INTERNATIONAL STANDARD 3787

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Wood — Test methods — Determination of ultimate stress in compression parallel to grain

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

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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.

International Standard ISO 3787 was drawn up by Technical Committee ISO/TC 55, *Sawn timber and sawlogs,* and was circulated to the Member Bodies in March 1975.

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

Austria	Ireland	Portugal
Belgium	Italy	Romania
Brazil	Mexico	South Africa, Rep. of
Canada	Netherlands	Spain
Czechoslovakia	New Zealand	Sweden
France	Norway	Turkey
Germany	Pakistan	U.S.S.R.
Hungary	Poland	Yugoslavia

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

India

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Wood — Test methods — Determination of ultimate stress in compression parallel to grain

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for determining the ultimate stress of wood in compression parallel to grain.

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 ultimate stress by testing small clear test pieces in compression parallel to grain until failure occurs, at a gradually increasing compressive load.

4 APPARATUS

4.1 Testing machine ensuring a constant rate of loading of the test piece or constant rate of movement of the loading head and allowing measurement of the load to an accuracy of 1 %.

4.2 Uniform-loading device consisting of two self-aligning plates of hardened steel, whose spherical surfaces obtain uniform distribution of load over the ends of the test piece.

4.3 Measuring instrument, capable of determining the cross-sectional dimensions of the test piece 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 from 30 to 60 mm.

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

6 PROCEDURE

6.1 Measure the cross-sectional dimensions at the midpoint of the long axis of the test piece, to an accuracy of 0,1 mm.

6.2 Load the test piece using the uniform-loading device (4.2). The speed of testing (at a 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 to 2 min after the start of loading. Continue the test until the test piece is broken. Determine the maximum load (P_{max}), to an accuracy in accordance with that specified in 4.1.

6.3 After the test has been completed, determine the moisture content of the test pieces according to ISO 3130.

Take the whole test piece as the sample for the determination of moisture content. To determine the mean moisture content it is permissible to use only some of the test pieces. Calculate the minimum number of the test pieces to be used for the determination of moisture content in accordance with ISO 3129.

7 CALCULATION AND EXPRESSION OF RESULTS

7.1 The ultimate stress in compression parallel to grain, σ_W, of each test piece at a moisture content W at the time of test, shall be calculated, in megapascals,[1] by the formula :

$$\sigma_W = \frac{P_{max}}{a \times b}$$

where

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

a and b are the cross-sectional dimensions of the test piece, in millimetres.

Express the result to the nearest 0,5 MPa.

1) 1 MPa = 1 N/mm²