beech (*Fagus sylvatica* L.)

**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 not above 60 °C can 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.

<sup>1</sup> Former name: *Coriolus versicolor* (Linnaeus) Quelet

<sup>2</sup> 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  $(25 \pm 0,5)$  mm  $\times$   $(15 \pm 0,5)$  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  $10^\circ$ ) 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  $(50 \pm 0,5)$  mm long.

The dimensions of each virulence control specimen at a moisture content of  $(12 \pm 2)$  % shall<sup>3</sup> be  $(50 \pm 0,5)$  mm  $\times$   $(25 \pm 0,5)$  mm  $\times$   $(15 \pm 0,5)$  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:  $(50 \pm 0,5)$  g; in powder form:  $(40 \pm 0,5)$  g;
- agar causing no inhibition of growth of fungi:  $(20 \pm 0,5)$  g to  $(30 \pm 0,5)$  g;
- de-ionized water; quantity to make up to 1 000 g.
- preferably use water conforming to grade 3 of EN ISO 3696.

Place in each culture vessel (5.3.4) 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 5.3.4 and sterilize in an autoclave at  $121^\circ\text{C}$  for 20 min. Let the vessels cool in their in-use position.

NOTE 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<sup>4</sup> 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.

<sup>3</sup> A moisture meter of the two pronged electrical conductivity type is suitable for assessing moisture content, but oven drying is used commonly to assess moisture content.

<sup>4</sup> Vermiculite is suitable.

**EN 113-3:2023 (E)****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  $(20 \pm 2) ^\circ\text{C}$  and  $(65 \pm 5) \%$  relative humidity.

**5.3.3 Culture chamber**

Incubator or room, dark and controlled at  $(22 \pm 2) ^\circ\text{C}$  and  $(70 \pm 5) \%$  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  $85 \text{ cm}^2$  and  $120 \text{ cm}^2$  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  $(103 \pm 2) ^\circ\text{C}$ .

**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 a mass fraction greater than 100 %.

**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.