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

**Part 4:
Determination of modulus of elasticity
in static bending**

*Propriétés physiques et mécaniques du bois — Méthodes d'essais sur
échantillons de bois sans défauts —*

Partie 4: Détermination du module d'élasticité en flexion statique



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 218, *Timber*.

This first edition of ISO 13061-4 cancels and replaces ISO 3349:1975, which has been technically revised with regards to the sizes, grain orientation and moisture content of test pieces, and adjustment for moisture content.

ISO 13061 consists of the following parts, under the general title *Physical and mechanical properties of wood — Test methods for small clear specimens*:

- *Part 1: Determination of moisture content for physical and mechanical tests*
- *Part 2: Determination of density for physical and mechanical tests*
- *Part 3: Determination of ultimate strength in static bending*
- *Part 4: Determination of modulus of elasticity in static bending*
- *Part 6: Determination of ultimate tensile stress parallel to grain*
- *Part 7: Determination of ultimate tensile stress perpendicular to grain*

The following are under preparation:

- *Part 5: Determination of strength in compression perpendicular to grain*
- *Part 10: Determination of impact bending strength*
- *Part 11: Determination of resistance to impact indentation*
- *Part 12: Determination of static hardness*
- *Part 13: Determination of radial and tangential shrinkage*
- *Part 14: Determination of volumetric shrinkage*

- *Part 15: Determination of radial and tangential swelling*
- *Part 16: Determination of volumetric swelling*
- *Part 17: Determination of strength in compression parallel to grain*

Introduction

The main purpose of this International Standard is to establish the common international point of member countries of international organization for standardization (ISO), concerning testing methods for small clear wood specimens and general requirements for determining physical and mechanical properties of wood.

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

Part 4:

Determination of modulus of elasticity in static bending

1 Scope

This part of ISO 13061 specifies a method for determining the modulus of elasticity of wood in static bending by measuring the deflection in the mid-span of a simply supported beam.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 13061-1, *Physical and mechanical properties of wood — Test methods for small clear specimen — Part 1: Determination of moisture content for physical and mechanical tests*

ISO 13061-2, *Physical and mechanical properties of wood - Test methods for small clear specimen — Part 2: Determination of density for physical and mechanical tests*

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.

4 Principle

The modulus of elasticity is determined by measuring the deflection in the mid-span of a simply supported beam during the application of a gradually increasing transverse load within the region of proportionality of the load and deflection.

5 Apparatus

5.1 Testing machine, providing (1) a rigid frame to support the test piece yet permit its deflection without restraint, (2) a loading head through which the force is applied without high stress concentrations in the test piece, (3) a constant rate of loading of the test piece or of movement of the loading head, and (4) a force-measuring device that is calibrated to ensure accuracy of 1 %.

5.2 Support apparatus, to provide support of the test piece at the specified span.

5.2.1 Reaction bearing plates or metal bearing plates, to prevent damage of the test piece at the point of contact between the test piece and reaction support. The plates shall be of sufficient length,