

**Puitkonstruktsioonid. Nelinurkse ristlõikega  
tugevussorditud ehituspuit. Osa 1: Üldnõuded**

Timber structures - Strength graded structural timber with  
rectangular cross section - Part 1: General requirements

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14081-1:2006+A1:2011 sisaldab Euroopa standardi EN 14081-1:2005+A1:2011 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 28.02.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 02.02.2011.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14081-1:2006+A1:2011 consists of the English text of the European standard EN 14081-1:2005+A1:2011.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 28.02.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 02.02.2011.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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English Version

## Timber structures - Strength graded structural timber with rectangular cross section - Part 1: General requirements

Structures en bois - Bois de structure à section rectangulaire classé pour sa résistance - Partie 1: Exigences générales

Holzbauwerke - Nach Festigkeit sortiertes Bauholz für tragende Zwecke mit rechteckigem Querschnitt - Teil 1: Allgemeine Anforderungen

This European Standard was approved by CEN on 26 August 2005 and includes Amendment 1 approved by CEN on 20 December 2010.

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## Foreword

This document (EN 14081-1:2006+A1:2011) 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of an identical text or by endorsement, at the latest by August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

This document includes Amendment 1, approved by CEN on 2010-12-20.

This document supersedes <sup>A1</sup> EN 14081-1:2005 <sup>A1</sup>.

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

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

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this European Standard.

<sup>A1</sup> *deleted text* <sup>A1</sup>

Other parts of this European Standard are:

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 14081-4 Timber structures - Strength graded structural timber with rectangular cross section - Part 4: Machine grading; grading machine settings for machine controlled systems.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## Introduction

There are basically two methods of strength grading: visual grading and machine grading.

Machine grading is in common use in a number of countries. The countries use two basic systems, referred to as 'output controlled' and 'machine controlled'. Both systems require a visual override inspection to cater for strength-reducing characteristics that are not automatically sensed by the machine.

The output-controlled system is suitable for use where the grading machines are situated in sawmills grading limited sizes, species and grades in repeated production runs of around one working shift or more. This enables the system to be controlled by testing timber specimens from the daily output. These tests together with statistical procedures are used to monitor and adjust the machine settings to maintain the required strength properties for each strength class. With this system it is permissible for machine approval requirements to be less demanding and for machines of the same type to have non-identical performance.

The machine controlled system was developed in Europe. Because of the large number of sizes, species and grades used it was not possible to carry out quality-control tests on timber specimens drawn from production. The system relies therefore, on the machines being strictly assessed and controlled, and on considerable research effort to derive the machines settings, which remain constant for all machines of the same type.

There are many different visual strength grading rules for timber in use in Europe. These have come into existence to allow for:

- different species or groups of species;
- geographic origin;
- different dimensional requirements;
- varying requirements for different uses;
- quality of material available;
- historic influences or traditions.

Because of the diversity of existing visual grading rules in use in different countries, it is currently impossible to lay down a single set of acceptable rules for all Member States.

The requirements given in this European Standard on visual strength grading rules therefore give basic principles, which should be followed when drawing up requirements for limits for some of the characteristics.

## 1 Scope

This European Standard specifies the requirements for visual and machine graded structural timber with rectangular cross-sections shaped by sawing, planing or other methods, and having deviations from the target sizes corresponding to EN 336.

This European Standard covers structural rectangular timber, untreated or treated against biological attack.

This European Standard does not cover timber treated by fire retardant products.

This European Standard identifies as a minimum the characteristics for which limits shall be given in visual grading rules.

Finger jointed timber is not covered in this European Standard.

## 2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 336, *Structural timber — Sizes, permitted deviations*

EN 338, *Structural timber — Strength classes*

EN 350-1, *Durability of wood and wood-based products — Natural durability of solid wood — Part 1: Guide to the principles of testing and classification of the natural durability of wood*

EN 350-2, *Durability of wood and wood-based products — Natural durability of solid wood — Part 2: Guide to natural durability and treatability of selected wood species of importance in Europe*

EN 384, *Structural timber — Determination of characteristic values of mechanical properties and density*

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

EN 844-7, *Round and sawn timber — Terminology — Part 7: Terms relating to anatomical structure of timber*

EN 844-9, *Round and sawn timber — Terminology — Part 9: Terms relating to features of sawn timber*

EN 844-10, *Round and sawn timber — Terminology — Part 10: Terms relating to stain and fungal attack*

EN 1310:1997, *Round and sawn timber — Method of measurement of features*

EN 1912, *Structural timber — Strength classes — Assignment of visual grades and species*

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

EN 13238, *Reaction to fire tests for building products — Conditioning procedures and general rules for selection of substrates*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13556, *Round and sawn timber — Nomenclature of timbers used in Europe*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 14081-2:2005, *Timber structures — Strength graded structural timber with rectangular cross section — Part 2: Machine grading; additional requirements for initial type testing*

EN 14081-3:2005, *Timber structures — Strength graded structural timber with rectangular cross section — Part 3: Machine grading; additional requirements for factory production control*

EN 14081-4:2009, *Timber structures — Strength graded structural timber with rectangular cross section — Part 4: Machine grading; grading machine settings for machine controlled systems*

EN 15228:2009, *Structural timber — Structural timber preservative treated against biological attack*

EN ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country codes* (ISO 3166-1:2006)

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test* (ISO 11925-2:2002)

### 3 Terms and definitions

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

- 3.1**  
**batch**  
timber of one species population and size graded in one working shift. In the case of machine graded timber, the timber should also be graded by one machine
- 3.2**  
**characteristic strength**  
population 5-percentile value obtained from the results of tests with a duration of  $(300 \pm 120)$  s using test pieces at an equilibrium moisture content resulting from a temperature of 20 °C and a relative humidity of 65 %
- 3.3**  
**control plank**  
object that simulates the characteristics of timber that are being sensed by the measuring devices in a grading machine, which, when passed through the machine, is able to check the calibration of the machine dynamically
- 3.4**  
**dry-graded timber**  
timber that is part of a batch that has intentionally been graded at a mean moisture content of 20 % or less, without any measurement exceeding 24 %
- 3.5**  
**grade**  
strength grade or strength class
- 3.6**  
**machine strength grading**  
process by which a piece of timber can be sorted by a machine sensing, non-destructively, one or more properties of the timber, with any necessary visual inspection, into grades to which characteristic values of strength, stiffness and density may be allocated. There are two methods of control, machine control and output control (see Introduction)