



**SLOVENSKI STANDARD**  
**SIST EN 320:1998**

**01-marec-1998**

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**Vlaknene plošče - Določanje odpornosti proti aksialnemu izvleku vijaka**

Fibreboards - Determination of resistance to axial withdrawal of screws

Faserplatten - Bestimmung des achsenparallelen Schraubenausziehstandes

Panneaux de fibres de bois - Détermination de la résistance à l'arrachement des vis selon son axe

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**ICS:**

79.060.20      Vlaknene in iverne plošče      Fibre and particle boards

**SIST EN 320:1998**

**en**

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EUROPEAN STANDARD

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English version

**Fibreboards - Determination of resistance to axial withdrawal of screws**

Panneaux de fibres de bois - Détermination de la résistance à l'arrachement des vis selon son axe

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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No existing European Standard is superseded.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of an identical text or by endorsement, at the latest by August 1993, and conflicting national standards shall be withdrawn at the latest by December 1994.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.

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## 1 Scope

This European Standard specifies a method for the determination of the resistance of fibreboards to axial withdrawal of screws.

## 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 326-1 Wood-based panels - Sampling, cutting and inspection - Part 1: Sampling and cutting of test pieces and expression of test results <sup>1)</sup>

ISO 1478 Tapping screws thread

## 3 Principle

Face and edge withdrawal of screws are determined by measuring the force required to withdraw a defined screw from the test piece. Edge withdrawal is only determined on boards of 15 mm thickness or more.

## 4 Apparatus

### 4.1 Testing machine

Testing machine, which shall be capable of applying an increasing axial load to the underside of the screw head through a suitable stirrup, whilst adequately restraining the test piece at the same time and measuring the maximum load to an accuracy of 1 %.

### 4.2 Metal jig

For testing face withdrawal of screws of boards of less than 15 mm thickness, the use of a metal jig with a central boring, which restrains the test piece (figure 1) is recommended.

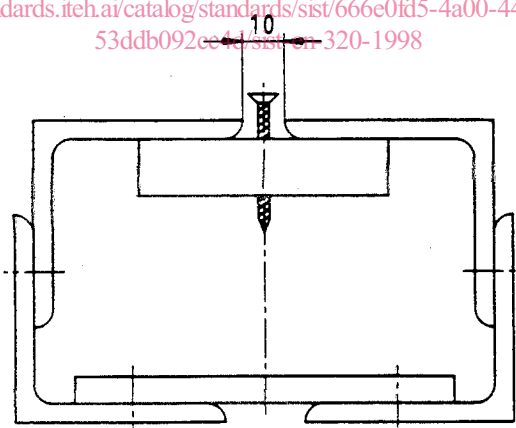


Figure 1: Principle of testing face screwholding on boards of < 15 mm thickness

<sup>1)</sup> At present of the draft stage

## 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

Five test pieces are taken from each sample board. The test pieces shall be square with a side length of  $(75 \pm 1)$  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.

NOTE: The tests should be carried out not later than 1 hour after removal of the test pieces from the conditioning environment.

### 5.4 Preparation of test pieces

After the test pieces have been conditioned, the screws shall be inserted into prebored pilot holes. Holes shall have a diameter of  $(2,7 \pm 0,1)$  mm and a depth of  $(19 \pm 1)$  mm. They shall be drilled perpendicular to the surface of the test piece, located at the midpoints of one face and two adjacent edges (on edges for boards of  $> 15$  mm thickness only).

For this test, a steel screw, nominal size 4,2 mm x 38 mm, with a thread no. ST 4,2 according to ISO 1478 and a thread pitch of 1,4 mm (figure 2) shall be used. The screws shall be inserted into the test pieces in such a way, that  $(15 \pm 0,5)$  mm of complete thread are embedded in the test piece. For testing face screwholding on test pieces of  $< 15$  mm, insert the screw in such a way that the length of the incomplete thread,  $y$ , protrudes on the opposite side of the test piece.

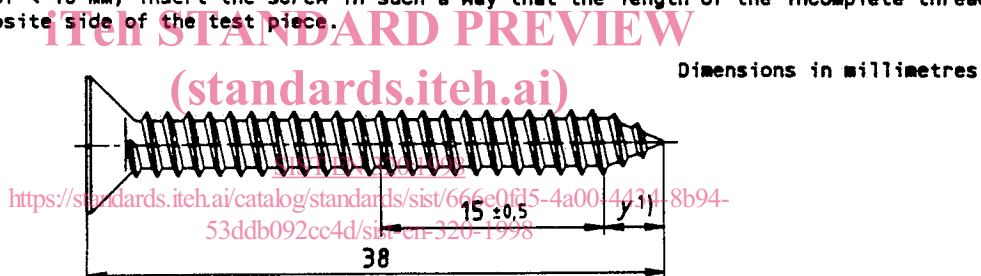


Figure 2: Parallel shank screw, nominal size 4,2 mm x 38 mm, with a thread no. ST 4,2 according to ISO 1478, thread pitch: 1,4 mm

1) Length of incomplete thread

## 6 Procedure

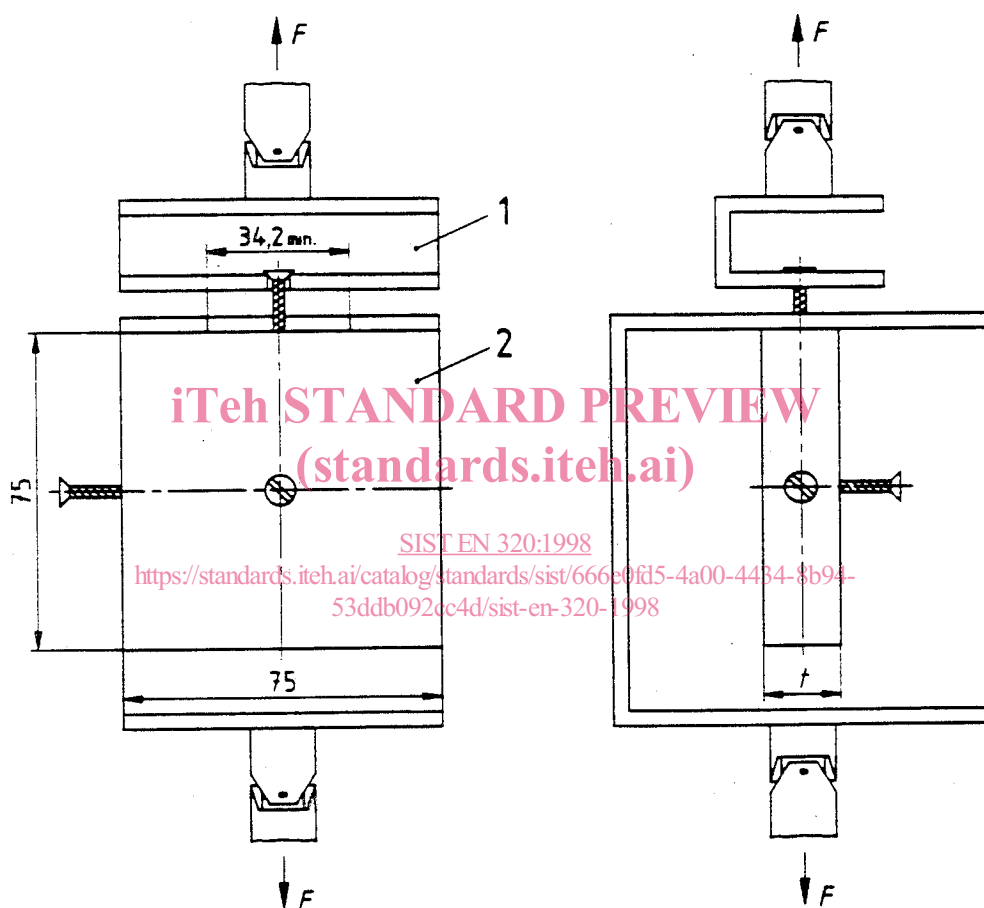
## 6.1 Positioning of test pieces

Mount the test pieces in the testing machine so that the surface under test is not supported at any point closer than 15 mm to the periphery of the embedded part of the screw and is held perpendicular to the direction of the force applied to the screw (figure 3). For the testing of face screw withdrawal on boards of < 15 mm thickness, the metal jig (figure 1) shall be used in such a way, that the screw is inserted into the boring in the centre of the metal jig, and the test piece is well restrained by the metal jig.

## 6.2 Application of the force

An increasing axial force is applied to the underside of the head of each screw in turn, through a stirrup incorporating a parallel-sided slot of suitable width to fit easily to the shank of the screw. Apply the axial load to the underside of the screw head at a constant rate of movement of  $(10 \pm 1)$  mm/min until maximum load is achieved.

Dimensions in millimetres



- 1 Stirrup  
2 Test piece  
t = test piece thickness  
F = load

Figure 3: Screw withdrawal test on boards of > 15 mm thickness (example)

### 6.3 Measurement of maximum load

Record the maximum load, to the nearest 10 N, sustained by the test piece during the withdrawal test on the face and both edges (edge screw withdrawal for boards  $\geq$  15 mm thickness only).

## 7 Expression of results

### 7.1 For a test piece

Separate withdrawal strengths are recorded for the face and edges of the test piece, expressed to 10 N. The edge screwholding value of a test piece is the arithmetic mean of the two results recorded on that test piece. The face screw withdrawal values of a test piece of less than 15 mm thickness shall be expressed in N/mm, by dividing the maximum load in Newton sustained by the test piece by its thickness in millimetres, to 1 N/mm.

### 7.2 For a board

Face and edge screwholding values of a board are the arithmetic means of the results of all test pieces taken from that board, expressed to 10 N for boards of  $\geq$  15,0 mm thickness, and to 1 N/mm for boards of  $<$  15,0 mm thickness.

## 8 Test report

According to EN 326-1.

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Annex A (informative)

Bibliography

EN 316 Wood fibreboards - Definition, classification and symbols  
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