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Round timber — Visual characteristics — Methods of determination

Bois ronds — Caractéristiques visuelles — Méthodes de mesure

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Foreword

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This document was prepared by Technical Committee ISO/TC 218, *Timber*.

Introduction

The main purpose of this document is to establish a uniform international approach to methods of determination of visible characteristics of round timber.

This document is developed in light of the provisions of ISO 4475, provisions of European standards EN 1310:1997, EN 1311:1997, and provisions of available national standards.

This document:

— establishes uniform and modern requirements for methods of determination of visible characteristics of round timber;

— harmonizes requirements of various standardization systems for methods of determination of visible characteristics of round timber;

— provides technological unity and compatibility of scientific technical information for round forest timber;

— reduces technical barriers in international trade of round timber, to simplify procedures of trade operations and mutual settlements between the producer, the buyer and the seller of timber.

Round timber — Visual characteristics — Methods of determination

1 Scope

This document defines requirements to methods of determination of visual characteristics of round timber.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 24294, *Timber — Round and sawn timber — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24294 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

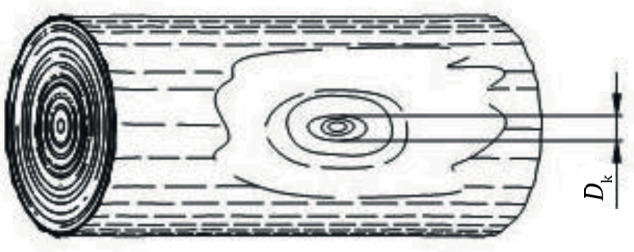
— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Knots

4.1 Uncovered knot

The smallest diameter of a knot at the surface of the bark of round timber is measured, and expressed in millimetres. The area surrounding the knot callus is not noted (see Figure 1).



Key

D_k diameter of knot

Figure 1 — Measurement of the size of a knot

4.2 Covered knot

The measurements do not need to be made; the presence of a covered knot is noted.

4.3 Rose

Depending on the grade, one of the following applies:

a) the smallest diameter of an extreme concentric fold is measured, and expressed in millimetres;

b) the measurements are not made; the presence of a rose is noted.

4.4 Epicormic shoot

The measurements are not made, the presence of an epicormic shoot is noted.

4.5 Chinese moustache

Depending on the grade, one of the following applies:

a) the height is measured on the outer surface, and expressed in millimetres;

b) the measurements are not made; the presence of a Chinese moustache is noted.

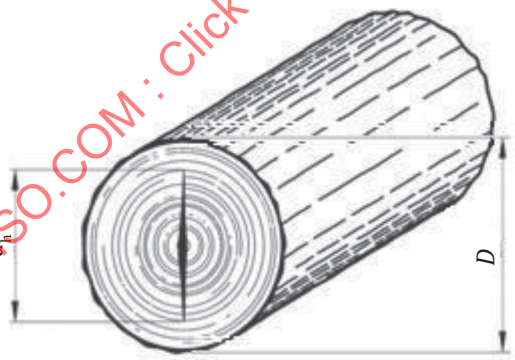
5 Shakes

5.1 Heart shake

Depending on the grade, one of the following applies:

a) the depth is measured at the end of round timber, and expressed in millimetres or as a percentage in relation to the diameter of round timber (see Figure 2);

b) the measurements are not made; the presence of a heart shake is noted.



Key

D diameter of timber

d_h depth of heart shake

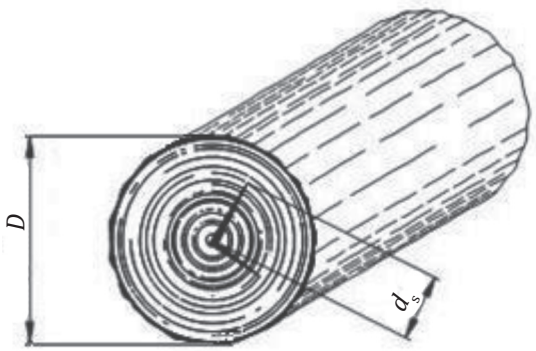
Figure 2 — Measurement of end (heart) shakes

5.2 Star shake

Depending on the grade, one of the following applies:

a) the largest shake is measured by the depth at the end of round timber, and is expressed in millimetres or as a percentage of the diameter of round timber (see Figure 3);

b) the measurements are not made; the presence of a star shake is noted.



Key

D diameter of timber

d_S size of star shake (depth of the largest shake)

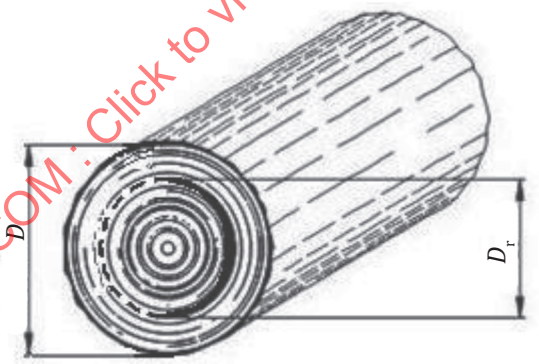
Figure 3 — Measurement of a star shake

5.3 Ring shake

Depending on the grade, one of the following applies:

a) the average diameter of a circle in which there is a shake is measured, and it is expressed in millimetres or as a percentage of the diameter of round timber (see Figure 4);

b) the measurements are not made, the presence is noted.



Key

D diameter of timber

D_r size of ring shake

Figure 4 — Measurement of end (ring) shakes

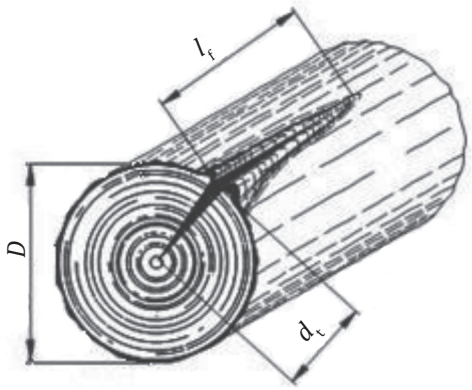
5.4 Frost crack, shake caused by lightning, drying shake, through shake

Depending on the grade, one of the following applies:

a) the depth, d, is measured at the end of round timber, and expressed in millimetres or as a percentage of the diameter at the end of round timber (see Figures 5 and 6);

b) the length, l, is measured and expressed in centimetres or as a percentage of the length of round timber (see Figures 5 and 6). If there are several shakes, the quantity of shakes and the maximum length are shown;

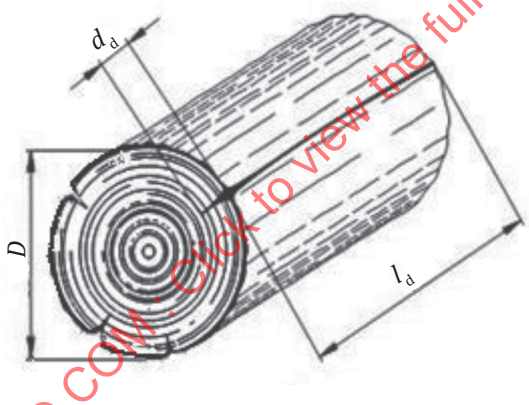
c) the measurements are not made; the presence of a frost crack is noted.



Key

D diameter of timber
d_f depth of frost crack
l_f length of frost crack

Figure 5 — Measurement of a frost crack



Key

D diameter of timber
d_d depth of through drying crack
l_d length of through drying crack

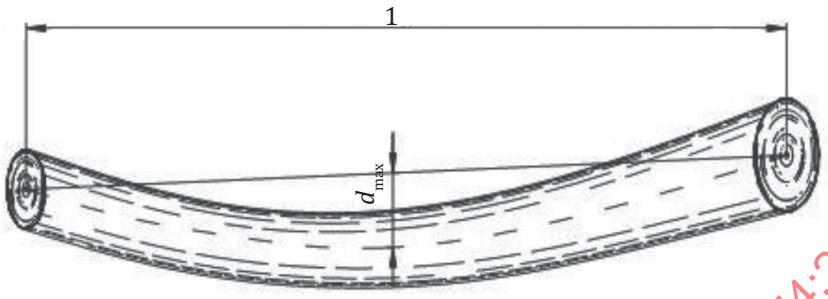
Figure 6 — Measurement of a through drying shake

6 Characteristics of trunk shape

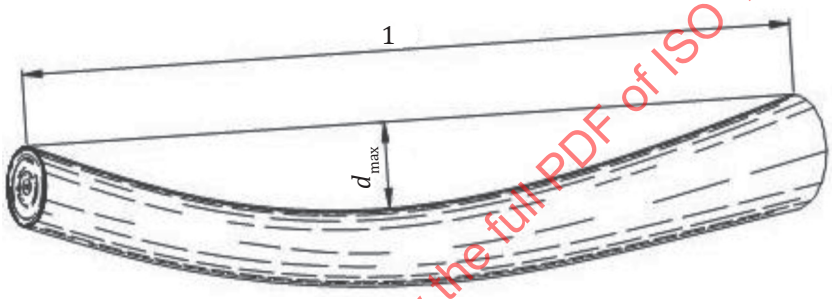
6.1 Sweep

6.1.1 Simple sweep

The maximum distance is measured between the concave centre line of round timber and the straight line, that it is connected by the central points at both ends. It is expressed in centimetres on each metre of the bend part, or as a percentage of the length of round timber [see Figure 7 a)].



a) Measurement by the centre line



b) Measurement by the surface

Key

d_{max} maximum distance between the concave centre line of round timber and the straight line that connects the central points at both ends (the length of round timber), in centimetres

1 Straight line that connects the central points at both ends (the length of round timber), in metres.

Figure 7 — Measurement of a simple curvature

When it is impossible to do such measurements, the maximum distance is measured between a concave side surface of the round timber and the straight line that it is connected to at the internal points of the ends of the bend part of round timber [see Figure 7 b)].

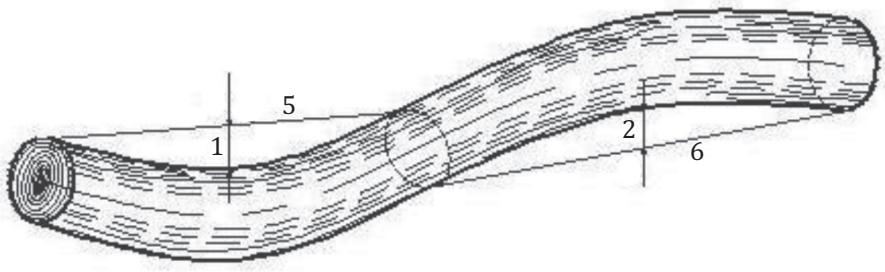
6.1.2 Multiple sweep

Divide the log with theoretical crosscut points into straight or simple sweep portions. Each segment is measured according to 6.1.1 (see Figure 8).

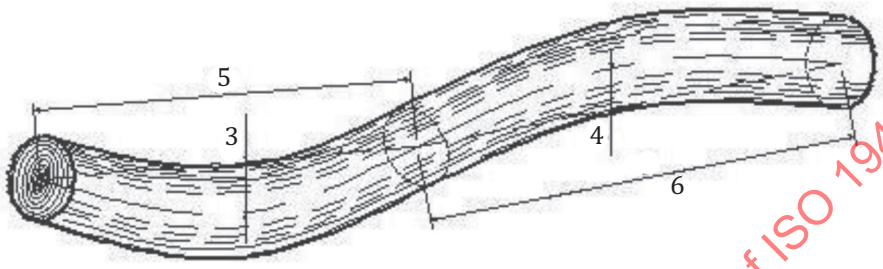
Express each result as:

a) the quotient of sagitta (in centimetres) and the length of the log (m) in centimetres per metre;

b) the ratio of sagitta and mid diameter in percent.



a) Measurement by the centre line



b) Measurement by the surface

Key

1 maximum distance between a concave side surface of the first segment of round timber and the straight line that connects the central points at both ends of the first segment, in centimetres

2 maximum distance between a concave side surface of the second segment of round timber and the straight line that connects the central points at both ends of the second segment, in centimetres

3 maximum distance between the concave centre line of the first segment of round timber and the straight line that connects the central points at both ends of the first segment, in centimetres

4 maximum distance between the concave centre line of the second segment of round timber and the straight line that connects the central points at both ends of the second segment, in centimetres

5 straight line, that connects the central points at both ends of the first segment, in metres

6 straight line that connects the central points at both ends of the second segment, in metres

Figure 8 — Measurement of a multiple sweep

6.2 Ovality

On a cross cut, the lower end of the round timber is measured, at a distance not less than 1 m apart, by the greatest and smallest diameters under bark. The difference between two diameters is expressed in centimetres or as a percentage of the greatest diameter.

6.3 Tapering

The diameters of round timber are measured at two ends without bark. For butt logs, the diameter is measured at a distance of 1 m from the larger end of round timber.

Determine as a difference between two diameters, divided by the distance in metres between the measurement points. The result is indicated in centimetres per 1 m of round timber.

Where there are some characteristics or mechanical damage at the point of measurement, the measurements should be taken at a distance of 5 cm from that point.

7 Characteristics of wood structure

7.1 Spiral grain

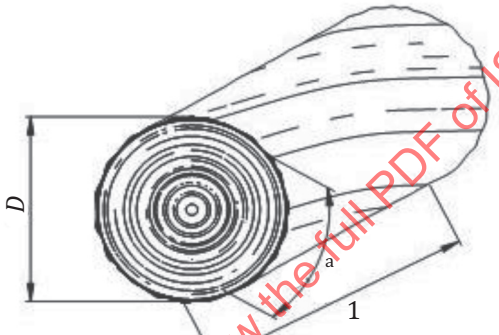
The measurements are made on the most representative area of the surface of round timber over a length of 1 m.

One of the following applies:

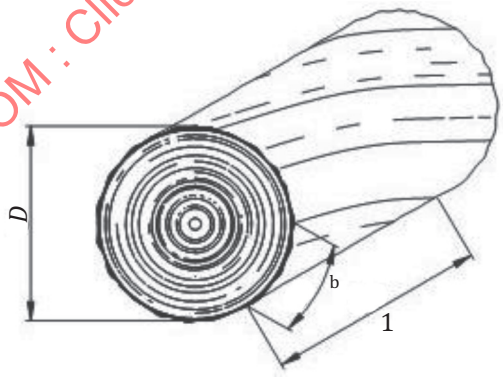
a) the deviation of grain is measured from a line parallel to the longitudinal axis of the trunk, i.e. by bark grooves on unbarked round timber [see Figure 9 a)].

b) the deviation of grain is measured by wood grain on barked round timber [see Figure 9 b)].

c) in both cases, the result is expressed as a percentage of the diameter at the end of the round timber or in centimetres.



a) On unbarked round timber



b) On barked round timber

Key

D diameter of timber

1 most representative area of the surface of round timber (length: 1 m)

a Deviation of grain from a line parallel to the longitudinal axis of the trunk.

b Deviation of grain by wood grain on barked round timber.

Figure 9 — Measurement of spiral grain

7.2 Reaction wood

The measurements are not made; the presence of reaction wood is noted.

7.3 Average width of annual rings

The measurements are made on a section not less than 75 % of the radius on the end of round timber. The length of the section is divided by the number of annual rings in the section and is expressed in millimetres.

7.4 Double pith

The measurements are not made; the presence of a double pith is noted.

7.5 Removed pith

The maximum distance is measured from the pith to the geometrical centre of the end of the round timber. It is expressed in centimetres or as a percentage of the main diameter of the end.

7.6 False heartwood

On the end surface, the diameter of the circle is measured. It is described as a false heartwood, and it is expressed as a percentage of the mean diameter of the corresponding end.

7.7 Scar

Depending on the grade, one of the following applies:

a) the length and depth of the affected area are measured and are expressed in metres with two decimal points and as a percentage of the length of round timber, or as a percentage of the height of the tree;

b) the measurements are not made; the presence of a scar is noted.

7.8 Canker

Depending on the grade, one of the following applies:

a) the length of the damaged places is measured and it is expressed in metres with two decimal points or as a percentage of the length of round timber;

b) the measurements are not made; the presence of a canker is noted.

7.9 Sapwood

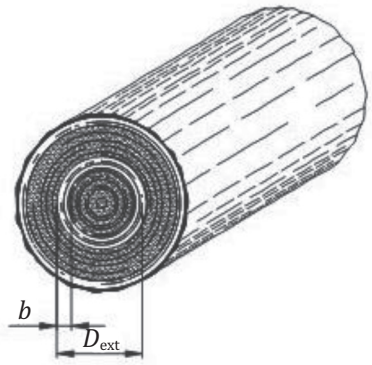
The width of the sapwood is measured on the end surface in the radial direction at its widest point. The diameter is expressed in millimetres or as a percentage of the diameter at the end. In the case of a butt log, the measurement is made on the smaller end.

7.10 Heart sapwood

Depending on the grade, one of the following applies:

a) The width of heart sapwood is measured on the end of round timber as the maximum exterior diameter and the width of its annulus. The diameter is expressed in centimetres or as a percentage of the diameter at the end (see Figure 10).

b) The measurements are not made; the presence of heart sapwood is noted.



Key

b width of the annulus of heart sapwood

D_{ext} maximum exterior diameter

Figure 10 — Measurement of heart sapwood

8 Biological factors

8.1 Fungal disease

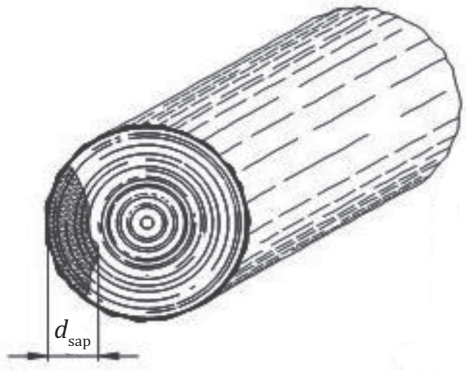
8.1.1 Sapwood rot, coloration

One of the following applies:

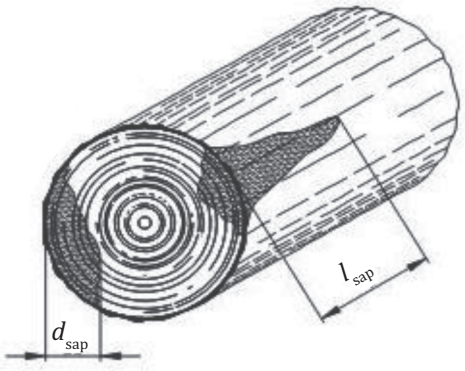
a) the maximum depth of the affected end is measured in the radial direction. It is expressed in centimetres or as a percentage of the diameter at the end of round timber [see Figure 11 a)]. On barked round timber, the length is measured of the affected area; it is expressed in centimetres or as a percentage of the length of round timber [see Figure 11 b)];

b) the area of the affected zone of round timber is measured and expressed as a percentage of the total area or of the sapwood area at the affected end;

c) the measurements are not made; the presence of sapwood rot is noted.



a) On unbarked round timber



b) On barked round timber

Key

d_{sap} maximum depth of the affected end

l_{sap} length of the affected area

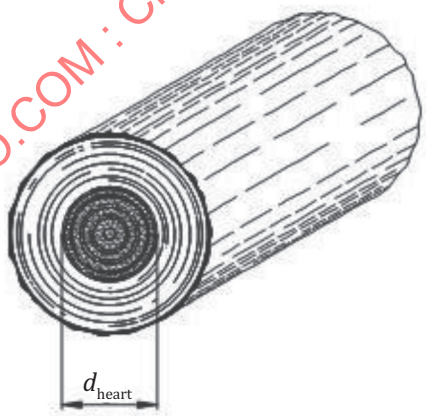
Figure 11 — Measurement of sap rot and coloration

8.1.2 Heartwood rot, hollow

Depending on the grade, one of the following applies:

a) the maximum diameter of the affected zone is measured in which heartwood rot or hollow is located, and it is expressed in centimetres or as a percentage of the diameter at the affected end of round timber (see Figure 12);

b) the measurements are not made; the presence of heartwood rot is noted.



Key

d_{heart} maximum depth of the affected end

Figure 12 — Measurement of heartwood rot and hollow

8.2 Insect hole

Depending on the grade, one of the following applies:

a) the presence of an insect hole is noted and, if necessary, the depth of the affected area is measured in millimetres. Identify the insects that have attacked the area;

