



SLOVENSKI STANDARD

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Nadomeglja:

SIST EN 636-1:1997

SIST EN 636-2:1997

SIST EN 636-3:1997

Vezane plošče - Specifikacije

Plywood - Specifications

Sperrholz - Anforderungen

Contreplaqué - Exigences

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79.060.10

Vezan les

Plywood

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 636

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Supersedes EN 636-1:1996; EN 636-2:1996; EN 636-3:1996

English version

Plywood - Specifications

Contreplaqué - Exigences

Sperrholz - Anforderungen

This European Standard was approved by CEN on 18 March 2003.

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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Contents

Foreword	3
1 Scope	3
2 Normative references	3
3 Terms and definitions	5
4 Classification system	5
5 General requirements	7
5.1 Tolerances on dimensions	7
5.2 Mechanical characteristics	7
5.2.1 General	7
5.2.2 Structural application	7
5.3 Formaldehyde release	7
5.3.1 Classification	7
5.3.2 Conditioning of test pieces	8
6 Requirements for plywood for use in dry conditions (EN 636-1)	8
6.1 Bonding quality	8
6.2 Biological durability	8
7 Requirements for plywood for use in humid conditions (EN 636-2)	9
7.1 Bonding quality	9
7.2 Biological durability	9
8 Requirements for plywood for use in exterior conditions (EN 636-3)	9
8.1 Bonding quality	9
8.2 Biological durability	9
9 Supplementary properties	9
10 Verification of compliance	9
10.1 General	9
10.2 External control	9
10.3 Factory production control	10
11 Marking, identification and documentation	10
Annex A (normative) Supplementary properties	12
Bibliography	13

Foreword

This document (EN 636:2003) 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 December 2003, and conflicting national standards shall be withdrawn at the latest by December 2003.

This document supersedes EN 636-1:1996, EN 636-2:1996 and EN 636-3:1996.

Compared to EN 636-1:1996, EN 636-2:1996 and EN 636-3:1996 the following modifications have been made:

- a) a classification system for bending strength and bending modulus has been added.
- b) the classification of formaldehyde release has been revised in accordance with EN 13986.

Annex A is normative.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

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This European Standard specifies the requirements for plywood for general purposes or structural application in dry, humid or exterior conditions. It also gives a classification system based on the bending properties.

NOTE 1 This standard will be called up in EN 13986 for construction applications.

The values listed in this standard relate to product properties but they are not characteristic values to be used in design calculations.

NOTE 2 Such characteristic values (e. g. for use in design calculation in ENV 1995-1-1) are given either in prEN 12369-2 or by the manufacturer, based on testing according to EN 789, EN 1058 and ENV 1156.

Additional information on supplementary properties for certain applications is also given.

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

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

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

EN 315, *Plywood — Tolerances for dimensions.*

EN 318, *Wood-based panels — Determination of dimensional changes associated with changes in relative humidity.*

EN 636:2003 (E)

EN 322, Wood-based panels — Determination of moisture content.

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

EN 324-1, Wood-based panels — Determination of dimensions of boards — Part 1: Determination of thickness, width and length.

EN 324-2, Wood-based panels — Determination of dimensions of boards — Part 2: Determination of squareness and edge straightness.

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 326-3, Wood based panels — Sampling, cutting and inspection — Part 3: Inspection of a consignment of panels.

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

EN 594, Timber structures — Test methods — Racking strength and stiffness of timber frame wall panels.

EN 596, Timber structures — Test methods — Soft body impact test of timber framed walls.

EN 635-1, Plywood — Classification by surface appearance — Part 1: General.

EN 635-2, Plywood — Classification by surface appearance — Part 2: Hardwood.

EN 635-3, Plywood — Classification by surface appearance — Part 3: Softwood.

ENV 635-4, Plywood — Classification by surface appearance — Part 4: Parameters of ability for finishing — Guideline.

EN 635-5, Plywood — Classification by surface appearance — Part 5: Method for measuring and expressing characteristics and defects.

ENV 717-1, 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.

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.

EN 1072, Plywood — Description of bending properties for structural plywood.

ENV 1156, Wood-based panels — Determination of duration load and creep factors.

EN 1195, Timber structures — Test methods — Performance of structural floor decking.

prEN 12369-2, Wood-based panels — Characteristic values for structural design — Part 2: Plywood.

EN 13446, Wood-based panels — Determination of withdrawal capacity of fasteners.

EN 13810-1, Wood-based panels — Floating floors — Part 1: Performance specifications and requirements.

CEN/TS 13810-2, Wood-based panels — Floating floors — Part 2: Test methods.

EN 13986, Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking.

ENV 14272, *Plywood — Calculation method for some mechanical properties.*

3 Terms and definitions

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

3.1

plywood for use in dry conditions (EN 636-1)

plywood to be used in conditions characterised by a moisture content in the material corresponding to a temperature of 20 °C and a relative humidity of the surrounding air only exceeding 65 % for a few weeks per year. These conditions correspond with service class 1 according to ENV 1995-1-1.

Boards of this type are suitable for use in biological hazard class 1 of EN 335-3

3.2

plywood for use in humid conditions (EN 636-2)

plywood to be used in conditions characterised by a moisture content in the material corresponding to a temperature of 20 °C and relative humidity of the surrounding air only exceeding 85 % for a few weeks per year. These conditions correspond with service class 2 according to ENV 1995-1-1.

Boards of this type are suitable for use in biological hazard class 1 and 2 of EN 335-3

NOTE This plywood is appropriate for protected external applications (e.g. behind cladding or under roof coverings), but is also capable of resisting weather exposure for short periods (e.g. when exposed during the construction). It is also suitable for interior situations where the service moisture condition is raised above humidity of dry conditions.

3.3

plywood for use in exterior conditions (EN 636-3)

plywood to be used in climatic conditions leading to higher moisture contents than in service class 2. These conditions correspond with service class 3 according to ENV 1995-1-1.

Boards of this type are suitable for use in biological hazard class 1, 2 and 3 of EN 335-3

NOTE It is capable of withstanding exposure to weathering conditions and liquid water, or water vapour in a damp but ventilated location, under consideration of 8.2.

4 Classification system

For the purpose of this standard, all types of plywood can be classified under a system independent of the composition factors (species, number of plies, thickness of the plies etc.) and based on the bending properties.

This classification system may be used to provide characteristic values for structural uses without testing semi-size test pieces referring to prEN 12369-2.

The values given in Tables 1 and 2 correspond to 5 percentile values based on the mean values, determined according to EN 310 and EN 326-2 for individual boards and calculated in accordance with EN 326-1.

These values shall not be used for structural design.

For the determination of the bending properties, see 5.2.

Table 1 — Bending strength classes for plywood

Bending strength		
Class		Lower limit value (N/mm ²)
$f_{m,0,5}$	F 3	5
	F 5	8
	F 10	15
	F 15	23
	F 20	30
	F 25	38
	F 30	45
	F 40	60
	F 50	75
	F 60	90
	F 70	105
	F 80	120

Table 2 — Bending modulus classes for plywood

Bending modulus		
Class		Lower limit value (N/mm ²)
$E_{m,0,5}$	E 5	500
	E 10	1 000
	E 15	1 500
	E 20	2 000
	E 25	2 500
	E 30	3 000
	E 40	4 000
	E 50	5 000
	E 60	6 000
	E 70	7 000
	E 80	8 000
	E 90	9 000
	E 100	10 000
	E 120	12 000
	E 140	14 000

For a given plywood, the 4 classes shall be given according to the following sequence:

Strength in length direction / strength in width direction / modulus in length direction / modulus in width direction

EXAMPLE For plywood with the following bending strengths and moduli values:

$$f_{m,0} = 22,4 \text{ N/mm}^2, f_{m,90} = 36,9 \text{ N/mm}^2, E_{m,0} = 3\,850 \text{ N/mm}^2 \text{ and } E_{m,90} = 4\,200 \text{ N/mm}^2,$$

the classes shall be expressed as: F 10/20 E 30/40

5 General requirements

5.1 Tolerances on dimensions

The tolerances on dimensions shall be as specified in EN 315.

5.2 Mechanical characteristics

5.2.1 General

Bending properties shall be determined on small test pieces in accordance with EN 310 and calculated according to EN 326-1.

5 percentile values are determined from minimum 30 panels of the same product type according to EN 326-2.

The bending properties are expressed according to clause 4. The 5 percentile values shall be at least equal to the lower limit of the classes given in Tables 1 and 2.

5.2.2 Structural application

In addition to 5.2.1, the characteristic values of the mechanical properties shall be determined according to EN 1058, from EN 789 test results. Provided that the mechanical properties of all the wood species involved in an untested composition have been derived from single species plywood panels, in accordance with EN 1058 and EN 789, the extrapolation of these test results to this untested composition shall be made using ENV 14272.

Tabulated minimum characteristic values of the mechanical properties for a number of classes, are given in prEN 12369-2.

The bending properties shall be used to identify the plywood according to EN 1072.

NOTE If it is made known by the purchaser that the boards are intended for specific use in flooring, walls or roofing the performance standard EN 12871 also has to be considered. This might result in additional requirements having to be complied with.

5.3 Formaldehyde release

5.3.1 Classification

For use in construction, refer to EN 13986.

For use in non constructional applications, the following applies :

Formaldehyde release of plywood for exterior use may be not determined. In this case, information shall be given that it shall be used only for exterior application.

Plywood for internal use shall be tested and classified into one of two classes: E 1 or E 2.

The test requirements for both initial type testing and factory production control/continuous surveillance are laid down in Table 3 for E 1 products and table 4 for E 2 products.

NOTE 1 Boards of Class E 1 can be used without causing an indoor air concentration greater than 0,1 ppm HCHO in conditions according to ENV 717-1.

The test requirement does not apply to plywood to which no formaldehyde containing material were added during production or in post-production processing. These may be classified E 1 without testing.

NOTE 2 Example of such plywood is uncoated, coated or overlaid plywood glued with resins emitting either no formaldehyde or negligible amounts of formaldehyde after production as e. g. isocyanate, or phenolic glue.

NOTE 3 The limit values for the class E 1 are given in Table 3 and for class E 2 are given in Table 4.