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# INTERNATIONAL STANDARD



# 769

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Fibre building boards — Hard and medium boards — Determination of water absorption and of swelling in thickness after immersion in water

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[ISO 769:1972](#)

<https://standards.iteh.ai/catalog/standards/sist/8a590fdd-7d4f-4c0b-bc46-656ee1ba319e/iso-769-1972>

## 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 769 was drawn up by Technical Committee ISO/TC 89, *Fibre building boards*.

This International Standard is the revision of ISO Recommendation R 769-1968. As the Members of ISO/TC 89 considered the amendments made to that ISO Recommendation to be of minor importance, International Standard ISO 769 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 769-1968, 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.

# Fibre building boards – Hard and medium boards – Determination of water absorption and of swelling in thickness after immersion in water

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the water absorption and swelling in thickness of hard and medium 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

Determination of the water absorption by calculating the increase in mass, and the swelling by calculating the increase in thickness of the test pieces after complete immersion in water.

## 4 APPARATUS

4.1 **Micrometer and balance**, as specified in ISO 766.

4.2 **A thermostatically controlled tank**, the temperature of which can be kept at  $20 \pm 1$  °C and in which the immersed test pieces can be maintained in the conditions indicated in section 6.

4.3 **Sheets of cellulose wadding**, or blotting paper, square in shape, with sides of at least 120 mm and of substance equal to or more than  $200 \text{ g/m}^2$ .

4.4 **Square plate**, with sides measuring 120 mm and having a mass of approximately 3 kg.

## 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 square in shape, with sides measuring 100 mm.

NOTE – In the case of perforated boards, the dimensions of the test pieces shall be such that they are representative of the whole board.

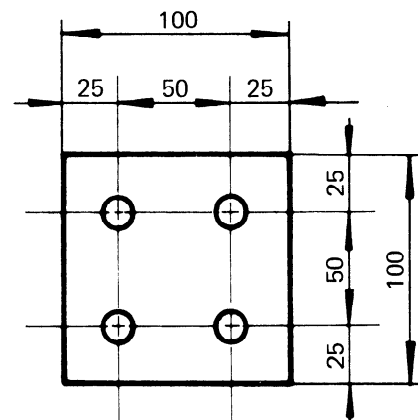
5.3 The test pieces shall be conditioned to constant mass<sup>1)</sup> in an atmosphere of a relative humidity of  $65 \pm 5$  % and a temperature of  $20 \pm 2$  °C.

## 6 PROCEDURE

6.1 Each test piece shall be weighed to an accuracy of  $\pm 0.1$  g.

6.2 The thickness of each test piece shall be measured in accordance with ISO 766, at four different points, shown as circles in the drawing below.

Dimensions in millimetres



The mean arithmetical value of the four measurements, stated to the nearest 0.01 mm, is considered to be the thickness of the test piece.

6.3 The test pieces, well separated from each other as well as from the bottom and sides of the tank, shall then be immersed vertically in clean and calm water having a pH value of  $6 \pm 1$  and a temperature of  $20 \pm 1$  °C at the beginning of every new test. The upper edges shall be immersed approximately 20 mm below the surface of the water.

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.

The immersion times shall be as follows :

- 2 h ± 5 min
  - and
  - 24 h ± 15 min
- } for medium boards. These two measurements are made on the same test piece.
- 24 h ± 15 min for hard boards.

6.4 Then take the test pieces out of the water and place each separately horizontally between the cellulose wadding or blotting paper in piles of a maximum of five, in order to remove excess water.

Load each pile with a square plate (4.4).

Keep the plate in this position for 30 s and then remove it and the absorbing sheets.

Weigh each test piece within the next 10 min and measure their thickness as stated under 6.2.

**7 CALCULATION AND EXPRESSION OF RESULTS**

**7.1 For each test piece**

**7.1.1 Water absorption**

The percentage of water, *A*, absorbed by each test piece shall be calculated in accordance with the following formula :

$$A = \frac{m_2 - m_1}{m_1} \times 100$$

where

- m*<sub>1</sub> is the mass, in grams, of the test piece before immersion;
- m*<sub>2</sub> is the mass, in grams, of the test piece after immersion.

The water absorption shall be determined to the nearest 0.1 %.

**7.1.2 Swelling**

The swelling in thickness, *G*, expressed as a percentage, of each test piece shall be calculated in accordance with the following formula :

$$G = \frac{a_2 - a_1}{a_1} \times 100$$

where

- a*<sub>1</sub> is the thickness, in millimetres, of the test piece before immersion;
- a*<sub>2</sub> is the thickness, in millimetres, of the test piece after immersion.

The swelling shall be determined to the nearest 0.1 %.

**7.2 For a board**

The water absorption and the swelling in thickness of a board are obtained by calculating the respective arithmetical mean values determined under 7.1.1 and 7.1.2 of all test pieces taken from the same board; they shall be stated to one decimal place.

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ISO 769:1972  
**8 TEST REPORT**  
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The test report shall include the following particulars :

- a) the type of boards as defined in ISO/R 818 and all necessary details to identify the boards;
- b) the results expressed as stated in section 7, by mentioning the immersion times, if necessary;
- c) the reference to this International Standard.