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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Sawn timber — Test methods — Determination of ultimate strength in shearing parallel to grain

Bois sciés — Méthodes d'essai — Détermination de la contrainte de rupture en cisaillement parallèle aux fibres

Reference number
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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.

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 8905 was prepared by Technical Committee ISO/TC 55, *Sawn timber and sawlogs.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Sawn timber — Test methods — Determination of ultimate strength in shearing parallel to grain

1 Scope and field of application

This International Standard specifies a method of testing sawn timber of coniferous and broadleaved species in shearing parallel to the grain to determine the ultimate strength.

2 Reference

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

3 Principle

Determination of the maximum load which causes the test piece to break by shearing as a result of compressive stresses, and calculation of the stress at this load.

4 Apparatus

4.1 Test machine, allowing measurement of the load to an accuracy of ± 1 %.

4.2 Device, capable of ensuring the maximum tangential stress in the area of the expected shearing (see figure 2).

4.3 Measuring instrument, to determine the dimensions of the working section 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 The shape and dimensions of the test piece shall be in accordance with those shown in figure 1. The thickness, *t*, of the test piece shall be the thickness of sawn timber to be tested.

Dimensions in millimetres

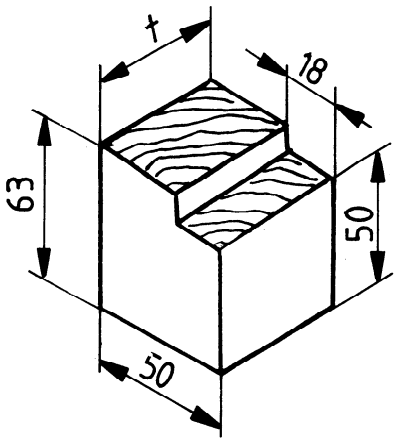

Figure 1 — Test piece

5.2 To determine the minimum strength value, the test pieces shall be cut from the weakest portions of sawn timber; this can be determined either visually or by the results of mechanized grading. Test pieces may be taken from the portions of sawn timber left after sampling for other tests.

5.3 Knots and similar defects which increase the resistance of wood to shearing, and shakes lying in the plane of shearing, are not permitted in the test piece.

The test piece shall be cut and placed in the test machine such that any slope of grain does not increase the resistance to shear.

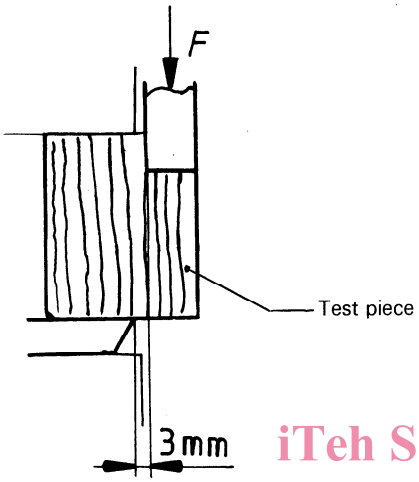

Figure 2 — Test piece position

5.4 The moisture content shall be in accordance with the technical requirements for sawn timber.

6 Procedure

6.1 Measure the thickness, t, of the test piece, in millimetres.

6.2 Place the device (4.2) with a test piece in the test machine (4.1) (see figure 2). Load the test piece continuously with a constant rate of stress or a constant rate of movement of the loading head of the machine. The rate of increase shall be such that the duration of the test from the moment of loading until the breaking of the test piece shall be not less than 2 min.

The maximum load F_{max}, which causes the break, shall be determined by the maximum deviation of the indicator of the measuring instrument (4.3) with an error of measurement of not more than the graduation mark. The maximum scale value shall not exceed three times the maximum load.

6.3 After completion of the test, determine the moisture content of the test piece in accordance with ISO 3130.

7 Calculation and expression of results

The ultimate strength in shearing parallel to grain, τ_W, for each test piece having a moisture content, W, at the time of the test is calculated, in megapascals, using the formula

$$\tau_W = \frac{F_{max}}{t\,l}$$

where

F_{max} is the maximum load, in newtons;

t is the thickness of the test piece, in millimetres;

l is the length of the shearing plane, in millimetres.

Calculate the result to three significant figures.

8 Test report

The test report shall include the following particulars :

a) a reference to this International Standard;

b) details of the wood species;

c) the dimensions and grade of the sawn timber;

d) information on sampling of the test pieces;

e) the moisture content of the test pieces;

f) the test results calculated as specified in clause 7.

NOTE — If necessary, the test report may include also the result of a measurement of the angle formed by the tangent to the growth rings with the shearing plane.

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Descriptors : wood, sawn timber, structural timber, tests, shear tests.

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