SLOVENSKI STANDARD
SIST EN 312-5:1998

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Iverne ploģ e - Specifikacije - 5. del: Zahteve za nosilne ploģ e za uporabo v vlaģnih razmerah

Particleboards - Specifications - Part 5: Requirements for load-bearing boards for use in humid conditions

Spanplatten - Anforderungen - Teil 5: Anforderungen an Platten für tragende Zwecke zur Verwendung im Feuchtbereich

Panneaux de particules - Exigences - Partie 5: Exigences pour panneaux travaillant utilisés en milieu humide

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79.060.20	Vlaknene in iverne ploģ e	Fibre and particle boards

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EN 312-5

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English version

Particleboards - Specifications - Part 5: Requirements for load-bearing boards for use in humid conditions

Panneaux de particules - Exigences - Partie 5: Exigences pour panneaux travaillants utilisés en milieu humide

Spanplatten - Anforderungen - Teil 5: Anforderungen an Platten für tragende Zwecke zur Verwendung im Feuchtbereich

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

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Contents

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 112 "Woodbased 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of an identical text or by endorsement, at the latest by September 1997, and conflicting national standards shall be withdrawn at the latest by September 1997.

This Standard is one of a series, specifying requirements for particleboards. The other parts of this series are listed in clause 2 and annex B.

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

1 Scope

This European Standard specifies the requirements for load-bearing particleboards for use in humid conditions[1]).

NOTE: These boards are intended for use in design and construction of load-bearing or stiffening building elements, e.g. walls, flooring, roofing or I-beams (see EN V 1995-1-1 and/or performance standards).

The values listed in this standard relate to product properties but they are not characteristic values to be used in design calculations[2]).

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

Particleboards in accordance with this standard may be referred to as P5-boards.

This standard does not give requirements for Oriented Strand Boards (OSB); these are set out in EN 300.

This standard does not apply to extruded particleboards.

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.

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

EN 311
Particleboards – Surface soundness of particleboards – Test method

EN 312-1
Particleboards – Specifications – Part 1: General requirements for all board types

EN 317
Particleboards and fibreboards – Determination of swelling in thickness after immersion in water

EN 318
Fibreboards – Determination of dimensional changes associated with changes in relative humidity

EN 319
Particleboards and fibreboards – Determination of tensile strength perpendicular to the plane of the board

EN 321
Fibreboards – Cyclic test in humid conditions

EN 323
Wood-based panels – Determination of density

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[1]) Humid conditions are defined in terms of service class 2 of EN V 1995-1-1 which is characterized by a moisture content in the material corresponding to a temperature of 20 °C and the relative humidity of the surrounding air only exceeding 85 % for a few weeks per year. Boards of this type are suitable for use in biological hazard classes 1 and 2 of EN 335-3.

[2]) Such characteristic values (e. g. for use in design calculation in EN V 1995-1-1) are given either in prEN 12369 or derived by testing according to EN 789, EN 1058 and prEN 1156.

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

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

3 Requirements

3.1 General

Particleboards shall comply with the general requirements as listed in EN 312-1, together with the requirements set out in Tables 1 and 2 of this standard.

The requirements in Tables 1 and 2 shall be met by 5 percentile values (95 percentile values in the case of thickness swelling) based on the mean values for individual boards and calculated in accordance with EN 326-1. In the case of thickness swelling they shall be equal to or less than the values in Tables 1 and 2 and in the case of all other properties they shall be equal to or greater than the values in Tables 1 and 2.

The values in Table 1 for both bending strength and modulus of elasticity shall apply to test results obtained in any direction in the plane of the panel.

3.2 Mechanical and swelling properties

Table 1: Requirements for specified mechanical and swelling properties

Property	Test method	Unit	Requirement							
			Thickness Range (mm, nominal)							
			3 to 4	>4 to 6	>6 to 13	>13 to 20	>20 to 25	>25 to 32	>32 to 40	>40
Bending strength	EN 310	N/mm²	20	19	18	16	14	12	10	9
Modulus of elasticity in bending	EN 310	N/mm²	2 550	2 550	2 550	2 400	2 150	1 900	1 700	1 550
Internal bond	EN 319	N/mm²	0,50	0,50	0,45	0,45	0,40	0,35	0,30	0,25
Swelling in thickness, 24 h	EN 317	%	13	12	11	10	10	10	9	9

NOTE 1: The values for bending properties and internal bond are charaterised by a moisture content in the material corresponding to a relative humidity of 65 % and a temperature of 20 °C.

The values for swelling in thickness are characterised by a moisture content in the material corresponding to a relative humidity of 65 % and a temperature of 20 °C before treatment.

NOTE 2: If it is made known by the purchaser that the boards are intended for specific use in flooring, walls or roofing the relevant performance standard has also to be consulted. This can result in additional requirements having to be complied with.

3.3 Moisture resistance

Table 2: Requirements for moisture resistance

Property	Test method	Unit	Requirement							
			Thickness Range (mm, nominal)							
			3 to 4	> 4 to 6	> 6 to 13	> 13 to 20	> 20 to 25	> 25 to 32	> 32 to 40	> 40
OPTION 1 *)										
Internal bond after cyclic test	EN 321	N/mm²	0,30	0,30	0,25	0,22	0,20	0,17	0,15	0,12
Swelling in thickness after cyclic test	EN 321	%	12	12	11	11	10	10	9	9
OPTION 2 *)										
Internal bond after boil test	EN 1087-1	N/mm²	0,15	0,15	0,15	0,14	0,12	0,11	0,10	0,09

*) The above choice of procedure should be regarded only as an interim measure pending the result of a prenormative research programme to develop a solution independent of the board composition.

NOTE: The values for internal bond and swelling in thickness after option 1 treatment are charaterised by a moisture content in the material (before and after cyclic test) corresponding to a relative humidity of 65 % and a temperature of 20 °C.

The values for internal bond after option 2 treatment are characterised by a moisture content in the material (before the boil test) corresponding to a relative humidity of 65 % and a temperature of 20 °C.

Requirements for moisture resistance, and if applicable swelling, are dependent upon the test method employed to assess these properties. Thus, two alternative sets of requirements (Option 1 and Option 2) are set out in Table 2 corresponding to the two principal recognised methods of evaluation. It is necessary for the manufacturer to show compliance with only one of these two options.

Option 1 requirements apply to those boards subjected to an accelerated ageing test, the so called "cyclic test in humid conditions" described in EN 321. The glues or adhesive systems suitable for the application of option 1 are unrestricted.

Option 2 requirements apply to boards with an adhesive system based on alkaline hardening phenolic resins, or the isocyanate PMDI, or any other adhesive system approved by an accredited body according to the procedure outlined in A.1. The internal bond after boil test is used for verification of conformity to control the bond quality.

The alkali content of boards shall not exceed 2,0 %, based on oven-dry mass and total thickness (tested analytically) and shall not exceed 1,7 % in the outer layers (by calculation).

When verifying compliance by external control only the test option performed and notified by the manufacturer shall be carried out. If the option is unknown it will be necessary to carry out both sets of procedures, even though compliance is required with only one set of requirements.

3.4 Supplementary properties

For certain applications, information on some of the properties listed in Table 3 can be required. On request, this information shall be supplied by the board manufacturer, and in this case shall have been derived using the EN test methods listed in Table 3.

Table 3: Supplementary properties and test methods

Property	Test method
Density	EN 323
Dimensional changes	EN 318
Surface soundness	EN 311

NOTE: For certain applications, information on additional properties not specified in table 3 can be required. For instance, for the determination of thermal conductivity and of water vapour transmission properties work is in progress in CEN/TC 89. Until this work is completed, users should refer to national publications. These should also be consulted for information on the fire behaviour of particleboards.

4 Verification of compliance

4.1 General

Verification of compliance with this EN shall be carried out using the test methods listed in tables 1 and 2 and in EN 312-1.

4.2 External control

External control of the factory, if any, shall be carried out according to a statistical basis[3]).

Inspection of consignments shall be carried out according to a statistical basis[3]).

4.3 Internal control

Internal control shall be carried out according to a statistical basis[3]).

The properties listed in the tables 1 and 2 and in EN 312-1, shall be controlled using intervals between tests not exceeding the intervals given in table 4. Sampling shall be carried out at random. Alternative test methods and/or unconditioned test pieces may be used if a valid correlation to the specified test methods can be proven (see prEN 326-2[3]). The intervals between tests given in table 4 are related to a production under statistical control.

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[3]) It is intended to apply EN 326-2 and EN 326-3 (which are under preparation for the time being) as a statistical basis when implemented.

Table 4: Maximum intervals between tests for each production line

Property	Maximum interval between tests
General properties	see EN 312-1
Moisture resistance Option 1 Option 2	 one week 8 h*)
All other properties listed in table 1	8 h*)
*) If several thickness ranges are produced in one 8 h shift, the internal control shall be organized so that at least one board of each thickness range is tested in one week's production.	

5 Marking

Each panel shall be clearly marked by the manufacturer by indelible direct printing with at least the following information in this sequence:

a) the manufacturer's name, trade mark, or identification mark;

b) the number of this EN 312-5;

c) the nominal thickness;

d) the formaldehyde class;

e) the batch number, or the production week and year.

NOTE: In case of cut-size panels, where the first purchaser is the user of the product and where he agrees that marking (other than on the package) is unnecessary, the marking of such individual panels in the package need not be undertaken.

Additionally, panels may be colour coded by the vertical application near one corner of a series of colour stripes each 25 mm in width; the colours shall comply with the colour coding system given in EN 312-1.