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Nadomešča:
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Lesne plošče - Karakteristične vrednosti za projektiranje - 3. del: Masivne lesne plošče

Wood-based panels - Characteristic values for structural design - Part 3: Solid wood panels

Holzwerkstoffe - Charakteristische Werte für die Berechnung und Bemessung von Holzbauwerken - Teil 3: Massivholzplatten

Panneaux à base de bois - Valeurs caractéristiques pour la conception des structures - Partie 3 : Bois panneautés

Ta slovenski standard je istoveten z: EN 12369-3:2022

ICS:

79.060.99 Druge lesne plošče Other wood-based panels

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EUROPEAN STANDARD

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NORME EUROPÉENNE

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Wood-based panels - Characteristic values for structural design - Part 3: Solid wood panels

Panneaux à base de bois - Valeurs caractéristiques pour la conception des structures - Partie 3 : Bois panneautés

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This European Standard was approved by CEN on 20 April 2022.

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<https://standards.iteh.ai/catalog/standards/sist/b3f121f2-35c7-4e9a-b88b-f9cf40b80a1a/sist-en-12369-3-2022>



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

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

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European foreword

This document (EN 12369-3:2022) 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of an identical text or by endorsement, at the latest by January 2023, and conflicting national standards shall be withdrawn at the latest by January 2023.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 EN 12369-3:2008.

This document is intended to be used in conjunction with EN 1995-1-1.

The EN 12369 series *Wood-based panels – Characteristic values for structural design* is currently composed of the following parts:

- *Part 1: OSB, particleboards and fibreboards;*
- *Part 2: Plywood;*
- *Part 3: Solid wood panels;*

Annex A is informative.

Compared to EN 12369-3:2008 the following changes have been made:

- a) modification of the thickness range and of the values for single-layer panels given at Table 2 in conjunction with changes in EN 13353;
- b) modification the thickness ranges and of the values for multi-layer panels given at Table 3 in conjunction with changes in EN 13353;
- c) editorial changes.

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, Turkey and the United Kingdom.

EN 12369-3:2022 (E)**1 Scope**

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

This document includes the characteristic values of the mechanical properties and of the raw density for solid-wood panels complying with EN 13353:2022 technical classes SWP/1 S, SWP/2 S, SWP/3 S.

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 789, *Timber structures - Test methods - Determination of mechanical properties of wood based panels*

EN 1058, *Wood-based panels - Determination of characteristic 5-percentile values and characteristic mean values*

EN 1156, *Wood-based panels - Determination of duration of load and creep factors*

EN 1995-1-1, *Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings*

EN 13017-1, *Solid wood panels - Classification by surface appearance - Part 1: Softwood*

EN 13017-2, *Solid wood panels - Classification by surface appearance - Part 2: Hardwood*

3 Terms and definitions and symbols**3.1 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:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1.1**characteristic values****3.1.1.1****characteristic strength value**

population 5-percentile value 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 %

3.1.1.2**characteristic stiffness value**

either the population 5-percentile or the mean value obtained 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 %

Note 1 to entry: The stiffness values given in the Tables are mean values as these are most commonly used in design. Annex A explains how to calculate the 5-percentile value.

3.1.1.3

characteristic density

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 %

3.1.2

service classes

3.1.2.1

service class 1

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

[SOURCE: EN 1995-1-1:2004, 2.3.1.3]

3.1.2.2

service class 2

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

[SOURCE: EN 1995-1-1:2004, 2.3.1.3]

3.1.2.3

service class 3

climatic conditions leading to higher moisture contents than in service class 2

[SOURCE: EN 1995-1-1:2004, 2.3.1.3]

3.1.3

load duration class

class characterized by the effect of a constant load acting for a certain period of time in the life of the structure

Note 1 to entry: 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.

Note 2 to entry: For strength and stiffness calculations, actions are assigned to one of the load-duration classes given in Table 1.

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 to 10 years	storage
Medium-term	1 week to 6 months	imposed load
Short-term	less than one 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

3.2.1 General

The symbols used in the Tables 2 and 3 are given in 3.2.2 and 3.2.3. The load directions and denomination of strength and stiffness characteristics are shown in Figure 1.

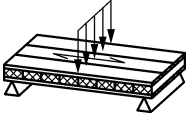
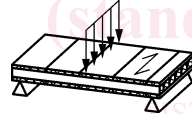
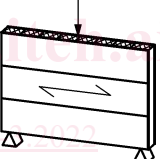
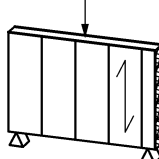
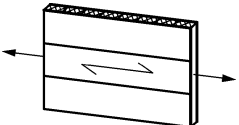
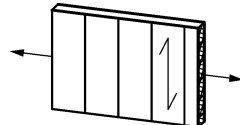
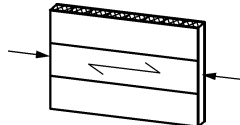
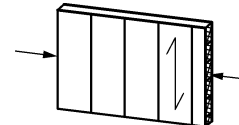
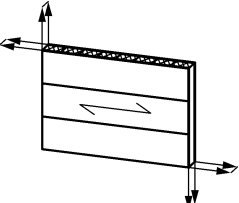
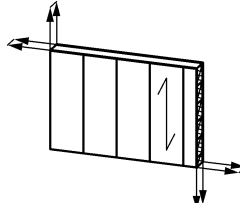
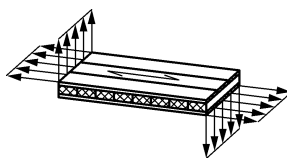
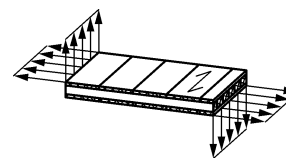
$f_{m,0,flat}$ & $E_{m,0,flat}$	$f_{m,90,flat}$ & $E_{m,90,flat}$	$f_{m,0,edge}$ & $E_{m,0,edge}$	$f_{m,90,edge}$ & $E_{m,90,edge}$
			
$f_{t,0}$ & $E_{t,0}$	$f_{t,90}$ & $E_{t,90}$	$f_{c,0}$ & $E_{c,0}$	$f_{c,90}$ & $E_{c,90}$
			
$f_{v,0,edge}$ & $G_{0,edge}$	$f_{v,90,edge}$ & $G_{90,edge}$	$f_{v,0,flat}$ & $G_{0,flat}$	$f_{v,90,flat}$ & $G_{90,flat}$
			

Figure 1 — Load directions and symbols

3.2.2 Main symbols

f	Strength
E	Modulus of elasticity (defined as stiffness in EN 1995-1-1)
G	Shear modulus
ρ	Density
k	Factor for modification in strength (k_{mod}) or stiffness (k_{def}) after a period of time relative to initial values. Values are included in EN 1995-1-1.

3.2.3 Subscripts

m	Bending
t	Tension
c	Compression
v	Shear
0	Parallel to the grain direction of the outer layer of SWP
90	Perpendicular to the grain direction of the outer layer of SWP
flat	flatwise
edge	edgewise
nom	Nominal
mod	Modification
def	Deformation

4 General

The characteristic values given in this document are the minimum values applicable to products conforming to EN 13353:2022. These values may be presented in the format as shown in Annex A or similar to it.

Alternatively, characteristic values other than those contained in this document shall be determined using sampling techniques as set out in EN 1058 and testing procedures given in EN 789, and declared in a format as shown in Annex A or similar to it.

Additionally, these characteristic values shall be supported by the following information:

- product description;
- requirement standard;
- service class or classes in which the panel can be used;
- particulars regarding the kind of wood and the appearance class as well as the panel structure.

EN 12369-3:2022 (E)

5 Characteristic values for solid wood panels

5.1 General

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

The minimum appearance class of the panels shall be class S and class C according to EN 13017-1 and EN 13017-2 respectively.

5.2 Load-bearing panels for use in all service classes

For load-bearing purposes under conditions of service class 1, class 2 and class 3, the characteristic values of the mechanical properties as specified in Table 2 and Table 3 require to be modified (k_{mod} , k_{def}) to EN 1995-1-1 for the service class as well as for the load duration.

In the case of single-layer solid wood panels the modification factors of solid wood shall be applied. In the case of multi-layer solid wood panels, the modification factors of plywood shall be applied.

For chemically or thermally treated wood the k_{mod} and k_{def} factors of EN 1995-1-1 cannot be used. The factors shall be found by testing according to EN 1156.

Table 2 — Characteristic values of single-layer solid-wood panels complying with EN 13353

Nominal thickness mm	Characteristic density (kg/m ³) and strength (N/mm ²)		
	Density	mean stiffness (N/mm ²)	
ρ		Bending perpendicular to the plane of the panel, parallel to the grain direction	
		$f_{m,flat}$	$E_{m,flat}$
10–55	410	0	0
		30	11 000

The 5-percentile value of stiffness should be 0,85 times the mean values given in Table 2. The characteristic values of strength class C24 according to EN 338 apply to the properties for all other characteristic values.