SLOVENSKI STANDARD
SIST EN 12369-1:2004

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Lesne plošče - Karakteristične vrednosti za dimenzioniranje konstrukcij - 1. del: OSB, iverne in vlaknene plošče

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

Holzwerkstoffe - Charakteristiche Werte für die Berechnung und Bemessung von Holzbauwerken - Teil 1: OSB, Spanplatten und Faserplatten

Panneaux a base de bois - Valeurs caractéristiques pour la conception des structures - Partie 1: OSB, panneaux de particules et panneaux de fibres

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79.060.20	Vlaknene in iverne plošče	Fibre and particle boards

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EUROPEAN STANDARD

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

Panneaux à base de bois - Valeurs caractéristiques pour la conception des structures - Partie 1: OSB, panneaux de particules et panneaux de fibres

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This European Standard was approved by CEN on 3 December 2000.

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 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 Management Centre has the same status as the official versions.

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

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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by July 2001, and conflicting national standards shall be withdrawn at the latest by July 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is intended to be used in conjunction with ENV 1995-1-1.

No existing European Standard is superseded.

Annex A is informative.

1 Scope

This European Standard provides information on the characteristic values for use in designing structures incorporating wood-based panels. The characteristic values given are as defined in ENV 1995-1-1.

This standard includes the characteristic values of both the mechanical properties and density for the panels set out below:

- OSB/2, OSB/3 and OSB/4, complying with EN 300;
- Particleboard, P4, P5 P6, P7 complying with EN 312 Parts 4 to 7;
- Hardboard, HB.HLA2 complying with EN 622-2;
- Medium board, MBH.LA2 complying with EN 622-3;
- MDF.LA and MDF.HLS complying with EN 622-5.

Characteristic values for plywood, solid wood panels, laminated veneer lumber (LVL) and cement bonded particleboards will be provided in one or more furthes parts of this standard.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 300, *Oriented Strand Boards (OSB) — Definitons, classification and specifications.*

EN 312-4, *Particleboards — Specifications — Part 4: Requirements for load-bearing boards for use in dry conditions.*

EN 312-5, *Particleboards — Specifications — Part 5: Requirements for load-bearing boards for use in humid conditions.*

EN 312-6, *Particleboards — Specifications — Part 6: Requirements for heavy duty load-bearing boards for use in dry conditions.*

EN 312-7, *Particleboards — Specifications — Part 7: Requirements for heavy duty load-bearing boards for use in humid conditions.*

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

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

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

EN 622-5, *Fibreboards — Specifications — Part 5: Requirements for dry process boards (MDF).*

EN 789, *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.*

ENV 1995-1-1 *Eurocode 5 - Design of timber structures — Part 1-1: General rules and rules for buildings.*

3 Terms and definitions and symbols

3.1 Terms and definitions

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

3.1.1
characteristic values
characteristic strength values are defined as the population 5-percentile values obtained from the results of tests with a duration of 300 s at an equilibrium moisture content of the test pieces relating to a temperature of 20 °C and a relative humidity of 65 %.

Characteristic stiffness values are defined as either the population 5-percentile or the mean values obtained under the same test conditions as defined above.

The stiffness values given in the tables are mean values as these are most commonly used in design. A note below each of the tables explains how to calculate the 5-percentile value.

The characteristic density is defined as the population 5-percentile value with mass and volume corresponding to equilibrium moisture content at a temperature of 20 °C and a relative humidity of 65 %. This value is used in the design of joints in association with ENV 1995-1-1.

3.1.2
service classes
three service classes are defined in ENV 1995-1-1. These are:

Service class 1: is characterised by a moisture content in the materials corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 65 % for a few weeks per year.

Service class 2: is characterised by a moisture content in the materials corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 85 % for a few weeks per year.

Service class 3: climatic conditions leading to higher moisture contents than in service class 2.

3.1.3
load duration classes
for strength and stiffness calculations actions are assigned to one of the load-duration classes given in table 1 (see ENV 1995-1-1).

The load-duration classes are characterised by the effect of a constant load acting for a certain period of time in the life of the structure. For a variable action the appropriate class is determined on the basis of an estimate of the interaction between the typical variation of the load with time and the rheological properties of the materials

Table 1 — Load-duration classes

Load-duration class	Order of accumulated duration of characteristic load	Examples of loading
Permanent	more than 10 years	self weight
Long-term	6 months — 10 years	storage
Medium-term	1 week — 6 months	imposed load
Short-term	less than on week	snow[a] and wind
Instantaneous		accidental load

[a] In areas which have a heavy snow load for a prolonged period to time, part of the load should be regarded as medium-term

3.2 Symbols

In the tables the following symbols are used:

3.2.1 main symbols

f Strength

E Modulus of elasticity (defined as stiffness in ENV 1995-1-1)

G Modulus of rigidity

k Retention in strength (k_{mod}) or stiffness (k_{def}) after a period of time relative to initial values. Values are included in ENV 1995-1-1.

t Thickness

ϱ Density as measured according to EN 323

$\parallel$ or 0 In the direction of the major axis of OSB

$\perp$ or 90 In the direction of the minor axis of OSB

3.2.2 subscripts

m Bending

t Tension

c Compression

v Panel shear

r Planar shear

nom Nominal

mod Strength

def Deflection

4 General

The characteristic values given in this standard are the minimum values applicable to products conforming to the appropriate EN specification standards. Suppliers may present these values in a format similar to that in annex A.

Alternatively, characteristic values other than chose contained in this standard shall be determined using sampling techniques set out in EN 1058 and testing procedures given in EN 789, and declared in a format similar to that in annex A. These characteristic values shall be supported by the following information:

- the product description;
- the product specification and part number;
- the service class or classes in which the panel can be used.

The characteristic values given in this standard are either different from the requirements given in the specification standard for each type of panel product, due to differences in test methodology or size of test piece used (as in the case of bending strength and modulus of elasticity), or are absent from the specification standards (as in the case of shear, in plane tension and compression).

5 Characteristic values

5.1 Introduction

This clause gives information on the characteristic values of both mechanical properties and density for those wood based panels the values of which, unless specified to the contrary, have been determined using the sampling techniques set out in EN 1058 and the testing procedures given in EN 789.

5.2 OSB (EN 300)

This subclause gives the minimum characteristic values for OSB complying with EN 300.

5.2.1 EN 300: OSB/2: Load-bearing boards for use in dry conditions and OSB/3: Load-bearing boards for use in humid conditions

When OSB/2 and OSB/3 are used structurally under service class 1 conditions, the characteristic values of the mechanical properties and density given in table 2 shall apply. These require to be modified according to ENV 1995-1-1 for duration of load (k_{mod}, k_{def}).

When OSB/3 is used structurally under service class 2 conditions, the characteristic values of the mechanical properties and density given in table 1 shall be modified according to ENV 1995-1-1 for both service class and duration of load (k_{mod}, k_{def}).

Table 2 — Characteristic values of boards complying with EN 300: OSB/2: Load bearing boards for use in dry conditions, and OSB/3: Load bearing boards for use in humid conditions

Thickness, mm	Characteristic density (kg/m^3) and strength (N/mm^2) values								
	Density	Bending		Tension		Compression		Panel Shear	Planar Shear
t_{nom}	ϱ	f_m		f_t		f_c		f_v	f_r
		0	90	0	90	0	90		
> 6 to 10	550	18,0	9,0	9,9	7,2	15,9	12,9	6,8	1,0
> 10 to 18	550	16,4	8,2	9,4	7,0	15,4	12,7	6,8	1,0
> 18 to 25	550	14,8	7,4	9,0	6,8	14,8	12,4	6,8	1,0

Thickness, mm	Mean stiffness values, N/mm^2							
	Bending		Tension		Compression		Panel Shear	Planar Shear
t_{nom}	E_m		E_t		E_c		G_v	G_r
	0	90	0	90	0	90		
> 6 to 10	4930	1980	3800	3000	3800	3000	1080	50
> 10 to 18	4930	1980	3800	3000	3800	3000	1080	50
> 18 to 25	4930	1980	3800	3000	3800	3000	1080	50

The 5 % characteristic values for stiffness should be taken as 0,85 times the mean values given in table 2. Other properties not given in table 2 shall comply with the requirements given in EN 300 for the grades OSB/2 or OSB/3.

5.2.2 EN 300: OSB/4: heavy-duty load bearing boards for use in humid conditions

When used structurally under service class 1 conditions, the characteristic values of the mechanical properties and density given in table 3 shall apply. These require to be modified for duration of load (k_{mod}, k_{def}).

When used structurally under service class 2 conditions, the characteristic values of the mechanical properties and density given in table 3 shall be modified according to ENV 1995-1-1 for both service class and duration of load (k_{mod}, k_{def}).

Table 3 — Characteristic values of boards complying with EN 300: OSB/4: Heavy-duty load bearing boards for use in humid conditions

Thickness, mm	Characteristic density (kg/m^3) and strength (N/mm^2) values								
	Density	Bending		Tension		Compression		Panel Shear	Planar Shear
t_{nom}	ϱ	f_m		f_t		f_c		f_v	f_r
		0	90	0	90	0	90		
> 6 to 10	550	24,5	13,0	11,9	8,5	18,1	14,3	6,9	1,1
> 10 to 18	550	23,0	12,2	11,4	8,2	17,6	14,0	6,9	1,1
> 18 to 25	550	21,0	11,4	10,9	8,0	17,0	13,7	6,9	1,1