International Standard 4469

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Wood — Determination of radial and tangential shrinkage

Bois — Détermination des retraits radial et tangentiel

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Foreword

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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.

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It has been approved by the member bodies of the following countries :

Australia	France	Poland
Austria	Germany, F.R.	Romania
Belgium	Ghana	South Africa, Rep. of
Brazil	Hungary	Sweden
Bulgaria	India	Turkey
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The member bodies of the following countries expressed disapproval of the document on technical grounds :

Canada
Ireland
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Wood — Determination of radial and tangential shrinkage

1 Scope and field of application

This International Standard specifies a method for the determination of linear shrinkage, in the radial and tangential directions, of wood.

2 References

ISO 3129, *Wood — Sampling methods and general requirements for physical and mechanical tests.*

ISO 3130, *Wood — Determination of moisture content for physical and mechanical tests.*

3 Principle

Determination of the linear dimensions, in the radial and tangential directions, of test pieces after drying at a moisture content in equilibrium with the normal environment, and at a moisture content equal to or greater than the saturation point of the cellular walls of wood.

4 Apparatus

4.1 Measuring instrument, capable of determining dimensions to an accuracy of 0,01 mm, fitted with flat ends each of diameter 5 to 8 mm, and applying a clamping force which will not cause any deformation greater than the accuracy of the instrument.

4.2 Oven, for drying wood at a temperature of 103 ± 2 °C.

4.3 Vessel, containing distilled water.

4.4 Air-tight vessel, containing a desiccant.

4.5 Balance, accurate to 0,01 g, if the method of successive weighing (see ISO 3130) is to be used.

5 Preparation of test pieces

5.1 Test pieces shall be made in the form of rectangular prisms, of base 20 mm × 20 mm, and of length along the grain from 10 to 30 mm. The angle of inclination of annual rings to a pair of opposite faces of the test piece shall not exceed 10°.

5.2 The preparation and number of test pieces shall be in accordance with ISO 3129.

6 Procedure[1)]

6.1 The moisture content of test pieces shall be considerably higher than the fibre saturation point. When the moisture content is less than the limit of saturation, soak the test pieces in distilled water in the vessel (4.3) at a temperature of 20 ± 5 °C until no further change in dimensions occurs. Check the changes in dimensions every 3 days through repeated measurements of two or three test pieces in corresponding directions. Stop the soaking when the difference between two successive measurements does not exceed 0,02 mm. In this case, it should be reported that the results of the determination of shrinkage are obtained on test pieces which have been previously soaked.

6.2 Measure the cross-sectional dimensions of every test piece to an accuracy of 0,01 mm in the middle of the radial and tangential faces of the pieces (dimension $l_{r\,max}$ being measured in a radial direction and dimension $l_{t\,max}$ in a tangential direction).

6.3 Condition the test pieces to a moisture content in equilibrium with the normal environment (relative humidity 65 ± 5 %; temperature 20 ± 2 °C) so that no checks distorting their dimensions and shape occur. Check the changes in dimensions of two or three control test pieces by repeated measurements, as specified in 6.2, every 6 h after stabilization of the conditioning environment. Stop the conditioning when the difference between two successive measurements does not exceed 0,02 mm. The conditioning of test pieces may be stopped by using the method of successive weighing in accordance with ISO 3130.

1) If necessary, shrinkage may also be determined at relative humidities between 30 and 90 %.