INTERNATIONAL STANDARD 768

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Fibre building boards — Determination of bending strength

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 768 was drawn up by Technical Committee ISO/TC 89, *Fibre building boards.*

This International Standard is the revision of ISO Recommendation R 768-1968. As the Members of ISO/TC 89 considered the amendments made to that ISO Recommendation to be of minor importance, International Standard ISO 768 was submitted direct to the ISO Council under the abbreviated procedure (ISO Directives, Clause F.7.1).

This International Standard cancels and replaces ISO Recommendation R 768-1968, which was approved in October 1965 by the Member Bodies of the following countries :

Argentina	Germany	Romania
Australia	Hungary	South Africa, Rep. of
Austria	India	Spain
Belgium	Ireland	Sweden
Brazil	Israel	Switzerland
Canada	Japan	United Kingdom
Czechoslovakia	Netherlands	U.S.S.R.
Egypt, Arab. Rep. of	New Zealand	Yugoslavia
Finland	Poland	
France	Portugal	

No Member Body expressed disapproval of the document.

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Fibre building boards — Determination of bending strength

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the bending strength of fibre building boards, defined in ISO/R 818.

2 REFERENCES

ISO 766, *Fibre building boards — Determination of dimensions of test pieces.*

ISO/R 818, *Fibre building boards — Definition — Classification.*

ISO . . ., *Fibre building boards — Sampling, cutting and inspection.* (In preparation.)

3 PRINCIPLE

Placing a test piece on two supports.

Applying a load in its centre until failure.

Calculating the bending strength from the maximum load, the distance between the supports, and the width and the thickness of the test piece.

4 APPARATUS

4.1 Measuring instruments, as specified in ISO 766.

4.2 Testing apparatus (see Figure 1), having essentially

4.2.1 Two parallel cylindrical supports adjustable in the horizontal plane having a length exceeding 75 mm and a diameter D of

— 15 ± 0.5 mm, if the thickness of the test piece is ⩽ 7 mm,

— 30 ± 0.5 mm, if the thickness of the test piece is ⩾ 7 mm or ⩽ 20 mm,

— 50 ± 0.5 mm, if the thickness of the test piece is > 20 mm.

4.2.2 A loading head, placed parallel to the supports and equidistant to them, adjustable in the vertical plane, and having the same length and radius as those of the supports.

NOTE — For the test of test pieces of soft boards it is recommended to place a support of steel with a thickness < 1.0 mm on each cylindrical support, as shown in Figure 1a).

Dimensions in millimetres

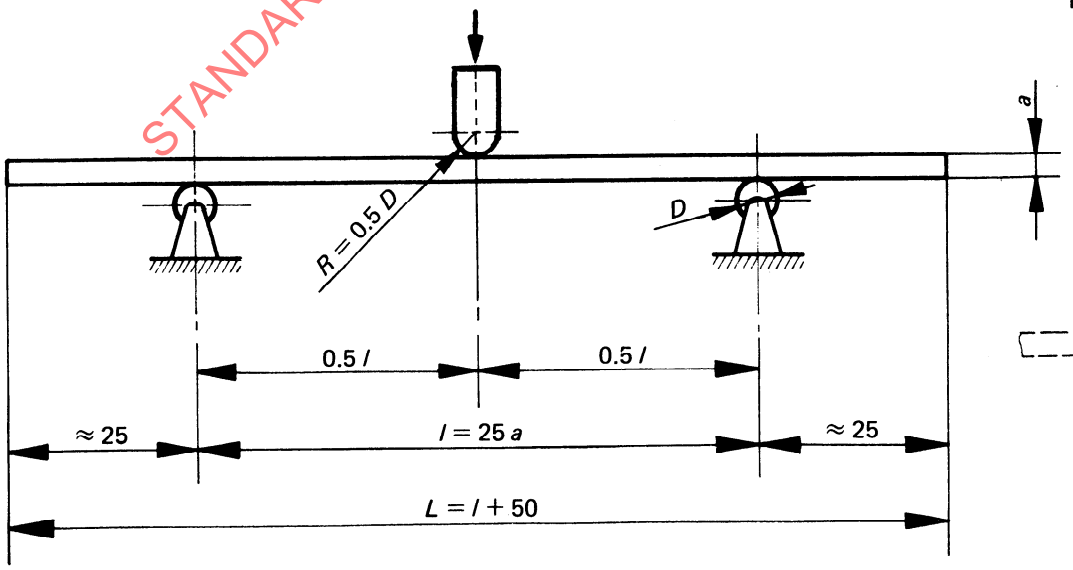

FIGURE 1

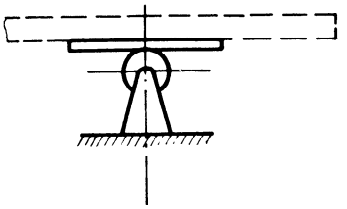

FIGURE 1a)

5 SAMPLING AND TEST PIECES

5.1 Sampling and cutting of the test pieces shall be carried out in accordance with ISO . . .

5.2 The test pieces shall be rectangular, of the following dimensions :

width b: approximately 75 mm,

length L: 25 times the nominal thickness, plus approximately 50 mm.

5.3 The test pieces shall be conditioned to constant mass[1] in an atmosphere of a relative humidity of 65 ± 5 % and a temperature of 20 ± 2 °C.

6 PROCEDURE

6.1 The width and thickness of each test piece shall be measured in accordance with ISO 766 as follows :

– the thickness, at three points along the transverse axis, one in the middle, the other two 15 mm from the edge, as shown in Figure 2.

– the width, on the same axis, as shown by the arrows in Figure 2.

Dimensions in millimetres

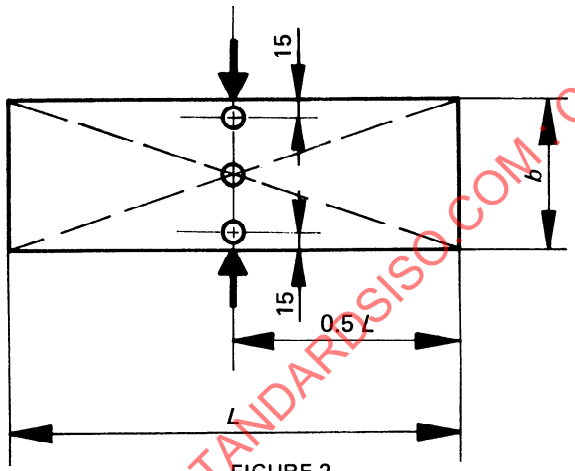

FIGURE 2

6.2 Adjust the distance between the supports to the nearest millimetre so that it is equal to 25 times the nominal thickness of the test piece.

6.3 Place the test piece flat on the supports, its length-axis being at right angles to those of the supports, so that the transverse axis of the test piece and the axis of the loading head are in the same plane (see Figure 1).

6.4 Apply the load through the loading head continuously at a speed of 30 ± 3 mm/min, until failure of the test piece, and read the maximum load to the nearest 1 N.

6.5 Tests shall be made on four groups of test pieces :

– two groups according to the direction of the board (lengthwise and crosswise),

– two groups according to the faces of the board.

7 CALCULATION AND EXPRESSION OF RESULTS

7.1 The bending strength σ_B, expressed in newtons per square millimetre, of each test piece is given by the formula

$$\sigma_B = \frac{3Pl}{2ba^2}$$

where

P is the maximum load, in newtons, to the nearest 1 N;

l is the distance between the supports, in millimetres, to the nearest 1 mm;

b is the width of the test piece, in millimetres, to the nearest 0.1 mm for test pieces of medium and hard boards, to the nearest 0.5 mm for test pieces of soft boards;

a is the thickness of the test piece in millimetres :

– for test pieces of hard and medium boards :

to the nearest 0.01 mm for test pieces of ⩽ 7 mm thickness,

to the nearest 0.05 mm for test pieces of > 7 mm thickness;

– for test pieces of soft boards :

to the nearest 0.1 mm for test pieces of all thicknesses.

The bending strength of each test piece shall be expressed to

– the nearest 0.5 N/mm² for medium and hard boards,

– the nearest 0.1 N/mm² for soft boards.

7.2 The bending strength of each group of test pieces of the board (see 6.5) is the arithmetical mean value of the bending strength of the relevant test pieces, rounded to

– 0.5 N/mm² for medium and hard boards,

– 0.1 N/mm² for soft boards.

7.3 The bending strength of one board is the arithmetical mean value of the results obtained from the four groups of test pieces rounded to

– 0.5 N/mm² for medium and hard boards,

– 0.1 N/mm² for soft boards.

1) 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.

8 TEST REPORT

The test report shall include the following particulars :

a) the type of board as defined in ISO/R 818, and all necessary details to identify the boards;

b) the results for each group of test pieces and for the board, expressed as stated in section 7;

c) the reference to this International Standard.

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