



SLOVENSKI STANDARD
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Wood-based panels - Characteristic values for structural design - Part 2: Plywood

Wood-based panels - Characteristic values for structural design - Part 2: Plywood

Holzwerkstoffe - Charakteristische Werte für die Berechnung und Bemessung von Holzbauwerken - Teil 2: Sperrholz

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Panneaux a base de bois - Valeurs caractéristiques pour la conception structurelle - Partie 2: Contreplaqué

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EUROPEAN STANDARD

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Wood-based panels - Characteristic values for structural design - Part 2: Plywood

Panneaux à base de bois - Valeurs caractéristiques pour la
conception structurelle - Partie 2: Contreplaqué

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This European Standard was approved by CEN on 2 January 2004.

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 document (EN 12369-2:2004) 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of an identical text or by endorsement, at the latest by August 2004, and conflicting national standards shall be withdrawn at the latest by August 2004.

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

NOTE prEN 1995-1-1 is in preparation.

Annex A is informative.

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

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EN 12369-2:2004 (E)**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 the mechanical properties for plywood complying with EN 636 and the requirements of EN 13986 when used in a bending mode.

Advice on obtaining the characteristic values for tension and compression for plywood by either testing or calculation is provided. Conservative values for shear are also included.

Characteristic values for OSB, particleboards and fibreboards are given in EN 12369-1. A further part of the standard for characteristic values of solid wood panels is in preparation.

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 636, *Plywood — Specifications.*

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 value

characteristic strength values are defined as the population 5-percentile values obtained from the results of tests with a duration of 300 s at 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. The note in annex A 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 class

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 class

for strength and stiffness calculations actions are assigned to one of the load-duration classes given in Table 1.

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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 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 of time, part of the load should be regarded as medium-term

EN 12369-2:2004 (E)**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
0	In the direction of the grain of the outer layers of plywood
90	Perpendicular to the direction of the grain of the outer layers of plywood

3.2.2 subscripts

m	Bending
t	Tension
c	Compression
v	Panel shear
r	Planar shear
k	Characteristic
mean	Mean
mod	Strength
def	Deflection

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4 General

The characteristic values given in this standard are the minimum values applicable to products conforming to EN 636. Suppliers may present these values in a format similar to that in annex A.

Alternatively, characteristic values other than those 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.

The characteristic values shall be supported by the following information:

- product description
- product specification
- service class or classes in which the panel can be used
- details of the veneer species and grade, and of the lay-up.

5 Characteristic values for plywood

5.1 Introduction

This part of this European Standard gives information on the characteristic values of the mechanical properties for plywood in bending, the values of which correspond to a series of strength classes and modulus classes.

Advice is given on the determination of the characteristic values in tension and compression by the combination of testing and calculation.

Conservative values for shear are presented.

5.2 EN 636: Plywood: Loadbearing panels for use in bending in all conditions

Plywood should comply with the requirements of EN 636 for a specific service class or classes.

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

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

Table 2 — Characteristic bending strength values $f_{m,k}$ for a series of strength classes for plywood complying with EN 636

Class	Minimum value $f_{m,k}$ characteristic bending strength (N/mm ²)
F 3	3
F 5	5
F 10	10
F 15	15
F 20	20
F 25	25
F 30	30
F 40	40
F 50	50
F 60	60
F 70	70
F 80	80