



**NSAI**  
Standards

Irish Standard  
I.S. EN 384:2016+A1:2018

# Structural timber - Determination of characteristic values of mechanical properties and density

**I.S. EN 384:2016+A1:2018**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

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## National Foreword

I.S. EN 384:2016+A1:2018 is the adopted Irish version of the European Document EN 384:2016+A1:2018, Structural timber - Determination of characteristic values of mechanical properties and density

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 384:2016+A1**

November 2018

ICS 79.040

Supersedes EN 384:2016

English Version

**Structural timber - Determination of characteristic values  
of mechanical properties and density**

Bois de structure - Détermination des valeurs  
caractéristiques des propriétés mécaniques et de la  
masse volumique

Bauholz für tragende Zwecke - Bestimmung  
charakteristischer Werte für mechanische  
Eigenschaften und Rohdichte

This European Standard was approved by CEN on 30 January 2016 and includes Amendment 1 approved by CEN on 8 October 2018.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN 384:2016+A1:2018) has been prepared by Technical Committee CEN/TC 124 “Timber structures”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1 approved by CEN on 2018-10-08.

This document supersedes A1 EN 384:2016 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 Deleted text A1

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**EN 384:2016+A1:2018 (E)**

## **Introduction**

Structural design codes can only function effectively if standard methods of determining the mechanical and physical properties exist. The aim of the procedures given in this standard is to derive characteristic values that are comparable in terms of the populations they represent. The standard permits the use of as much existing test data as possible from various sampling and testing techniques.

Where methods are given to permit characteristic values to be determined from a less than ideal amount of structural size test data, reduction factors to reflect a lower degree of confidence are employed.



## 1 Scope

This European Standard gives a method for determining characteristic values of mechanical properties and density, for defined populations of visual grades and/or strength classes of machine graded structural timber. Additionally it covers the stages of sampling, testing, analysis and presentation of the data.

The standard provides methods to derive strength, stiffness and density properties for structural timber from tests with defect-free specimen.

The values determined in accordance with this standard for mechanical properties and density are suitable for assigning grades and species to the strength classes of EN 338.

NOTE 1 For assigning grades and species to the strength classes in EN 338 only three properties, i.e. bending or tension strength, modulus of elasticity parallel to grain in bending or tension and density need to be determined from test data, other properties can be calculated according to Table 2.

NOTE 2 EN 1912 gives examples of established visual grades assigned to strength classes.

## 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.

EN 338, *Structural timber — Strength classes*

EN 408, *Timber structures — Structural timber and glued laminated timber — Determination of some physical and mechanical properties*

EN 13183-2, *Moisture content of a piece of sawn timber — Part 2: Estimation by electrical resistance method*

EN 13183-3, *Moisture content of a piece of sawn timber — Part 3: Estimation by capacitance method*

EN 14081-1:2016, *Timber structures — Strength graded structural timber with rectangular cross section — Part 1: General requirements*

EN 14081-2, *Timber structures — Strength graded structural timber with rectangular cross section — Part 2: Machine grading; additional requirements for initial type testing*

EN 14081-3, *Timber structures — Strength graded structural timber with rectangular cross section — Part 3: Machine grading; additional requirements for factory production control*

EN 14358:2016, *Timber structures — Calculation and verification of characteristic values*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **characteristic value**

representative value of a material property used for design, which is based either on 5-percentile values (e.g. strength properties and density) or mean values (e.g. modulus of elasticity)

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