
INTERNATIONAL STANDARD



3133

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION · МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ · ORGANISATION INTERNATIONALE DE NORMALISATION

Wood — Determination of ultimate strength in static bending

Bois — Détermination de la résistance à la flexion statique

First edition — 1975-11-01

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO 3133:1975](#)

<https://standards.iteh.ai/catalog/standards/sist/36781824-819b-486b-96bc-d25d32b701c0/iso-3133-1975>

UDC 674.03 : 539.384

Ref. No. ISO 3133-1975 (E)

Descriptors : wood, tests, bend tests, breaking load, flexural strength, physical tests, mechanical tests.

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 3133 was drawn up by Technical Committee ISO/TC 55, *Sawn timber and sawlogs*, and circulated to the Member Bodies in June 1973.

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

Australia	Germany	Romania
Austria	Hungary	South Africa, Rep. of
Belgium	India	Sweden
Bulgaria	Ireland	Thailand
Canada	Italy	Turkey
Chile	Mexico	United Kingdom
Czechoslovakia	Netherlands	U.S.S.R.
Egypt, Arab Rep. of	Norway	Yugoslavia
France	Poland	

The Member Body of the following country expressed disapproval of the document on technical grounds :

Japan

Wood – Determination of ultimate strength in static bending

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determining the ultimate strength of wood in static bending.

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 maximum load required to cause rupture of the test piece $1,5 \pm 0,5$ min from the beginning of loading, and estimation of the stress at this load.

4 APPARATUS

4.1 Testing machine capable of measuring load to the nearest 1 %.

4.2 Device capable of ensuring bending of the test piece by applying a load to its side surface mid-way between the centres of the device supports. The radius of curvature of the supports and a loading shoe shall be 30 mm.

4.3 Measuring instrument capable of determining the cross-sectional dimensions of the test pieces to an accuracy of 0,1 mm.

4.4 Equipment for the determination of moisture content in accordance with ISO 3130.

5 PREPARATION OF TEST PIECES

5.1 Test pieces shall be prepared in the form of right prisms having a square cross-section of side 20 mm and length along the grain of 300 to 380 mm.

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

6 PROCEDURE

6.1 Mid-way along the test piece, measure the breadth in a radial direction and the height in a tangential direction to an accuracy of 0,1 mm.

6.2 Carry out the test with the ratio of the distance between the centres of the device supports and the test piece height being from 12 to 16. Apply the bending load to a radial surface of the test piece (tangential bending) mid-way between the supports.

6.3 The loading of test pieces shall be carried out uniformly at constant speed. The speed of testing (at constant rate of loading or constant rate of movement of the loading head of the machine) shall be such that the test piece is broken in $1,5 \pm 0,5$ min from the beginning of loading. Determine the maximum load P_{\max} to an accuracy which shall not exceed that specified in 4.1.

6.4 After the test has been carried out determine the moisture content of the test pieces, when required, in accordance with ISO 3130.

Take, as the sample for the determination of moisture content, a portion of the test piece 25 ± 5 mm long, cut from near the point of rupture. To determine the mean moisture content, it is permissible to use only some of the test pieces. Calculate the minimum number of test pieces for the determination of moisture content in accordance with ISO 3129.

7 CALCULATION AND EXPRESSION OF RESULTS

7.1 The ultimate strength in static bending σ_{bW} at the moisture content, W , at the time of test is given, in megapascals, by the formula :

$$\sigma_{bW} = \frac{3P_{\max}l}{2bh^2}$$

where

P_{\max} is the breaking load, in newtons;

l is the distance between the centres of the supports, in millimetres;

b is the breadth of the test piece, in millimetres;

h is the height of the test piece, in millimetres.

Express the result to an accuracy of 1 MPa.

7.2 When necessary, the ultimate strength in static bending σ_{bW} shall be adjusted to a 12 % moisture content to an accuracy of 1 MPa according to the formula :

$$\sigma_{b12} = \sigma_{bW} [1 + \alpha(W - 12)]$$

where

α is the correction factor for moisture content, whose value shall be obtained from national standards;

W is the moisture content of the wood, calculated according to ISO 3130.

7.3 The mean ultimate strength in static bending of the test pieces cut out from one piece of the selected material shall be calculated to an accuracy of 1 MPa as the arithmetic mean of the results for the individual test pieces.

8 TEST REPORT

The test report shall contain the following particulars :

- a) reference to this International Standard;
- b) details concerning sampling of the test pieces;
- c) details in accordance with clause 7 of ISO 3129;
- d) the test results calculated as specified in clause 7, and their statistical values;
- e) the value of the coefficient α used for the adjustment of the test results to a 12 % moisture content.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 3133:1975](https://standards.iteh.ai/catalog/standards/sist/36781824-819b-486b-96bc-d25d32b701c0/iso-3133-1975)

<https://standards.iteh.ai/catalog/standards/sist/36781824-819b-486b-96bc-d25d32b701c0/iso-3133-1975>