



**SLOVENSKI STANDARD**  
**SIST EN 321:1996**  
**01-marec-1996**

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**Vlaknene plošče - Ciklični preskus v vlažnih razmerah**

Fibreboards - Cyclic tests in humid conditions

Faserplatten - Zyklustest im Feuchtbereich

Panneaux de fibres - Essai cyclique en milieu humide

**Ta slovenski standard je istoveten z: EN 321:1996**

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English version

Fibreboards - Cyclic tests in humid conditions

Panneaux de fibres - Essai cyclique en milieu humide

Faserplatten - Zyklustest im Feuchtbereich

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CEN

European Committee for Standardization  
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Europäisches Komitee für Normung

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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No existing European Standard is superseded.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard:

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## 1 Scope

This European Standard is one of a series defining methods for the determination of the behaviour of a panel under the influence of moisture. This standard defines a cyclic test in humid conditions and is applicable to fibreboards.

## 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 317 Particleboards and fibreboards - Determination of swelling in thickness after immersion in water
- EN 319 Particleboards and fibreboards - Determination of tensile strength perpendicular to the plane of the board
- 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

## 3 Principle

The test pieces are exposed to three cycles, each comprising immersion in water, freezing, and drying and then tested for swelling in thickness and transverse tensile strength.

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## 4 Apparatus

### 4.1 Water bath

Thermostatically controlled water bath according to EN 317.  
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### 4.2 Freezer cabinet

Freezer cabinet which is capable of reaching a temperature between - 12 °C and - 20 °C within one hour after inserting the test pieces and of maintaining this temperature.

### 4.3 Drying oven

Laboratory drying oven with forced, evenly distributed air ventilation, with an air speed of around 1,50 m/s, which is capable of maintaining a temperature of  $(70 \pm 1)$  °C at the air inlet and allows an air exchange rate of about 30 per hour. It shall be capable of reaching the temperature of  $(70 \pm 1)$  °C within two hours after inserting the test pieces and of maintaining this temperature.

#### 4.4 Micrometer

Micrometer according to EN 325.

### 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

Per panel, five test pieces shall be taken, which shall be square in shape, with a side length of  $(50 \pm 1)$  mm.

#### 5.3 Conditioning

The test pieces shall be conditioned to constant mass in an atmosphere with a mean relative humidity of  $(65 \pm 5)$  % and a temperature of  $(20 \pm 2)$  °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.

### 6 Procedure

#### 6.1 Measurements

Measure the length, width and thickness of each test piece according to EN 325.

#### 6.2 Test cycles

Expose the test pieces to three cycles each comprising:

- immersion in water at  $(20 \pm 2)$  °C for  $(72 \pm 1)$  h
- freezing at between  $-12$  °C and  $-20$  °C for  $(24 \pm 0,25)$  h
- drying at  $(70 \pm 1)$  °C for  $(72 \pm 1)$  h

NOTE: To complete three cycles requires 21 days.

##### 6.2.1 Immersion in water

Immerse the test pieces with their faces vertical in water at  $(20 \pm 2)$  °C. They shall be separated by at least 15 mm from each other and from the bottom of the water bath. The upper edges of the test pieces shall be covered by  $(25 \pm 5)$  mm of water.

##### 6.2.2 Freezing

After each immersion period, the test pieces shall be removed from the tank and wiped off superficially with a cloth or blotting paper. The test pieces shall then immediately be placed with their faces vertical, well separated from each other, in the freezer cabinet (4.2).

### 6.2.3 Drying

After freezing, the test pieces shall be immediately transferred to the drying oven (4.3), where they are placed with their faces vertical and well separated from each other. The ratio of the volume of the test pieces to the volume of the drying oven shall be between 5 % and 10 %.

### 6.3 Reconditioning

The complete testing cycle of 168 h (1 week) is carried out three times. Rotate the test pieces through 90° after each complete cycle and leave them to cool down to room temperature before commencing the next cycle. After the completion of all three cycles, the test pieces shall be reconditioned to constant mass (5.3).

### 6.4 Measurement of thickness

Measure the thickness of the test pieces according to EN 325.

### 6.5 Determination of tensile strength

After measuring the thickness, determine tensile strength perpendicular to the plane of the board according to EN 319.

NOTE: Before bonding the test pieces to the loading blocks, their faces may be lightly sanded to remove any roughness caused by the cyclic test.

## 7 Expression of results

### 7.1 Swelling in thickness

Calculate and express swelling in thickness according to EN 317.

### 7.2 Tensile strength

Calculate and express tensile strength perpendicular to the plane of the board according to EN 319.

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## 8 Test report

According to EN 326-1.

Annex A (informative)

Bibliography

EN 316 Wood fibreboards - Definition, classification and symbols

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