
Konstruktivski les - Vizualno razvrščanje tropskega lesa po trdnosti

Structural timber - Visual strength grading of tropical hardwood

Bauholz für tragende Zwecke - Visuelle Sortierung von Tropenholz nach der Festigkeit

Bois de structure - Classement virtuel des bois feuillus tropicaux de structure

Ta slovenski standard je istoveten z: EN 16737:2016

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ICS:

79.040	Les, hlodovina in žagan les	Wood, sawlogs and sawn timber
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16737

May 2016

ICS 79.040

English Version

**Structural timber - Visual strength grading of tropical
hardwood**

Bois de structure - Classement visuel des bois feuillus
tropicaux de structure

Bauholz für tragende Zwecke - Visuelle Sortierung von
Tropenholz nach der Festigkeit

This European Standard was approved by CEN on 19 March 2016.

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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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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 16737:2016) 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of an identical text or by endorsement, at the latest by November 2016 and conflicting national standards shall be withdrawn at the latest by November 2016.

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 standard gives grading methods, definitions and criteria as required in EN 14081-1 for a visual strength grading standard.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 16737:2016 (E)

1 Scope

This European Standard specifies a method of strength grading tropical hardwood visually for structural use.

The permissible limits of characteristics for a single visual strength grade of timber are specified, designated "Structural Tropical Hardwood" (STH) grade.

The method is only suitable for pieces of timber with a rectangular cross-section that is constant along their lengths.

Characteristics related to durability are not covered in this standard. For some end uses, additional requirements may be specified at the time of grading, e.g. sapwood exclusion.

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 336, *Structural timber - Sizes, permitted deviations*

EN 338, *Structural timber - Strength classes*

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 844-3, *Round and sawn timber - Terminology - Part 3: General terms relating to sawn 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 844-12, *Round and sawn timber - Terminology - Part 12: Additional terms and general index*

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

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 336, EN 844-3, EN 844-9, EN 844-10, EN 844-12 and EN 14081-1 and the nomenclature in EN 13556 and the following apply.

3.1

bark pocket

bark that is partly or wholly enclosed in the wood

3.2**bore hole**

hole or tunnel in timber caused by insects

3.3**boxed heart**

pith that is present and not visible on any face or edge

3.4**brittleheart**

wood characterized by abnormal brittleness, mostly located in the heart

3.5**compression creases**

buckling of fibres across the grain as a consequence of excessive internal growth stresses or external forces

3.6**interlocked grain**

grain in which cells in succeeding growth periods incline alternately in opposite directions that are different from that of the axis of the tree

3.7**fissure**

longitudinal separation of the fibres

3.8**pinhole**

bore hole usually not more than 2 mm in diameter

3.9**pin knot**

round or oval knot, sound, intergrown or partially intergrown, with a maximum size of 5 mm

3.10**resin pocket**

lens-shaped cavity in timber containing, or that has contained, resin

3.11**resin canal**

longitudinal separation of the fibres containing resin appearing on a face or edge of the piece of timber

3.12**slope of grain**

divergence of the direction of the fibres from the longitudinal axis of the piece of timber

3.13**thickness**

lesser dimension perpendicular to the longitudinal axis of the piece of timber

Note 1 to entry: This is the size of the edge.

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3.14**tropical hardwood**

wood of angiosperm trees of the botanical group dicotyledons whose natural distribution lies substantially South of the Tropic of Cancer and north of the Tropic of Capricorn

Note 1 to entry: Unlike temperate hardwood, tropical hardwood is typically free of gross anatomical features that indicate the rate of growth, such as annual growth increments.

3.15**width**

greater dimension perpendicular to the longitudinal axis of the piece of timber

Note 1 to entry: This is the size of the face.

4 Strength graded timber**4.1 Supervision of strength grading operations**

As specified in EN 14081-1, visual strength grading operations shall be carried out by a competent person, or people working within a company under the close supervision of competent persons.

4.2 Sizes

Timber graded to this standard shall conform to EN 336 with respect to its permissible deviations with the following exceptions:

- the minimum thickness at the time of grading shall be 22 mm;
- the minimum cross-sectional area at the time of grading shall be 2 200 mm².

4.3 Processing of visually graded timber

Visually graded timber shall no longer conform to this standard if its cross-section is reduced in size through subsequent processing by more than:

- a) 5 mm for dimensions 22 ≤ to 100 mm, or;
- b) 10 mm for dimensions > 100 mm.

Where graded timber is reduced in cross section beyond the above limits, it shall be re-graded if it is to conform to this standard.

Where graded timber is reduced in length, or a piece of graded timber is cross-cut into two or more pieces, each resulting piece may be assumed to conform to the permissible limits of characteristics in Table 1 of this standard.

4.4 Moisture content

Dry graded timber shall have at the time it is graded for fissures and distortion a mean moisture content of 20 % or less with no individual measurement exceeding 24 %.

NOTE The end use determines whether timber needs to be dry graded or not. If timber is not dry graded, it may be needed to check fissures and distortion also at the time of end use.

5 Measurement of strength-reducing characteristics

5.1 Knots

5.1.1 General

The size of the knot shall be related to the width or thickness on the basis of linear values.

Methods of measurements of knots are given in EN 1310. The “alternative method” shall be used, whereby the size of the knot is measured in a direction perpendicular to the longitudinal axis of the piece of timber (Figure 1).

Knots are accumulative if longitudinal separation between the edges of the knots is either less than twice the width or 300mm (whichever is the lesser), or when the grain has not fully recovered.

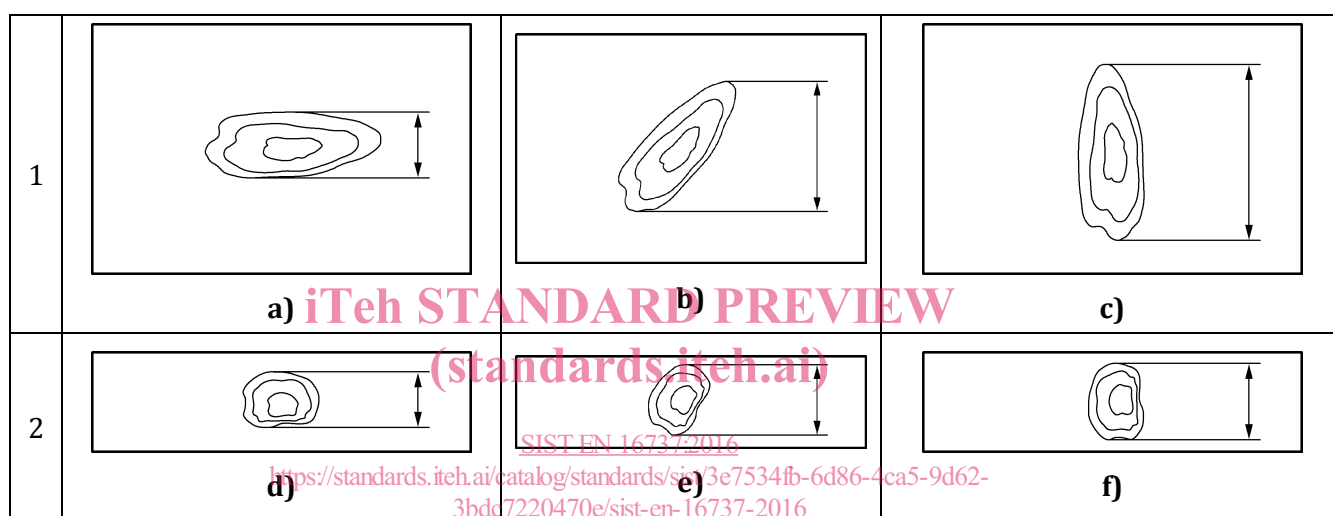
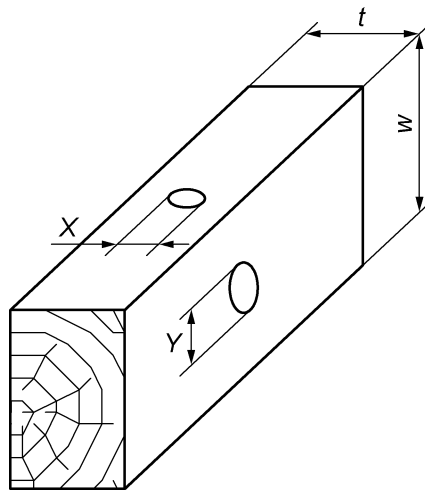


Figure 1 — Measuring knot sizes 1 on faces and 2 on edges

5.1.2 Knot size: requisite comparisons

For knots that are contained entirely within a single face or edge, the size of the knot shall be compared to the full size of the face or edge in which it appears (Figure 2).



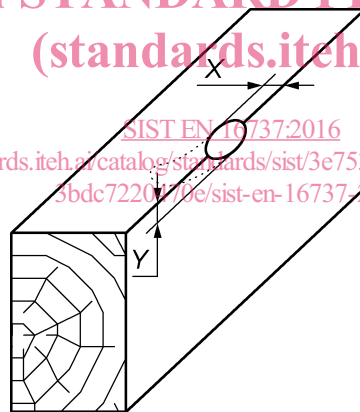
X is related to the thickness t and Y is compared to the width w .

Figure 2 — Measuring knot sizes

For arris knots that are not elongated, the size of the knot on both the face and the edge shall be measured. The larger of the two sizes shall be compared to the thickness of the piece (Figure 3).

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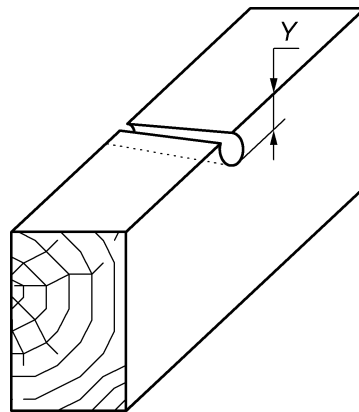
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The greater of X and Y is compared to the thickness.

Figure 3 — Measuring knot sizes

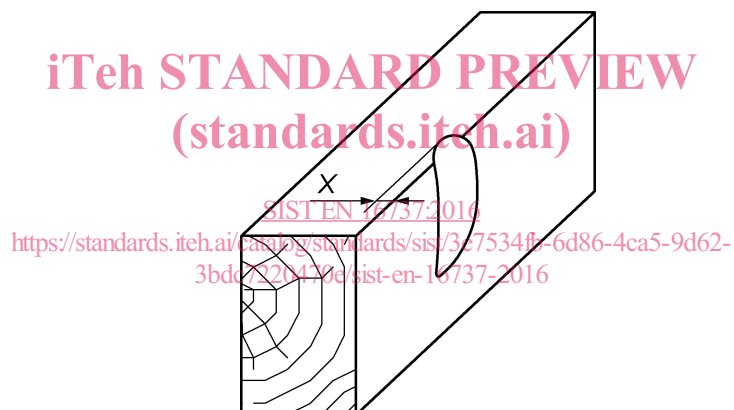
For arris knots that appear on both faces and occupy the full size of an edge, or are elongated across at least 75 % of an edge, the size of the knot on both faces shall be measured. The larger of the two sizes shall be compared to the width of the piece (Figure 4).



Y is measured on both faces and the larger value is compared to the width.

Figure 4 — Measuring knot sizes

For splay knots or branch knots that are elongated across a face, the size of the knot shall be measured on the edge and compared to the thickness of the piece (Figure 5).



X is compared to the thickness.

Figure 5 — Measuring knot sizes

For knot clusters, where no grain recovery is evident between adjacent knots, the knot size shall be measured on the surface on which the cluster is transversely cut. The size of the knot shall be the overall width of the knot cluster d , or the sum of the individual knot widths $d_1 d_2 d_3 \dots d_n$, whichever is the lesser (Figure 6).