SLOVENSKI STANDARD
SIST EN 13986:2005+A1:2015

01-junij-2015

Lesne plošče za uporabo v gradbeništvu - Lastnosti, vrednotenje skladnosti in označevanje

Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking

Holzwerkstoffe zur Verwendung im Bauwesen - Eigenschaften, Bewertung der Konformität und Kennzeichnung

Panneaux à base de bois destinés à la construction - Caractéristiques, évaluation de conformité et marquage

Ta slovenski standard je istoveten z: **EN 13986:2004+A1:2015**

ICS:

79.060.01	Lesne plošče na splošno	Wood-based panels in general

SIST EN 13986:2005+A1:2015 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13986:2004+A1

April 2015

ICS 83.140.99

Supersedes EN 13986:2004

English Version

Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking

Panneaux à base de bois destinés à la construction - Caractéristiques, évaluation de conformité et marquage

Holzwerkstoffe zur Verwendung im Bauwesen - Eigenschaften, Bewertung der Konformität und Kennzeichnung

This European Standard was approved by CEN on 8 July 2004 and includes Amendment 1 approved by CEN on 19 January 2015.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of 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 United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword

This document (EN 13986:2004+A1:2015) has been prepared by Technical Committee CEN/TC 112 “Wood-based panels”, the secretariat of which is held by DIN.

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 October 2015, and conflicting national standards shall be withdrawn at the latest by January 2017.

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 includes Amendment 1, approved by CEN on 2015-01-19.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ⟨A1⟩ ⟨A1⟩.

This document has been prepared under Mandate M/113 given to CEN by the European Commission and the European Free Trade Association, as revised by the Standing Committee on Construction on 14 May 2003 and supports essential requirements of EU Regulations.

For relationship with ⟨A1⟩ Regulation (EU) No. 305/2011 ⟨A1⟩, see the informative Annex ZA, which is an integral part of this document.

This document supersedes ⟨A1⟩ EN 13986:2004 ⟨A1⟩.

⟨A1⟩ *Deleted text* ⟨A1⟩

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, 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.

1 Scope

This document defines wood-based panels for use in construction and specifies the relevant characteristics and the appropriate test methods to determine these characteristics for wood-based panels, unfaced, overlaid, veneered or coated:

- for internal use as structural components in dry conditions[1)];
- for internal (or protected external) use as structural components in humid conditions[2)];
- for external use as structural components[3)];
- for internal use as non-structural components in dry conditions[1)];
- for internal (or protected external) uses as non structural components in humid conditions[2)];
- for external use as non-structural components[3)];
- for use as structural floor decking on joists in dry[1)] or humid[2)] or external[3)] conditions;
- for use as structural roof decking on joists in dry[1)] or humid[2)] or external[3)] conditions;
- for use as structural wall sheathing on studs in dry[1)] or humid[2)] or external[3)] conditions.

It provides for the evaluation of conformity and the requirements for marking these products.

This document covers wood-based panels in the form of solid wood panels, LVL [4)], plywood, OSB, particleboards (chipboards) either resin- or cement-bonded, wet process fibreboards (hardboards, medium boards, softboards) and dry process fibreboards (MDF) for use in construction. They may contain chemical agents to improve their reaction to fire and their resistance to biological attack, e.g. by fungi and insects.

This document is not intended to be applicable to wood-based panels for use in non-constructional applications.

2 Normative references

The following referenced documents are indispensable for the application 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 120, *Wood based panels - Determination of formaldehyde content - Extraction method called the perforator method*

---

1) Dry conditions are defined in 3.8.2. Boards of this type are suitable for use in biological hazard class 1 of EN 335-3.

2) Humid conditions are defined in 3.8.3. Boards of this type are suitable for use in biological hazard classes 1 and 2 of EN 335-3.

3) Exterior conditions are defined in 3.8.4. Boards of this type are suitable for use in biological hazard classes 1, 2, 3 and 4 of EN 335-3.

4) [A1] *deleted text* [A1]. PrEN 14374 — Timber structures: Laminated Veneer Lumber (LVL), for use as a structural product — is being prepared by CEN/TC 124.

EN 300, *Oriented Strand Boards (OSB) - Definitions, classification and specifications*

EN 309, *Wood particleboards — Definitions and classification*

EN 310, *Wood-based panels - Determination of modulus of elasticity in bending and of bending strength*

EN 312, *Particleboards - Specifications*

EN 313-2, *Plywood - Classification and terminology - Part 2: Terminology*

EN 314-1, *Plywood - Bonding quality - Part 1: Test methods*

EN 314-2, *Plywood - Bonding quality - Part 2: Requirements*

EN 316, *Wood fibre boards - Definition, classification and symbols*

EN 317, *Particleboards and fibreboards - Determination of swelling in thickness after immersion in water*

EN 319, *Particleboards and fibreboards - Determination of tensile strength perpendicular to the plane of the board*

EN 321, *Wood-based panels - Determination of moisture resistance under cyclic test conditions*

EN 323, *Wood-based panels - Determination of density*

EN 325, *Wood-based panels - Determination of dimensions of test pieces*

EN 326-1, *Wood-based panels - Sampling, cutting and inspection - Part 1: Sampling and cutting of test pieces and expression of test results*

EN 326-2, *Wood-based panels — Sampling, cutting and inspection — Part 2: Quality control in the factory*

EN 335-1, *Durability of wood and derived products — Definition of hazard classes of biological attack — Part 1: General*

EN 335-2, *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Part 2: Application to solid wood*

EN 335-3, *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Part 3: Application to wood-based panels*

[A1] EN 383, *Timber Structures - Test methods - Determination of embedment strength and foundation values for dowel type fasteners*

EN 594, *Timber structures - Test methods - Racking strength and stiffness of timber frame wall panels* [A1]

EN 596, *Timber structures - Test methods - Soft body impact test of timber framed walls*

EN 622-1, *Fibreboards - Specifications - Part 1: General requirements*

EN 622-2, *Fibreboards - Specifications - Part 2: Requirements for hardboards*

EN 622-3, *Fibreboards - Specifications - Part 3: Requirements for medium boards*

EN 622-4, *Fibreboards - Specifications - Part 4: Requirements for softboards*

[A1] EN 622-5 [A1], *Fibreboards - Specifications - Part 5: Requirements for dry process boards (MDF)*

EN 633, *Cement-bonded particleboards - Definition and classification*

EN 634-2, *Cement-bonded particleboards — Specifications — Part 2: Requirements for OPC bonded particleboards for use in dry, humid and exterior*

EN 636, *Plywood - Specifications*

▌A1⟩ EN 717-1 ⟨A1▌, *Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method*

EN 717-2, *Wood-based panels - Determination of formaldehyde release - Part 2: Formaldehyde release by the gas analysis method*

▌A1⟩ EN 789 ⟨A1▌, *Timber structures - Test methods - Determination of mechanical properties of wood based panels*

EN 1058, *Wood-based panels — Determination of characteristic values of mechanical properties and density*

EN 1087-1, *Particleboards - Determination of moisture resistance - Part 1: Boil test*

▌A1⟩ EN 1156 ⟨A1▌, *Wood-based panels - Determination of duration of load and creep factors*

EN 1195, *Timber structure — Test methods — Performance of structural floor decking*

▌A1⟩ EN 1995-1-1 ⟨A1▌, *Eurocode 5 — Design of timber structures — Part 1-1: General rules and rules for buildings*

▌A1⟩ EN 12114, *Thermal performance of buildings - Air permeability of building components and building elements - Laboratory test method* ⟨A1▌

EN 12369-1, *Wood-based panels - Characteristic values for structural design - Part 1: OSB, particleboards and fibreboards*

EN 12369-2, *Wood-based panels - Characteristic values for structural design - Part 2: Plywood*

EN 12524, *Building materials and products — Hygrothermal properties — Tabulated design values*

EN 12664, *Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance*

EN 12775, *Solid wood panels - Classification and terminology*

EN 12871, *Wood-based panels — Performance, specification and requirements for load-bearing boards for use in floors, walls, and roofs*

▌A1⟩ CEN/TR 12872 ⟨A1▌, *Wood-based panels - Guidance on the use of load-bearing boards in floors, walls and roofs*

EN 13353, *Solid wood panels (SWP) — Requirements*

CEN/TS 13354, *Solid wood panels — Bonding quality — Test method*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

[A1] EN 14279 [A1], *Laminated Veneer Lumber (LVL) — Specifications, definitions, classification and requirements*

[A1] EN 14755 [A1], *Extruded particleboards - Specifications*

[A1] EN 15197, *Wood-based panels - Flaxboards - Specifications* [A1]

EN ISO 354, *Acoustics - Measurement of sound absorption in a reverberation room (ISO 354:2003)*

EN ISO 12572:2001, *Hygrothermal performance of building materials and products - Determination of water vapour transmission properties (ISO 12572:2001)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
wood-based panel
solid wood panel, laminated veneer lumber (LVL), plywood, oriented strand board (OSB), resin-bonded particleboard, cement-bonded particleboard or fibreboard

3.2
solid wood panel (SWP)
wood-based panel as defined in EN 12775 consisting of pieces of timber glued together on their edges and, if multi-layer, on their faces

3.2.1
solid wood panel for internal use as a structural component in dry conditions
solid wood panel incorporating the performance characteristics from 4.1 that are relevant to board type SWP/1 in EN 13353

NOTE The performance characteristics relevant to SWP/1 in structural use and their requirements are given in Table A.1.

3.2.2
solid wood panel for internal use as a structural component in humid conditions
solid wood panel incorporating the performance characteristics from 4.2 that are relevant to board type SWP/2 in EN 13353

NOTE The performance characteristics relevant to SWP/2 in structural use and their requirements are given in Table A.1.

3.2.3
solid wood panel for external use as a structural component
solid wood panel incorporating the performance characteristics from 4.3 that are relevant to board type SWP/3 in EN 13353

NOTE The performance characteristics relevant to SWP/3 in structural use and their requirements are given in Table A.1.

3.2.4
solid wood panel for internal use as a non-structural component in dry conditions
solid wood panel incorporating the performance characteristics from 4.4 that are relevant to board type SWP/1 in EN 13353

NOTE The performance characteristics relevant to SWP/1 in non-structural use and their requirements are given in Table A.1.

3.2.5
solid wood panel for internal use as a non-structural component in humid conditions
solid wood panel incorporating the performance characteristics from 4.5 that are relevant to board type SWP/2 in EN 13353

NOTE The performance characteristics relevant to SWP/2 in non-structural use and their requirements are given in Table A.1.

3.2.6
solid wood panel for external use as a non-structural component
solid wood panel incorporating the performance characteristics from 4.6 that are relevant to board type SWP/3 in EN 13353

NOTE The performance characteristics relevant to SWP/3 in non-structural use and their requirements are given in Table A.1.

3.3
laminated veneer lumber (LVL)
wood-based panel as defined in [A1] EN 14279 [A1] consisting of wood veneers with fibres primarily in the same direction

NOTE The performance characteristics relevant to LVL and their requirements are given in Table A.10.

3.4
plywood
wood-based panel as defined in EN 313-2 consisting of an assembly of layers glued together with the direction of the grain in adjacent layers usually at right angles

3.4.1
plywood for internal use as a structural component in dry conditions
plywood incorporating the performance characteristics from 4.1 that are relevant to plywood in EN 636, type EN 636-1

NOTE The performance characteristics relevant to this type of plywood and their requirements are given in Table A.2.

3.4.2
plywood for internal use as a structural component in humid conditions
plywood incorporating the performance characteristics from 4.2 that are relevant to plywood in EN 636, type EN 636-2

NOTE The performance characteristics relevant to this type of plywood and their requirements are given in Table A.2.

3.4.3
plywood for external use as a structural component
plywood incorporating the performance characteristics from 4.3 that are relevant to plywood in EN 636, type EN 636-3

NOTE The performance characteristics relevant to this type of plywood and their requirements are given in Table A.2.

3.4.4
plywood for internal use as a non-structural component in dry conditions
plywood incorporating the performance characteristics from 4.4 that are relevant to plywood in EN 636, type EN 636-1

NOTE The performance characteristics relevant to this type of plywood and their requirements are given in Table A.2.

3.4.5
plywood for internal use as a non-structural component in humid conditions
plywood incorporating the performance characteristics from 4.5 that are relevant to plywood in EN 636, type EN 636-2

NOTE The performance characteristics relevant to this type of plywood and their requirements are given in Table A.2.

3.4.6
plywood for external use as a non-structural component
plywood incorporating the performance characteristics from 4.6 that are relevant to plywood in EN 636, type EN 636-3

NOTE The performance characteristics relevant to this type of plywood and their requirements are given in Table A.2.

3.5
oriented strand board (OSB)
wood-based panel as defined in EN 300 as a multi-layered board made from strands of wood of a predetermined shape and thickness together with a binder. The strands in the external layers are aligned and parallel to the board length or width; the strands in the centre layer or layers can be randomly oriented, or aligned, generally at right angles to the strands of the external layers

3.5.1
OSB for internal use as a structural component in dry conditions
incorporating the performance characteristics from 4.1 that are relevant to board type OSB/2 in EN 300

NOTE The performance characteristics relevant to type OSB/2 and their requirements are given in Table A.3.

3.5.2
OSB for internal use as a structural component in humid conditions
incorporating the performance characteristics from 4.2 that are relevant to board type OSB/3 (general structural use) or OSB/4 (heavy duty) in EN 300

NOTE 1 The performance characteristics relevant to type OSB/3 and OSB/4 and their requirements are given in Table A.3.

NOTE 2 A revision of EN 300 is under development to cover also boards with a thickness of more than 25 mm. The requirements for these boards will become applicable as soon as the revised EN 300 is published.

3.5.3
OSB for internal use as a non-structural component in dry conditions
incorporating the performance characteristics from 4.4 that are relevant to board type OSB/1 in EN 300

NOTE The performance characteristics relevant to type OSB/1 and their requirements are given in Table A.3.

3.5.4
OSB for internal use as a non-structural component in humid conditions
incorporating the performance characteristics from 4.5 that are relevant to board type OSB/3 in EN 300

NOTE 1 The performance characteristics relevant to type OSB/3 and their requirements are given in Table A.3.

NOTE 2 A revision of EN 300 is under development to cover also boards with a thickness of more than 25 mm. The requirements for these boards will become applicable as soon as the revised EN 300 is published.

3.6
particleboard
(see: resin-bonded particleboard, cement-bonded particleboard)

3.6.1
resin-bonded particleboard
wood-based panel as defined in EN 309 manufactured under pressure and heat from particles of wood (wood flakes, chips, shavings, sawdust and similar) and/or other lignocellulosic material in particle form (flax shives, hemp shives, bagasse fragments and similar) with the addition of an adhesive

3.6.1.1
resin-bonded particleboard for internal use as a structural component in dry conditions
resin-bonded particleboard incorporating the performance characteristics from 4.1 that are relevant to board type P4 or types having higher levels of performance in EN 312

NOTE The performance characteristics relevant to type P4 and higher and their requirements are given in Table A.4.

3.6.1.2
resin-bonded particleboard for internal use as a structural component in humid conditions
resin-bonded particleboard incorporating the performance characteristics from 4.2 that are relevant to board type P5 or P7

NOTE The performance characteristics relevant to types P5 and P7 and their requirements are given in Table A.4.

3.6.1.3
resin-bonded particleboard for internal use as a non-structural component in dry conditions
resin-bonded particleboard incorporating the performance characteristics from 4.4 that are relevant to board type P1 or types having higher levels of performance in EN 312

NOTE The performance characteristics relevant to type P1 and higher and their requirements are given in Table A.4.

3.6.1.4
resin-bonded particleboard for internal use as a non-structural component in humid conditions
resin-bonded particleboard incorporating the performance characteristics from 4.5 that are relevant to board type P3, P5 or P7

NOTE The performance characteristics relevant to types P3, P5 and P7 and their requirements are given in Table A.4.

3.6.1.5
extruded particleboard for internal use as a non-structural component in dry conditions
resin-bonded particleboard incorporating the performance characteristics from 4.4 that are relevant to board types ES, ET, ESL or ETL in [A1] EN 14755 [/A1]

NOTE The performance characteristics relevant to types ES, ET, ESL and ETL and their requirements are given in Table A.4.

3.6.2
cement-bonded particleboard
wood-based panel as defined in EN 633, manufactured under pressure, based on wood or other vegetable particles bonded with hydraulic cement and possibly containing additives

3.6.2.1
cement-bonded particleboard for use in dry, humid and external conditions
cement-bonded particleboard incorporating the performance characteristics from Clause 4 that are relevant to cement-bonded particleboard in EN 634-2

NOTE The performance characteristics relevant to cement-bonded particleboard and their requirements are given in Table A.5.

3.7
fibreboard
wood-based panel as defined in EN 316 with a nominal thickness of 1,5 mm or greater, manufactured from lignocellulosic fibres with application of heat and/or pressure. The bond is derived from either

- the felting of the fibres and their inherent adhesive properties, or
- from a synthetic binder added to the fibres

Other additives can be included

3.7.1
hardboard
fibreboard as defined in EN 316 having a density of ≥ 900 kg/m^3, manufactured from lignocellulosic fibre by the “wet process”, i.e. having a fibre moisture content of more than 20 % at the forming stage and being produced under heat and pressure

3.7.1.1
hardboard for internal use as a structural component in dry conditions
hardboard incorporating the performance characteristics from 4.1 that are relevant to board type HB.LA in EN 622-2

NOTE The performance characteristics relevant to type HB.LA and their requirements are given in Table A.6.

3.7.1.2
hardboard for internal use as a structural component in humid conditions
hardboard incorporating the performance characteristics from 4.2 that are relevant to board type HB.HLA1 or HB.HLA2 in EN 622-2

NOTE The performance characteristics relevant to type HB.HLA1 and HB.HLA2 and their requirements are given in Table A.6.

3.7.1.3
hardboard for internal use as a non-structural component in dry conditions
hardboard incorporating the performance characteristics from 4.4 that are relevant to board type HB in EN 622-2

NOTE The performance characteristics relevant to type HB and their requirements are given in Table A.6.

3.7.1.4
hardboard for internal use as a non-structural component in humid conditions
hardboard incorporating the performance characteristics from 4.5 that are relevant to board type HB.H in EN 622-2

NOTE The performance characteristics relevant to type HB.H and their requirements are given in Table A.6.

3.7.1.5
hardboard for external use as a non-structural component
hardboard incorporating the performance characteristics from 4.6 that are relevant to board type HB.E in EN 622-2

NOTE The performance characteristics relevant to type HB.E and their requirements are given in Table A.6.

3.7.2
medium board
fibreboard as defined in EN 316 having a density of ≥ 400 kg/m^3 to < 900 kg/m^3, manufactured from lignocellulosic fibres by the “wet process”, i.e. having a moisture content of more than 20 % at the forming

stage and being produced under heat and pressure. Low density medium boards have a density range of 400 kg/m^3 to < 560 kg/m^3 and high density medium boards have a density range of 560 kg/m^3 to < 900 kg/m^3.

3.7.2.1
medium board for internal use as a structural component in dry conditions
medium board incorporating the performance characteristics from 4.1 that are relevant to board type MBH.LA1 (general structural use) or MBH.LA2 (heavy duty) in EN 622-3

NOTE The performance characteristics relevant to type MBH.LA1 and MBH.LA2 and their requirements are given in Table A.7.

3.7.2.2
medium board for internal use as a structural component in humid condtions
medium board incorporating the performance characteristics from 4.2 that are relevant to board type MBH.HLS1 (general structural use) or MBH.HLS2 (heavy duty) in EN 622-3

NOTE The performance characteristics relevant to type MBH.HLS1 and MBH.HLS2 and their requirements are given in Table A.7.

3.7.2.3
medium board for internal use as a non-structural component in dry conditions
medium board incorporating the performance characteristics from 4.4 that are relevant to board type MBL or type MBH in EN 622-3

NOTE The performance characteristics relevant to types MBL and MBH and their requirements are given in Table A.7.

3.7.2.4
medium board for internal use as a non-structural component in humid conditions
medium board incorporating the performance characteristics from 4.5 that are relevant to board type MBL.H or type MBH.H in EN 622-3

NOTE The performance characteristics relevant to types MBL.H and MBH.H and their requirements are given in Table A.7.

3.7.2.5
medium board for external use as a non-structural component
medium board incorporating the performance characteristics from 4.6 that are relevant to board type MBL.E or type MBH.E in EN 622-3

NOTE The performance characteristics relevant to types MBL.E and MBH.E and their requirements are given in Table A.7.

3.7.3
softboard
fibreboard as defined in EN 316 having a density of < 400 kg/m^3, manufactured from lignocellulosic fibres by the “wet process”, i.e. having a fibre moisture content of more than 20 % at the forming stage and being produced under heat and pressure

3.7.3.1
softboard for internal use as a structural component in dry conditions
softboard incorporating the performance characteristics from 4.1 that are relevant to board type SB.LS in EN 622-4

NOTE The performance characteristics relevant to type SB.LS and their requirements are given in Table A.8.