INTERNATIONAL STANDARD

ISO 9427

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Wood-based panels — Determination of density

Panneaux à base de bois — Détermination de la masse volumique

Reference number
ISO 9427 : 1989 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 9427 was prepared by Technical Committee ISO/TC 89, *Wood-based panels.*

It cancels and replaces ISO 819 : 1975, ISO 822 : 1975 and ISO 3805 : 1977, of which it constitutes a technical revision.

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Wood-based panels — Determination of density

1 Scope

This International Standard specifies a method of determining the density of wood-based panels such as fibre building boards, defined in ISO 818, particle boards, defined in ISO 820, as well as plywood, defined in ISO 2074.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 818 : 1975, *Fibre building boards — Definition — Classification.*

ISO 820 : 1975, *Particle boards — Definition and classification.*

ISO 2074 : 1972, *Plywood — Vocabulary.*

ISO 9424 : 1989, *Wood-based panels — Determination of dimensions of test pieces.*

ISO 9425 : 1989, *Wood-based panels — Determination of moisture content.*

3 Principle

Determination of the ratio of the mass, in grams, of each test piece to its volume, in cubic centimetres.

4 Apparatus

4.1 Thickness measurement

Micrometer, having flat and parallel circular measuring surfaces of 16 mm ± 1 mm diameter and an operating force of 4 N ± 1 N. The graduation of the apparatus shall allow a reading to an accuracy of 0,01 mm.

4.2 Length and width measurement

Sliding caliper, or any other instrument, with measuring surfaces of at least 5 mm width, graduated to allow a reading to an accuracy of 0,1 mm.

4.3 Balance, allowing a measurement to an accuracy of 0,01 g.

5 Sampling, dimensions and conditioning of test pieces

5.1 Sampling and cutting of test pieces will be the subject of a future International Standard.

5.2 The test pieces shall be square in shape, with sides measuring 100 mm.

In the case of extruded panels, cellular panels, or panels of similar structure with cavities parallel to the length or width of the test piece, the total length or width of the test piece shall be at least twice the length or width of any individual core element (i.e. two tube diameters plus two web thicknesses) and the test pieces shall have a symmetrical cross-sectional area as shown in figure 1.

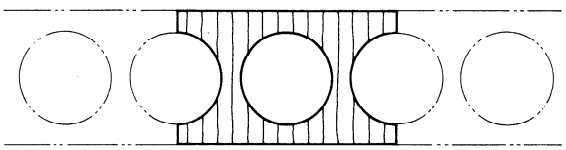

Figure 1 — Cross-section of tubular boards

5.3 Condition the test pieces to constant mass in an atmosphere with a relative humidity of 65 % ± 5 % and a temperature of 20 °C ± 2 °C.

NOTE — 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 Weigh each test piece to an accuracy of 0,1 g.

6.2 Measure the dimensions of each test piece, in accordance with ISO 9424, as follows.

a) Measure the thickness at four points, shown as open circles in figure 2, to an accuracy of 0,01 mm and calculate the arithmetic mean of the measurements to the nearest 0,01 mm.

Dimensions in millimetres

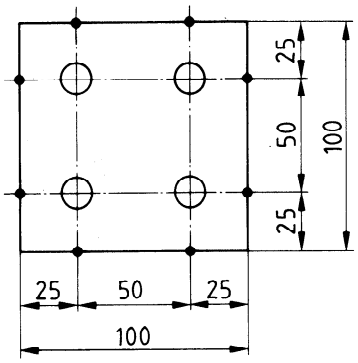

Figure 2 — The points of measurement

b) Measure the length and width at two points, parallel to the edges of the test piece, along lines which pass through the centres of the open circles shown in figure 2, to an accuracy of 0,1 mm and calculate the arithmetic mean of the measurements for the length and the width to the nearest 0,1 mm.

6.3 Calculate the volume of the test piece to the nearest 0,1 cm^3.

7 Expression of results

7.1 Calculate the density ϱ, in grams per cubic centimetre, of each test piece to the nearest 0,01 g/cm^3 in accordance with the following formula:

$$\varrho = \frac{m}{V}$$

where

m is the mass of the test piece, in grams;

V is the volume of the test piece, in cubic centimetres.

7.2 Obtain the density of one board by calculating to the nearest 0,01 g/cm^3 the arithmetic mean of the densities of all the test pieces taken from the same board.

8 Test report

The test report shall include the following particulars:

a) the type of board, as defined in ISO 818, ISO 820 and ISO 2074, and all necessary details to identify the board;

b) the method of sampling;

c) the moisture content of the test pieces at the time of testing, calculated in accordance with ISO 9425;

d) the results, expressed as stated in clause 7;

e) any deviations from this International Standard;

f) reference to this International Standard;

g) any operation not included in this International Standard, or regarded as optional, as well as any incidents likely to have affected the results.

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