



SLOVENSKI STANDARD

SIST EN 318:1996

01-marec-1996

Vlaknene plošče - Določanje sprememb mer pri spremembah relativne vlažnosti

Fibreboards - Determination of dimensional changes associated with changes in relative humidity

Faserplatten - Bestimmung von Maßänderungen in Verbindung mit Änderungen der relativen Luftfeuchte

Panneaux de fibres - Détermination des variations dimensionnelles sous l'influence de variations de l'humidité relative

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Ta slovenski standard je istoveten z: EN 318:1993

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ICS:

79.060.20 Vlaknene in iverne plošče Fibre and particle boards

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en

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EUROPEAN STANDARD

EN 318:1993

NORME EUROPÉENNE

EUROPÄISCHE NORM

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Descriptors: Fibreboard, test method, dimensional changes, climatic conditions, thickness, length

English version

Fibreboards - Determination of dimensional changes associated with changes in relative humidity

Panneaux de fibres - Détermination des variations dimensionnelles sous l'influence de variations de l'humidité relative

Faserplatten - Bestimmung von Maßänderungen in Verbindung mit Änderungen der relativen Luftfeuchte

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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

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

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Foreword

This European Standard was prepared by 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 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No existing European Standard is superseded.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of an identical text or by endorsement, at the latest by August 1993, and conflicting national standards shall be withdrawn at the latest by December 1994.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 the determination of dimensional changes in fibreboards, due to climatic variations.

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 322 Wood-based panels
Determination of moisture content
- EN 325 Wood-based panels
Determination of dimensions of test pieces
- EN 326-1 Wood-based panels
Sampling, cutting and inspection
Part 1: Sampling and cutting of test pieces and expression of test results ¹⁾

3 Principle

Changes in length and thickness of test pieces are determined by measuring these dimensions after conditioning the test pieces at 20 °C and 65 % relative humidity, followed by reconditioning at 20 °C and 35 % relative humidity and at 20 °C and 85 % relative humidity and are expressed as a percentage increase (+ %) or decrease (- %) of the original value.

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4 Apparatus

4.1 Balance

Balance according to EN 322.

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4.2 Micrometer

Micrometer according to EN 325.

1) At present at the draft stage

4.3 Measuring instrument

Instrument for measuring dimensional changes with a reading accuracy of $\pm 0,01$ mm, for example:

- metal jig (figure 1). The surface of the gauge anvil shall be flat, and have a diameter of $(12 \pm 0,5)$ mm and an operating force of (4 ± 1) N (EN 325).
- optical measuring unit (figure 2), on which the measuring basis of 180 mm is marked.

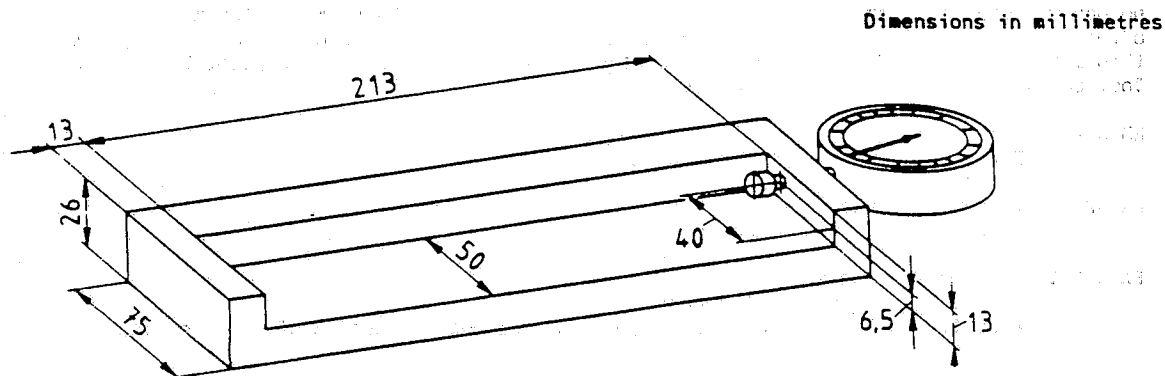
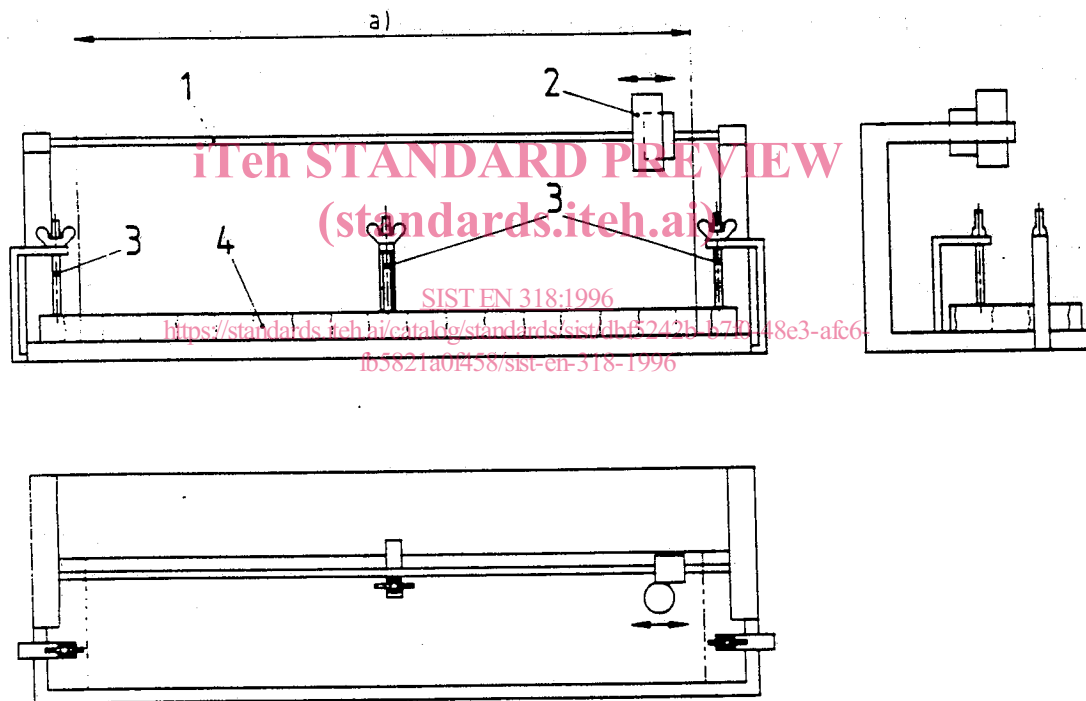


Figure 1: Apparatus for measuring length movement (metal jig)



- | | |
|--------------------------|-----------------------|
| 1 Rack | 4 Test piece |
| 2 Eyepiece with reticule | |
| 3 Clamping of test piece | a) Measuring distance |

Figure 2: Apparatus for measuring length movement (optical measuring unit)

4.4 Steel bar and calibrated weight

Steel bar, of 180 mm length, 20 mm width and 35 mm thickness (weight approximately 1000 grams) and a calibrated weight of 2000 grams.

4.5 Metal bar

Suitable metal bar for the calibration of length measurement.

4.6 Controlled humidity room

Controlled humidity room or airtight vessels capable of maintaining the required relative humidities.

4.7 Hygrometer

Calibrated hygrometer with an accuracy of $\pm 1\%$ to measure relative air humidity in the conditioned room or in the airtight vessels.

4.8 Thermometer

Calibrated thermometer with an accuracy of $\pm 1\text{ }^\circ\text{C}$, to measure the temperature in the conditioned room or in the airtight vessels.

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 rectangular, with dimensions of $(200 \pm 1)\text{ mm} \times (20 \pm 1)\text{ mm} \times$ board thickness. Three test pieces shall be cut from each panel from both longitudinal and transversal panel directions. If an optical measuring unit (4.3) is used for measuring length movement, the measuring basis of 180 mm shall be marked on the test pieces.

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6 Procedure

6.1 Conditioning

The test pieces shall be conditioned to constant mass under each of the following atmospheric conditions:

- (1) $(65 \pm 5)\%$ relative humidity at $(20 \pm 2)\text{ }^\circ\text{C}$
- (2) $(35 \pm 5)\%$ relative humidity at $(20 \pm 2)\text{ }^\circ\text{C}$
- (3) $(85 \pm 5)\%$ relative humidity at $(20 \pm 2)\text{ }^\circ\text{C}$

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.

NOTE 1: 35 %, 65 % and 85 % relative humidity and 20 °C are the averages at which the climatized room shall be controlled. The tolerances of $\pm 5\%$ relative humidity and $\pm 2\text{ }^\circ\text{C}$ only indicate the maximum permitted steering tolerances.

NOTE 2: The preliminary equilibrium measurement is made at 65 % relative humidity, so that the proportion of the observed dimensional change above or below this climate can be seen.

6.2 Measurements

After each of the conditioning operations (6.1), carry out the following measurements:

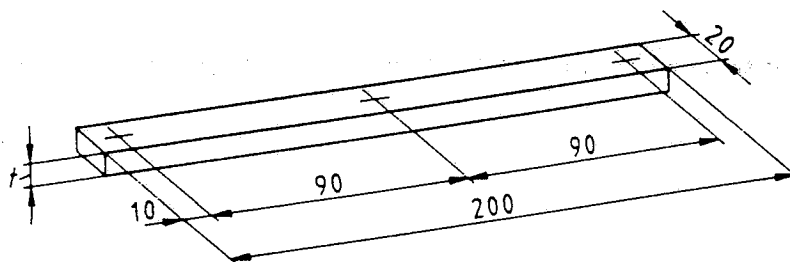
6.2.1 Thickness increase

Thickness is measured at three points (figure 3), according to EN 325. The average of the three readings is considered as the thickness of the test piece.

6.2.2 Length increase

Length is measured to an accuracy of 0,1 mm. The test piece shall be suitably marked so that for each successive measurement it can be placed in an identical position. If the metal jig is used, the steel bar and the weight of 2000 g (4.4) shall be placed on top of the test piece, to compensate any warp which may have occurred during conditioning. If the optical measuring unit is used, the test piece shall be fixed in such a way, that the marking of the measuring base on the instrument corresponds to one of the markings on the test piece.

Dimensions in millimeters



t thickness

Figure 3: Measuring points for measurement of thickness for dimensional changes associated with changes in relative humidity

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7 Expression of results

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7.1 Increase in length <https://standards.iteh.ai/catalog/standards/sist/dbf5242b-b7f0-48e3-afc6-fb5821a0f458/sist-en-318-1996>

The increase in length (IL) after reconditioning to 85 % relative humidity (IL85) and decrease in length after reconditioning to 35 % relative humidity (DL35) expressed as a percentage are calculated according to the following formulae:

$$IL85 = \frac{l_3 - l_1}{l_1} \times 100 \quad DL35 = \frac{l_2 - l_1}{l_1} \times 100$$

where:

l_1 is the length of the test piece at 20 °C/65 %, in millimetres

l_2 is the length of the test piece at 20 °C/35 %, in millimetres

l_3 is the length of the test piece at 20 °C/85 %, in millimetres

The results are expressed as a positive value (+ %) for IL85 and as a negative value (- %) for DL35 to the nearest 0,05 %.

7.2 Increase in thickness

The increase in the mean thickness of the test piece after reconditioning to 85 % relative humidity (IT85) and the decrease in the mean thickness of the test piece after reconditioning to 35 % relative humidity (DT35) expressed as a percentage are calculated according to the following formulae:

$$IT85 = \frac{t_3 - t_1}{t_1} \times 100$$

$$DT35 = \frac{t_2 - t_1}{t_1} \times 100$$

where:

t_1 is the thickness of the test piece at 20 °C/65 %, in millimetres

t_2 is the thickness of the test piece at 20 °C/35 %, in millimetres

t_3 is the thickness of the test piece at 20 °C/85 %, in millimetres

The results are expressed as a positive value (+ %) for IT85 and as a negative value (- %) for DT35 to the nearest 0,5 %.

7.3 Results of a board

The changes in length, expressed to 0,05 %, and in thickness, expressed to 0,5 %, of a board are the arithmetic means of the results of all test pieces taken from both longitudinal and transversal direction of that board. These values are expressed as positive values (+ %) for IL85 and IT85 and as negative values (- %) for DL35 and DT 35.

8 Test report

According to EN 326-1.

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