International Standard

ISO 13061-16

Second edition
2025-03

Physical and mechanical properties of wood — Test methods for small clear wood specimens —

Part 16: Determination of volumetric swelling

Propriétés physiques et mécaniques du bois — Méthodes d'essais sur petites éprouvettes de bois sans défauts —

Partie 16: Détermination du gonflement volumique

Reference number
ISO 13061-16:2025(en)

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 218, *Timber*.

The second edition cancels and replaces the first edition (ISO 13061-16:2017), which has been editorially and technically revised.

The main changes are as follows:

— changes in the sizes and measurements of test pieces and the calculation of test results.

A list of all parts in the ISO 13061 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Physical and mechanical properties of wood — Test methods for small clear wood specimens —

Part 16: Determination of volumetric swelling

1 Scope

This document specifies methods for the determination of volumetric swelling of wood.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3129, *Wood — Sampling methods and general requirements for physical and mechanical testing of small clear wood specimens*

ISO 24294, *Timber — Round and sawn timber — Vocabulary*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 24294 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Principle

Stereometric and immersion methods are specified for determining the volumetric swelling by measuring volume of a test piece after drying to a constant mass and after soaking in water to a constant volume. The volume of the test pieces is calculated as a product of the linear dimensions of the test piece in stereometric method and measured as the volume of water displaced or the mass of the water displaced in immersion method. The volumetric swelling is calculated as the change of the volume expressed as a percentage of the original volume. The initial measurements shall be taken on test pieces in oven-dry state. The final measurements shall be taken on the fully saturated test pieces.

5 Sampling

The selection, preparation and the minimum number of test pieces shall be in accordance with ISO 3129.

6 Stereometric method

6.1 Apparatus

6.1.1 Measuring instruments, capable of determining dimensions to an accuracy of 0,02 mm, fitted with parallel flat ends each of diameter 5 mm to 8 mm and applying a clamping force which will not cause any deformation greater than the accuracy of the instrument.

6.1.2 Forced convection oven that can be maintained at a temperature of (103 ± 2) °C throughout the drying chamber for the time required to dry the specimen to the end point shall be used. The oven shall be vented to allow the evaporated moisture to escape.

6.1.3 Desiccator, a vapour-tight container with absorbent material (e.g. silica gel, calcium chloride, etc.) to maintain the air dry.

6.1.4 Vessel, containing distilled water.

6.1.5 Balance, accurate to 0,001 g.

6.2 Preparation of test pieces

6.2.1 Dimensions of test pieces

6.2.1.1 Test pieces shall be cut from wood in the air-dry state in the form of rectangular prisms.

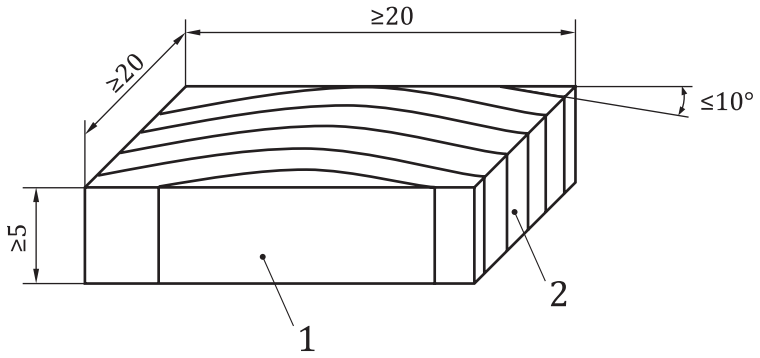
6.2.1.2 The size of the prism shall be at least 20 mm square in radial and tangential directions and at least 5 mm along the grain if the longitudinal swelling is neglected in the measurements.

6.2.1.3 If the longitudinal swelling is considered in the determination, the length of the prism along the grain shall be not less than 100 mm.

6.2.2 Inclination of annual rings of test pieces

The angle of inclination of growth rings to a pair of opposite tangential faces of the test pieces shall not exceed 10° (see Figure 1).

Dimensions in millimetres



Key

1 tangential face

2 radial face

Figure 1 — Inclination of annual rings of a test piece