



SLOVENSKI STANDARD

SIST EN 319:1996

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Iverne in vlaknene plošče - Ugotavljanje razslojne trdnosti pravokotno na površino plošče

Particleboards and fibreboards - Determination of tensile strength perpendicular to the plane of the board

Spanplatten und Faserplatten - Bestimmung der Zugfestigkeit senkrecht zur Plattenebene

Panneaux de particules et panneaux de fibres - Détermination de la résistance a la traction perpendiculaire aux faces du panneau

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Ta slovenski standard je istoveten z: EN 319:1993

ICS:

79.060.20 Vlaknene in iverne plošče Fibre and particle boards

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en

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EUROPEAN STANDARD

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English version

Particleboards and fibreboards - Determination of tensile strength perpendicular to the plane of the board

Panneaux de particules et panneaux de fibres -
Détermination de la résistance à la traction
perpendiculaire aux faces du panneau

Spanplatten und Faserplatten - Bestimmung der
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CEN

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard was prepared by Working Group 1 "Particleboards" (Secretariat: Germany) and Working Group 3 "Fibreboards" (Secretariat: Italy) of Technical Committee CEN/TC 112, Wood-based panels (Secretariat: Germany).

This standard is one of a series specifying methods of test for determining the properties of particleboards and fibreboards.

No existing European Standard is superseded.

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of an identical text or by endorsement, at the latest by August 1993, and conflicting national standards shall be withdrawn at the latest by December 1994.

In accordance with the CEN/CENELEC Internal Regulations, 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, United Kingdom.

1 Scope

This European Standard specifies a method for determining the resistance to tension perpendicular to the plane of the board ("internal bond") of particleboards, fibreboards, and cement-bonded 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 last edition of the publication referred to applies.

EN 325 Wood-based panels - Determination of dimensions of test pieces

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

3 Principle

Determination of resistance to tension perpendicular to the surface of the test piece by submitting the latter to a uniformly distributed tensile force until rupture occurs. Tensile strength perpendicular to the plane of the board is determined by the maximum load in relation to the surface area of the test piece.

4 Apparatus

4.1 Sliding caliper

Sliding caliper according to EN 325.

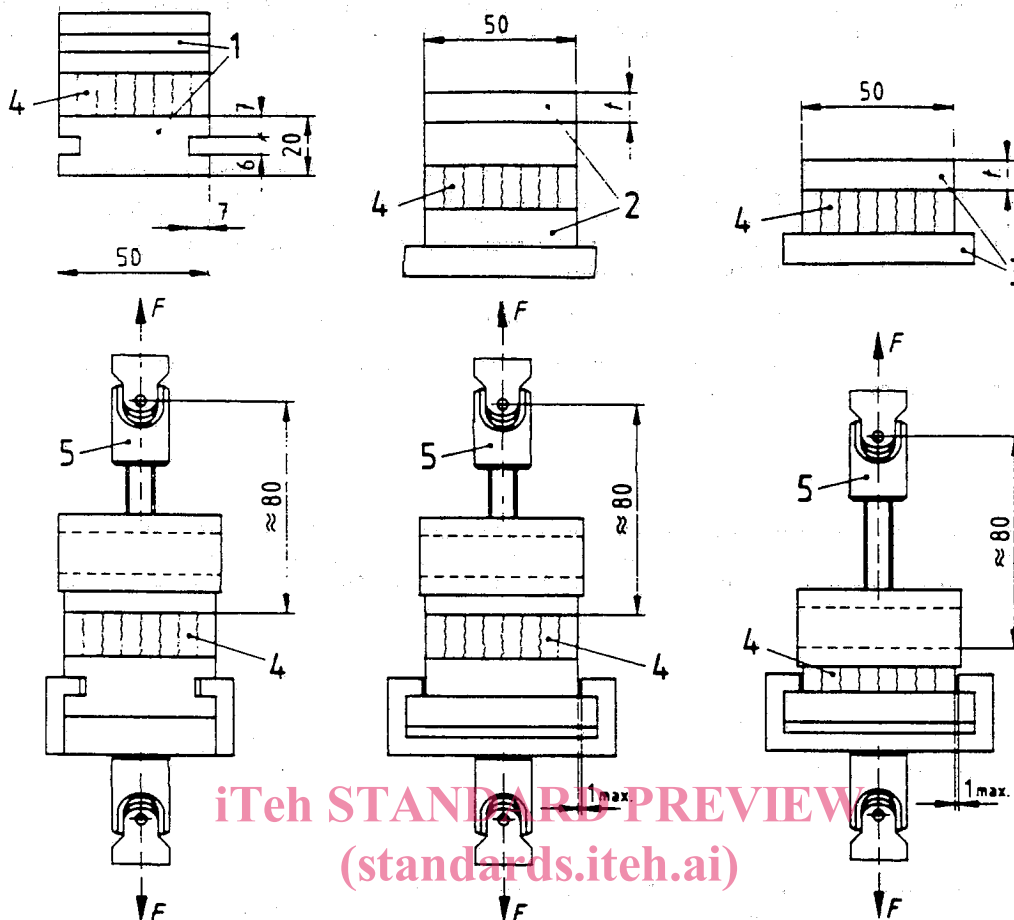
4.2 Testing machine

Testing machine, capable of applying a tensile force perpendicular to the surfaces of the test piece by means of grips (figure 1), and measuring this force to an accuracy of 1 %. The grips shall be self-aligning by means of a ball-and-socket joint on both sides of the test piece.

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¹⁾ At present at the draft stage

Dimensions in millimetres



- 1 Metal testing block
 2 Testing block (metal, hardwood or hardwood plywood) <http://standards.iteh.ai/sist/58b127cc-4fb2-4d87-a271-cd18d30651a6/sist-en-319-1996>
 3 Hardwood plywood testing block (not suitable for thin boards)
 4 Test piece
 5 Self-aligning ball-and-socket joint
 t = 10 mm minimum for metal testing blocks
 t = 15 mm minimum for hardwood and hardwood plywood blocks

Figure 1: Examples of apparatus for testing tensile strength perpendicular to the plane of the board

4.3 Test blocks

Test blocks (metal, hardwood or hardwood plywood), compatible with the fixing device, to which the test pieces are to be bonded (figure 1).

5 Test pieces

5.1 Sampling

Sampling and cutting of the test pieces shall be carried out according to EN 326-1.

5.2 Dimensions

The test pieces shall be square with a side length of (50 ± 1) mm. The test pieces shall be cut with precision, the angles shall be 90° and the edges shall be straight and clean.

5.3 Conditioning

The test pieces and the hardwood, or hardwood plywood, testing blocks shall be conditioned to constant mass in an atmosphere with a mean relative humidity of (65 ± 5) % and a temperature of (20 ± 2) °C. Constant mass is considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0,1 % of the mass of the test piece.

In some cases, for instance in a cyclic test in humid conditions or in an immersion-in-water test, alternative conditioning procedures may be specified. In this case the appropriate standard shall be consulted and followed.

5.4 Determination of dimensions

After conditioning, measure the length and width of each test piece according to EN 325.

5.5 Bonding of the test pieces to the loading blocks

Each test piece shall be bonded to loading blocks using a suitable adhesive. Excess glue pressed out from the glueline shall be removed. If hot-melt glue is used, the screen side of hardboards shall be sanded off until a smooth surface is achieved. If the screen side is not sanded off, a gap-filling glue (epoxy glue) shall be used.

When glueing, additional stresses affecting the test piece, by the moisture contained in the adhesive and the rise in temperature, etc., shall be avoided as far as possible.

NOTE: The following combinations have proved suitable:

- hot melt and epoxy glues with metal blocks
- hot melt, epoxy, PVAC, UF, phenol-resorcinol glues with hardwood and hardwood-plywood blocks

Certain glues are not suitable for bonding test pieces which have been subjected to a cyclic test in humid conditions or an immersion-in-water test. If the test pieces are bonded to their loading blocks after such a pretreatment they may be lightly sanded top and bottom to remove any roughness which has occurred during pretreatment.

The tests shall not be carried out until the glue has had sufficient time to cure, so that the rupture does not occur in the glueline, and until the test pieces have regained an equal distribution of moisture. By experience, approximately 24 h are sufficient if hotmelt or epoxy glues are used, and approximately 72 h, if other glues are used. During this time, the glued assembly shall be stored under controlled conditions of (65 ± 5) % relative humidity and a temperature of (20 ± 2) °C. Test pieces shall be tested not more than 1 hour after removal from the conditioning environment.

Conditioning is not applicable to test pieces or glued assemblies which have been subjected to a cyclic test in humid conditions or an immersion-in-water test and which are tested in the humid stage.

NOTE: When thin boards (< 8,0 mm thickness) or high density boards (> 800 kg/m³) are tested, it is recommended to use metal blocks, since experience has shown that the results are more variable with wooden blocks in these cases.

6 Procedure

6.1 Application of the load

Place the testing assembly in the grips and apply a force until rupture occurs. The load shall be applied at a constant rate of crosshead-movement throughout the test. The rate of loading shall be adjusted so that the maximum load is reached within (60 ± 30) s.

6.2 Measurement of failing load

Record the maximum load sustained by the test piece with a precision of 1 %. Reject the results from any test piece that exhibit partial or total glue-line failure or failure in the testing block. In this case, the test shall be repeated using new test pieces.

7 Expression of results

7.1 For a test piece

Tensile strength perpendicular to the plane of the board of each test piece, f_{t1} , expressed in N/mm² to two decimals, is calculated according to the following formula:

$$f_{t1} = \frac{F_{max}}{a \times b}$$

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where:

F_{max} is the breaking load, in Newton

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a, b is the length and width of the test piece, in millimetres
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7.2 For a board

The transverse tensile strength of the board is the mean value of all results obtained from the test pieces from that board, expressed in N/mm² to two decimals.

8 Test report

According to EN 326-1.