INTERNATIONAL STANDARD ISO 3546

Fibre building boards — Determination of surface finish (roughness)

Panneaux de fibres — Détermination de l'état de surface (rugosité)

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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 3546 was drawn up by Technical Committee ISO/TC 89, *Fibre building boards*, and was circulated to the Member Bodies in October 1974.

It has been approved by the Member Bodies of the following countries :

Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Bulgaria	Ireland	Sweden
Canada	Italy	Switzerland
Czechoslovakia	New Zealand	Turkey
France	Norway	United Kingdom
Germany	Poland	U.S.S.R.
Hungary	Romania	Yugoslavia

No Member Body expressed disapproval of the document.

Fibre building boards — Determination of surface finish (roughness)

1 SCOPE

This International Standard specifies a method for the determination of the surface finish (roughness) of fibre building boards.

It gives a general guide to the roughness of the surface and also forms a part of the "fibre raise" method.

2 FIELD OF APPLICATION

This International Standard applies to hard fibre building boards.

This method cannot be used for the measurement of the roughness of boards of which the air leakage by this method is less than 10 cm³/min.

3 REFERENCES

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

ISO . . ., *Fibre building boards — Sampling, cutting and inspection.*[1]

4 PRINCIPLE

Determination of roughness of the surface of a board by the measurement of the air leakage emanating from a measuring head placed on the surface of a test piece.

5 APPARATUS

5.1 Roughness tester[2] comprising the following parts :

5.1.1 Measuring head (figure 1) with an air inlet tube on one side. The head shall have a circular flat measuring surface in contact with the test piece and shall conform to the following data (see figure 1) :

Diameter of flat measuring surface,

outer : 50 ± 0,2 mm

inner : 10 ± 0,2 mm

Mass : 600 ± 5 g

Deviation from perfect flatness : not more than 0,005 mm.

NOTES

1 The perfect flatness of the measuring surface (the measuring head) is highly important. To check it, the head should be moved partially outside the edge of a good-quality mirror (or flat ground sheet of glass) and also be lightly loaded at the periphery, which will result in a definite slope if the measuring surface is convex.

2 A result of 0 cm³/min when the measuring head is placed on good-quality mirror glass is not sufficient, since the surface of the head may be slightly sloped in one direction or the other, so that perfect contact is obtained at the inner or outer periphery only.

3 For routine measurement of roughness, a more sophisticated and quickly operating apparatus with ten permanent integral gauges connected in parallel has been designed. The device has a large capacity but the operator is required to observe rigid discipline. In this context it may also be noted that the greatest care must be taken not to damage the smooth side of the measuring heads.

5.1.2 Air flow-rate meter, consisting of two flow meters with variable section, the first for a flow-rate of 5 to 150 cm³/min and the second for a flow-rate of 50 to 500 cm³/min. The flow meters should allow these air flow-rates to be determined with an error of less than 2,5 cm³/min and 5 cm³/min, respectively.

5.1.3 Pressure governor, consisting of, for example, a rotating cylindrical body (manostat) which by its weight restricts the flow of compressed air through two holes, to give a pressure in the measuring head which at various flow-rates corresponds to the following readings on a U-tube manometer filled with water :

Readings	Flow meter 1			Flow meter 2			
Air flow, cm³/min	5	100	150	50	100	300	500
Reading on the manometer, cm³	152	150	148	152	151	149	146

An equalizing bottle of at least 500 ml capacity shall be connected between the pressure governor and the flow-rate meter.

5.2 Compressed air supply apparatus ensuring a constant pressure of 127 × 10³ Pa (1,25 atm) above the pressure governor for all measuring ranges.

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1) In preparation.

2) The Bendtsen apparatus corresponds to the given specifications.

5.3 Clamp, arranged as in figure 3, i.e. :

5.3.1 Flat upper plate of aluminium, with ten holes intended to receive the measuring head (5.1.1).

5.3.2 Flat lower plate of aluminium, without holes.

5.3.3 Air pad.

5.4 Vacuum cleaner with a brush nozzle or other device, to clean the surface of the test piece thoroughly.

5.5 Enclosure for conditioning the test piece under standard climatic conditions.

6 SAMPLING AND TEST PIECES

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

6.2 The test pieces shall be squares, of side 30 cm.

7 PROCEDURE

7.1 Condition the test pieces to constant mass[1] in the enclosure (5.5) in an atmosphere of relative humidity 65 ± 5 % and temperature 20 ± 2 °C.

7.2 Carefully clean all dust and loose particles from the smooth side of the test piece with the aid of the vacuum cleaner (5.4).

7.3 Insert the test piece between the flat upper plate (5.3.1) and the flat lower plate (5.3.2) so that the ten holes in the plate (5.3.1) are as far as possible from each of the edges of the test piece. The ten holes in the plate (5.3.1) shall not overlap the test piece and shall not be tangent to the edges of the test piece.

7.4 Fix the test piece between the plates by applying air pressure to the air pad (5.3.3).

7.5 Place a measuring head (5.1.1) on the surface of the test piece in each of the holes in the upper plate, consecutively or simultaneously.

7.6 Note the result obtained for each measurement, in cubic centimetres per minute.

8 EXPRESSION OF RESULTS

The surface finish (roughness) shall be expressed as the air leakage in cubic centimetres per minute between the surface of the test piece and the measuring head, with an accuracy of 2,5 cm³/min for test results from 10 up to and including 100 cm³/min, and with an accuracy of 5 cm³/min for test results exceeding 100 cm³/min.

9 TEST REPORT

The test report shall include the following particulars :

a) the average for each test piece;

b) the average for each board and for the test batch;

c) description of observed surface faults;

d) all necessary information for the complete identification of the sample;

e) all functional details not considered in this International Standard or optional, as well as any incidents likely to have had an influence on the result.

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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.
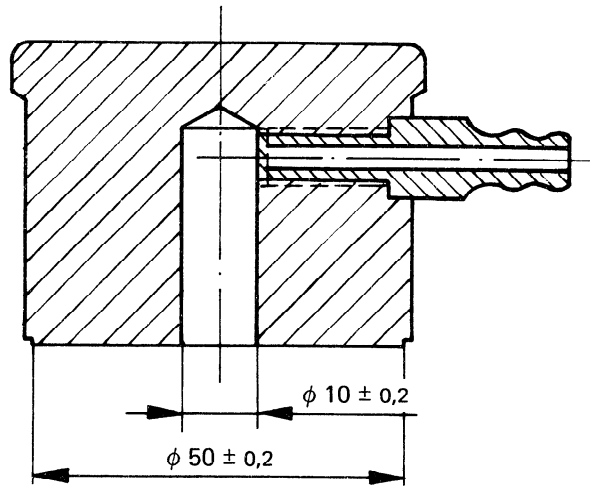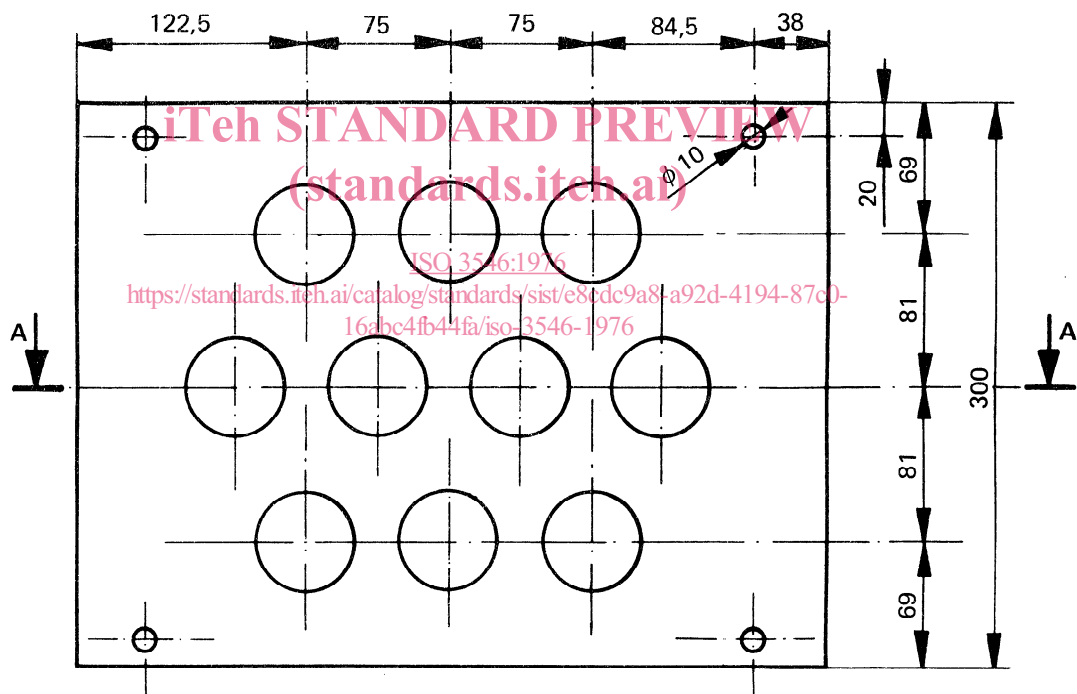
Dimensions in millimetres

FIGURE 1 — Measuring head

ϕ 10 ± 0,2

ϕ 50 ± 0,2

122,5   75   75   84,5   38

ϕ 10

20   69

A   81   A

300

81

69

FIGURE 2 — Upper plate

52   12

Upper plate

Test piece

Lower plate

Air pad

85   75   75   75   85

A   A

395
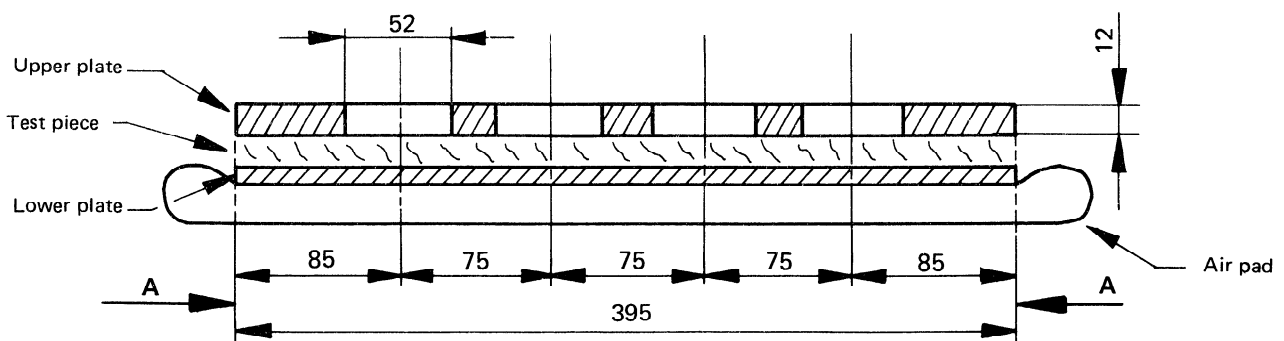
FIGURE 3 — Clamp for holding test piece

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