BS EN 13647:2011

BSI Standards Publication

Wood flooring and wood panelling and cladding — Determination of geometrical characteristics

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National foreword

This British Standard is the UK implementation of EN 13647:2011. It supersedes BS EN 13647:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee B/543, Round and sawn timber.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments issued since publication

Date	Text affected

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English Version

Wood flooring and wood panelling and cladding - Determination of geometrical characteristics

Planchers en bois et lambris et bardages en bois - Détermination des caractéristiques géométriques

Holzfußböden und Wand- und Deckenbekleidungen aus Holz - Bestimmung geometrischer Eigenschaften

This European Standard was approved by CEN on 14 April 2011.

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Foreword

This document (EN 13647:2011) has been prepared by Technical Committee CEN/TC 175 “Round and sawn timber”, 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of an identical text or by endorsement, at the latest by November 2011, and conflicting national standards shall be withdrawn at the latest by November 2011.

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 document supersedes EN 13647:2002.

Compared with EN 13647:2002, the following modifications have been made:

a) In 6.2, the NOTE has been completed,

b) 6.3 has been improved,

c) New presentation of 6.5,

d) New figures for 6.5.2 "Depth of the groove" ,

e) New figures for 6.5.3 "Width of the tongue",

f) New figures for "undercut"

g) Adding of accuracy of "length and width of the element" in 7.1.1,

h) New values of "bow", in 7.4.2,

i) New values of "spring" in 7.4.3

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Introduction

This document is one of a series of standards specifying requirements and test methods for wood flooring and wood panelling and cladding.

The measurements should be carried out as specified in this standard or with any other equipment or principles giving at least the same accuracy.

1 Scope

This European Standard specifies methods of measuring the geometrical characteristics of wood flooring and wood panelling and cladding elements.

This European Standard does not specify sampling, which is intended to be found in the product standards or test methods and it does not apply to elements which are installed.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 13756:2002, *Wood flooring – Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13756:2002 apply.

4 Principles

4.1 General

The measurements shall be carried out only if relevant, taking the product standards into account.

4.2 Dimensions

The dimensions are determined by measuring any characteristic defined in the product standard and with appropriate tools.

4.3 Angles

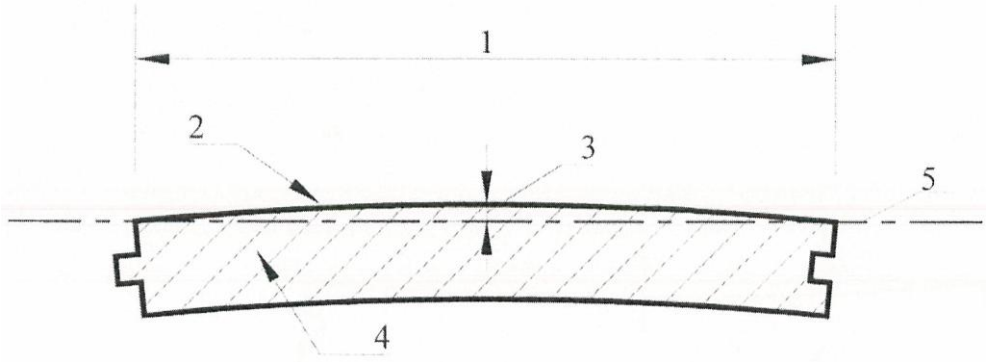
Determine square angles by measuring the distance (maximum value) between an edge of the element and the side of a square whose other side is in line with an adjacent edge of the element.

Determine other angles by the use of a protractor.

4.4 Warp

4.4.1 Cup

Determine cup by measuring, at the middle of the width of the element, the distance separating the face of the element from the straight reference line joining the top arises of the edges of the element, see Figures 1 and 2.



Key

1 Width

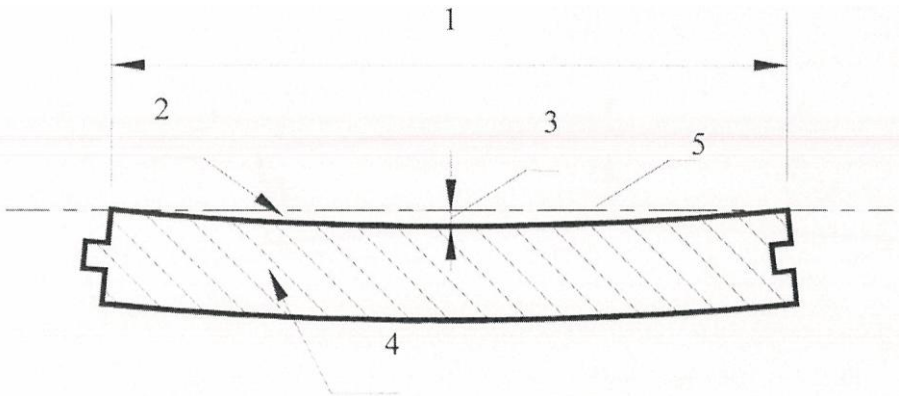
2 Face

3 Cup

4 Cross section

5 Reference line

Figure 1 – Example of convex cup



Key

1 Width

2 Face

3 Cup

4 Cross section

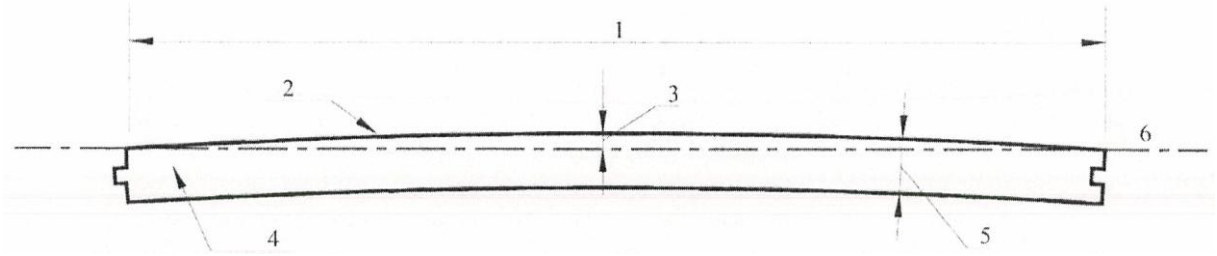
5 Reference line

Figure 2 – Example of concave cup

4.4.2 Bow

Determine bow by measuring, at the middle of the length of the element, the distance separating the face of the element from the straight reference line joining the end top arises of the element, see Figures 3 and 4.

NOTE If the maximum bow is not in the middle of the length, the measurement can be carried out at the appropriate place and this should be mentioned in the report.



Key

1 Length

2 Face

3 Bow

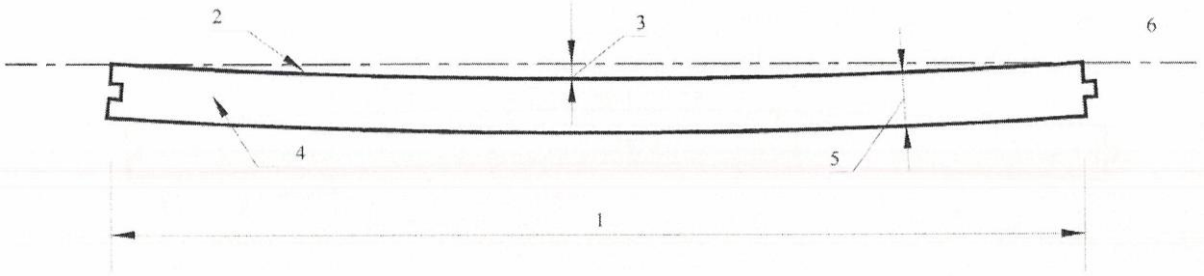
4 Edge

5 Thickness

6 Reference line

NOTE For practical reasons convex bow may be measured in the same way on the back of the element.

Figure 3 – Example of convex bow



Key

1 Length

2 Face

3 Bow

4 Edge

5 Thickness

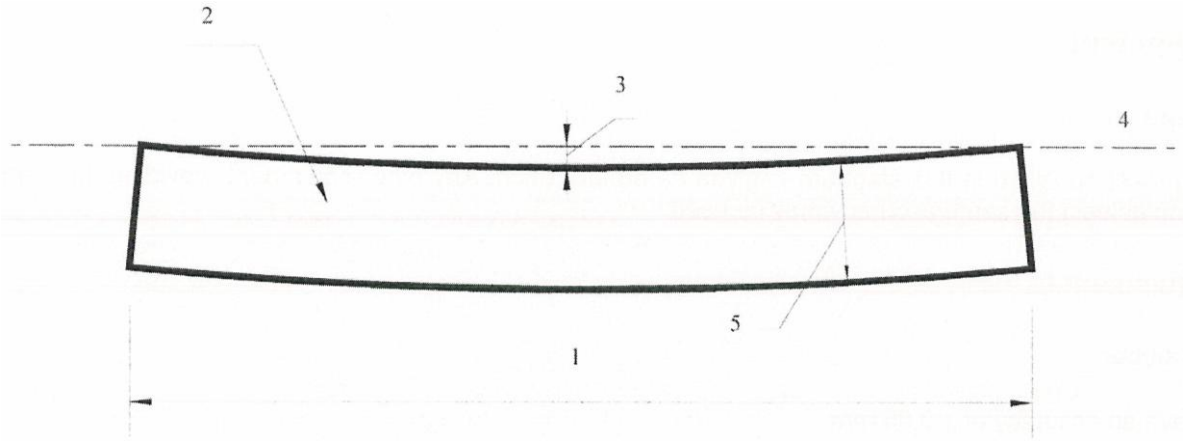
6 Reference line

Figure 4 – Example of concave bow

4.4.3 Spring

Determine spring by measuring, at the middle of the length of the element, along the lengthwise edges of the element, the distance separating one edge from the straight reference line joining the two arises of that edge, see Figure 5.

NOTE The measurement is usually carried out on the edge bearing the groove.



Key

1 Length

2 Face

3 Spring

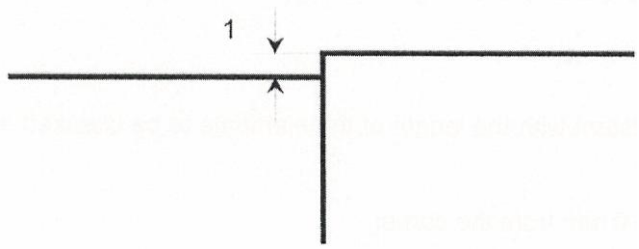
4 Reference line

5 Width

Figure 5 – Example of spring (element viewed from above)

4.5 Lipping

Determine lipping by measuring the difference in the levels of the face of two adjacent elements when they are assembled together, see Figure 6.



Key

1 lipping

Figure 6 – Example of lipping

5 Equipment

5.1 General

The equipment specified in this standard is given as an indication. Any other equipment providing the same results with at least the same accuracy may be used.

5.2 Equipment to measure the dimensions

5.2.1 Calliper

It shall have an accuracy of ± 0,05 mm.

If used to measure the characteristics of tongue and groove profiles, it shall have a built-in depth rod.

It shall also have a useful measuring length corresponding to the width of the elements to be measured.

5.2.2 Micrometer

It shall have a limit deviation of ± 0,05 mm and two parallel flat circular feelers having a diameter of (10 ± 1) mm.

5.2.3 Graduated rule

It shall be used when the dimensions to be measured are out of the calliper's range.

It shall have a limit deviation of ± 0,5 mm up to a length of 2 m, and ± 1 mm for longer lengths.

5.3 Equipment to measure angle values

5.3.1 General

The design of the equipment shall be such as to allow the measurement as close as possible to the face of the element and preferably on the groove side if the element is tongued and grooved.

5.3.2 Equipment for square cut elements

— A reference square with its longer arm consistent with the length of the elements to be checked and shall not be less than 210 mm,

— Each arm shall have a fixed feeler at about 10 mm from the corner,

— The longer arm shall have a second feeler, adjustable between 200 mm and 300 mm from the fixed feeler,

— The shorter arm shall have a gauge, readable to the nearest 0,01 mm, adjustable to the width of the element to be controlled.

NOTE an example of such a square is shown in Figure A.1

— A calibration square to set the gauge to 0.

5.3.3 Equipment for mitre-cut elements

Protractor fitted with a vernier with a limit a limit deviation of ± 1 min of angle.

5.4 Equipment to measure warp

5.4.1 Equipment to measure cup

A gauge with an accuracy of ± 0,01 mm with a rounded tip with a radius of (5 ± 0,2) mm, installed centrally in relation to the three rounded supports with a radius not less than 5 mm. This shall be adjustable along a T assembly of bars according to the gauge length to be achieved. The tip of the gauge in contact with the face of the element shall apply a force of less than 5 N [1)]

Figure B.1 gives an example of such a device and Figure B.2 shows gauging of the device.

5.4.2 Calibration plate

A reference plate of suitable material to calibrate to zero the gauge fitted on the apparatus defined in 5.4.1.

5.4.3 Equipment to measure bow and spring

A straight ruler at least as long as the actual element and a gauge readable to the nearest 0,5 mm regarding bow and 0,1 mm regarding spring.

5.4.4 Equipment to measure lipping

A feeler gauge readable to the nearest 0,05 mm.

5.4.5 Conditioning equipment, if relevant

An enclosure capable of maintaining the following conditions:

— Climate A, defined by a relative humidity of (65 ± 5) % and a temperature of (20 ± 2) °C or

— Climate B, defined by a relative humidity of (50 ± 5) % and a temperature of (23 ± 2) °C.

1) The weight of the apparatus should not change the cup of the element beyond the limit of the accuracy of the gauge.

6 Procedure

6.1 Dimensions and shape

Measure the element in its delivered size at the reference moisture content given in the product standards or, if there is no product standard, at a given reference moisture content.

6.2 Conditioning

If specified, condition the element in one of the standard climates, defined in 5.4.5, to constant mass prior to measurement.

NOTE Constant mass is considered to be reached when the results of two successive weighing operations carried out at an internal of 24 h, do not differ by more than 0,1 % of the mass of the element.

6.3 Measurement and recording

Proceed as follows with the method of measurement and record the results every time.

Mark all position of measurements on the element.

When there is a doubt about a measurement or the value is outside the limits, proceed immediately as follows: carry out two other measurements at 5 mm on each side of the point where the first measurement was just taken. Average the three measurements.

6.4 Dimensions

6.4.1 Length and width of the element

6.4.1.1 For rectangular or square elements

With the calliper defined in 5.2.1 or, if it is out of its range, with the equipment defined in 5.2.3, measure length and width along two lines parallel to the arises as they are seen when the element is assembled. The lines of measurement shall be within 5 mm to 10 mm from edges. If the span between the edges exceeds 500 mm, one measurement shall be made, in addition, along a central line.

Mark all positions of measurements on the element.

6.4.1.2 For other elements

Make the measurements with one of the equipment defined in 5.2.

Mark all positions of measurements on the element.

Measure the length along the long edges between two adjacent angles (two measurements).

Measure the width perpendicularly to the edges.

6.4.2 Thickness of the element

Measure the thickness of the element with the calliper defined in 5.2.1 or with the micrometer defined in 5.2.2.

If the element is not longer than 500 mm, make two measurements each 5 mm to 10 mm from each end along the longitudinal lines of measurement defined in 6.4.1.

If the edge length exceeds 500 mm, make a third measurement at the middle of the element.

6.5 Additional dimensions, if relevant

6.5.1 Overall dimensions

Repeat the measurements in the same positions as used for measuring the dimensions in 6.4, but including the connecting parts.

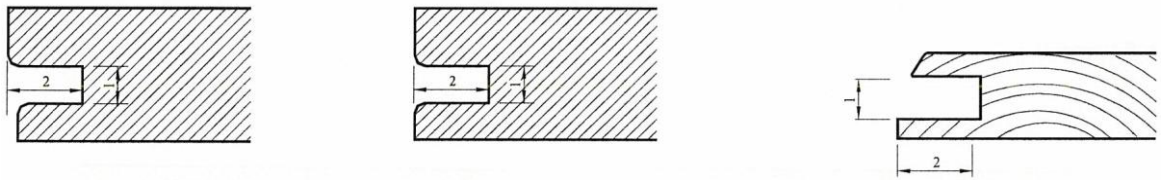
6.5.2 Depth of the groove

Use the built-in depth rod of the calliper defined in 5.2.1.

If the length of the groove does not exceed 500 mm, make two measurements of the depth near the ends of the elements. If the length of the groove exceeds 500 mm, make three measurements, one in the middle of the length of the groove.

In both cases, the points of measurement shall be roughly symmetrical on the element.

Refer to Figure 7.



Key

1 width of the groove

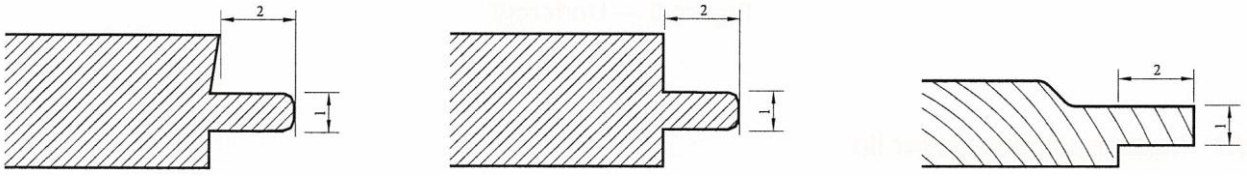
2 depth of the groove

Figure 7 – Depth and width of the groove

6.5.3 Width of the tongue

Apply the same procedure as defined for the depth of the groove.

Refer to Figure 8.



Key

1 thickness of the tongue

2 width of the tongue

Figure 8 – Width of tongue

6.5.4 Thickness of the tongue

Measure the thickness of the tongue with the calliper defined in 5.2.1 at the base of the tongue.

If the element is not longer than 500 mm, make two measurements each 10 mm to 20 mm from each of the element.

If the edge length exceeds 500 mm, make a third measurement at the middle of the element.

Refer to Figure 8.

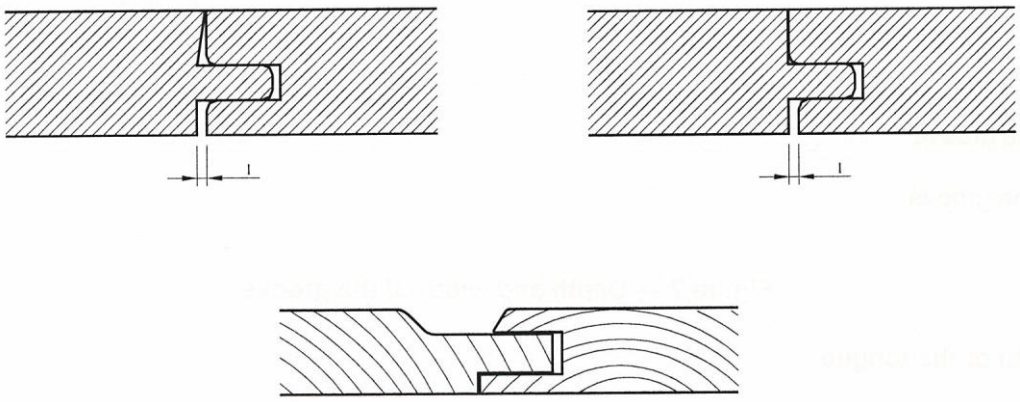
6.5.5 Width of the groove

Measure the width of the groove at the lowest part of the groove. Using the calliper defined in 5.2.1, apply the same procedure as for thickness of the tongue, see Figure 7.

6.5.6 Undercut

Apply the same procedure as defined for the depth of the grooves.

Refer to Figure 9.



Key

1 undercut

Figure 9 – Undercut

6.5.7 Thickness of the upper lip

Measure the thickness of the upper lip with the calliper defined in 5.2.1.

Apply the same procedure as for measuring thickness of the tongue (two or three measurements per element according to its length).

6.5.8 Thickness above the groove

Cross-cut the element being checked.

If the length of the element is ≤ 500 mm, two cross-sections are needed.

If the length of the element is > 500 mm, three cross-sections are needed.

Measure the thickness above the groove at two points on each cross-section with the calliper defined in 5.2.1 at 10 mm to 20 mm from the edge for large elements.

6.6 Angles

6.6.1 Squareness

Adjust the adjustable feeler and the gauge of the reference square defined in 5.3.2 to the lengths of the sides of the element they shall be applied on. In case of long element (more than 500 mm), the distance between the adjustable and fixed feeler shall be 300 mm.

Then set the gauge to zero using the calibration square.

Apply the reference square to one of the four angles with full contact on the three feelers and the gauge. The gauge located within 10 mm to 20 mm from the apparent end of the element gives the deviation from the calibration square.

Repeat the procedure with the opposite angle on the same diagonal with the exception of tongued and grooved elements where the measurement is carried out above the tongue.

6.6.2 Mitre cuts

Measure the angle with the protractor defined in 5.3.3.

Apply one of the arms of the protractor on one of the edges of the element.

Rotate the other arm into contact with the other edge of the element whose angle of the cut is to be controlled.

Read the angle and record it to the nearest five minutes of angle.

Repeat the procedure at the other end of the element with the exception of tongued and grooved elements where the measurement is carried out above the tongue.

6.7 Warp

6.7.1 Cup

Prior to testing, mark measuring points minimum 50 mm from the end arises and maximum 5 mm from the edge arises. The direction of the line of measurement passing through each pair of points shall be perpendicular to the edge arises of the element.

With the measuring equipment, defined in 5.4.1, adjusted to the span between the pairs of marked points on the element being checked, calibrate the gauge to 0 with the reference plate defined in 5.4.2.

The distance between each line of measurement shall be approximately equal to but not greater than 400 mm. Depending upon the length of the element being checked, make two or more measurements.

Record the cup indicated on the gauge for each pair of marked points.

Record convex cup as a (+) value.

Record concave cup as a (-) value.

6.7.2 Bow

Place the element with its concave surface (the face for an element with concave bow, the back for an element with convex bow), in contact, at its two ends, with the ruler defined in 5.4.2 or with the reference plate defined in 5.4.3.

Measure the maximum gap between the actual surface and the ruler or the reference plate - generally around the centre of the element, either

— with feeler gauge;

— with a calliper; or

— with any device providing the same accuracy.

Record convex bow as a (+) value.

Record concave bow as a (-) value.

6.7.3 Spring

Measure the spring on the groove side.

Measure the maximum gap between the laid edge and the ruler or the reference plate - generally around the centre of the element, either:

— with feeler gauge;

— with a calliper; or

— with any device providing the same accuracy.

6.7.4 Lipping

Join two elements together and place the resulting assembly on a flat surface. Measure the difference in levels of the faces of the two elements with the feeler defined in 5.4.4.

7 Expression of results

7.1 Dimensions

7.1.1 Length and width of the element

Average the two or, if relevant, three sets of measurements of the apparent length to the nearest mm or 0,1 mm, depending on whether the measurements are made by means of a tape or calliper respectively, to yield the length of the element.

Apply the same procedure to the width with an accuracy of ± 0,1 mm.

7.1.2 Thickness of the element

Note the minimum and the maximum values.

Average the four or six measurements, as obtained in 6.4.2 to the nearest 0,1 mm.

7.2 Additional dimensions, if relevant

7.2.1 Overall dimensions

Apply the same procedure as in 7.1.

7.2.2 Depth of the groove

Note the minimum value.

Average the two or three measurements, as obtained in 6.5.2 to the nearest 0,1 mm.

7.2.3 Width of the tongue

Note the maximum value.

Average the two or three measurements, as obtained in 6.5.3 to the nearest 0,1 mm.

7.2.4 Undercut

Average the results obtained as defined in 6.5.6 to the nearest 0,1 mm to get the value of the undercut.

7.2.5 Thickness of the tongue

Note the maximum value.

Average the two or three measurements of each tongue, as obtained in 6.5.4 to the nearest 0,1 mm.

7.2.6 Width of the tongue

Note the minimum value.

Average the two or three measurements, as obtained in 6.5.3 to the nearest 0,1 mm.

7.2.7 Thickness of the upper lip

Average the results of the corresponding four or six measurements in accordance with 6.5.7 to the nearest 0,1 mm.

7.2.8 Thickness above the groove

Note the minimum value.

Average the four or six measurements, as obtained in 6.5.8 to the nearest 0,1 mm.

7.3 Angle measurement

7.3.1 Squareness

Divide each value given by the gauge by the distance expressed in mm between the fixed feeler and the gauge and multiply by 100.

It gives the relative deviation expressed in %.

7.3.2 Mitre cuts

Calculate the difference, in minutes, between the assumed reference value, and the measured value and multiply by 0,29. This gives the angular defect in mm/m, of the cut of the element relative to the nominal cut.

7.4 Warp

7.4.1 Cup

Average the measurements to the nearest 0,05 mm.

7.4.2 Bow

Report the measurements to the nearest 0,5 mm for 1 m and 1 mm for longer than 1 m.

7.4.3 Spring

Report the measurements to the nearest 0,1 mm.

7.4.4 Lipping

Average the measurements to the nearest 0,1 mm.

8 Test report

It shall contain the following information:

a) the name and address of the laboratory or of the company, if relevant;

b) the name and address of the company ordering the test, if relevant;

c) the sampling procedure and the identification of the sample, if relevant;

d) the date of delivery, if relevant;

e) the date or period of the test(s);

f) the type (the brand if any) and the full description of the elements (with their measurements), face view and cross sections in a suitable scale;

g) reference to this standard, and the deviations, if any;

h) the conditioning applied to the elements prior testing, if any;

i) the climatic conditions within the laboratory during the test, if relevant;

j) a short description of the equipment involved in the test method;

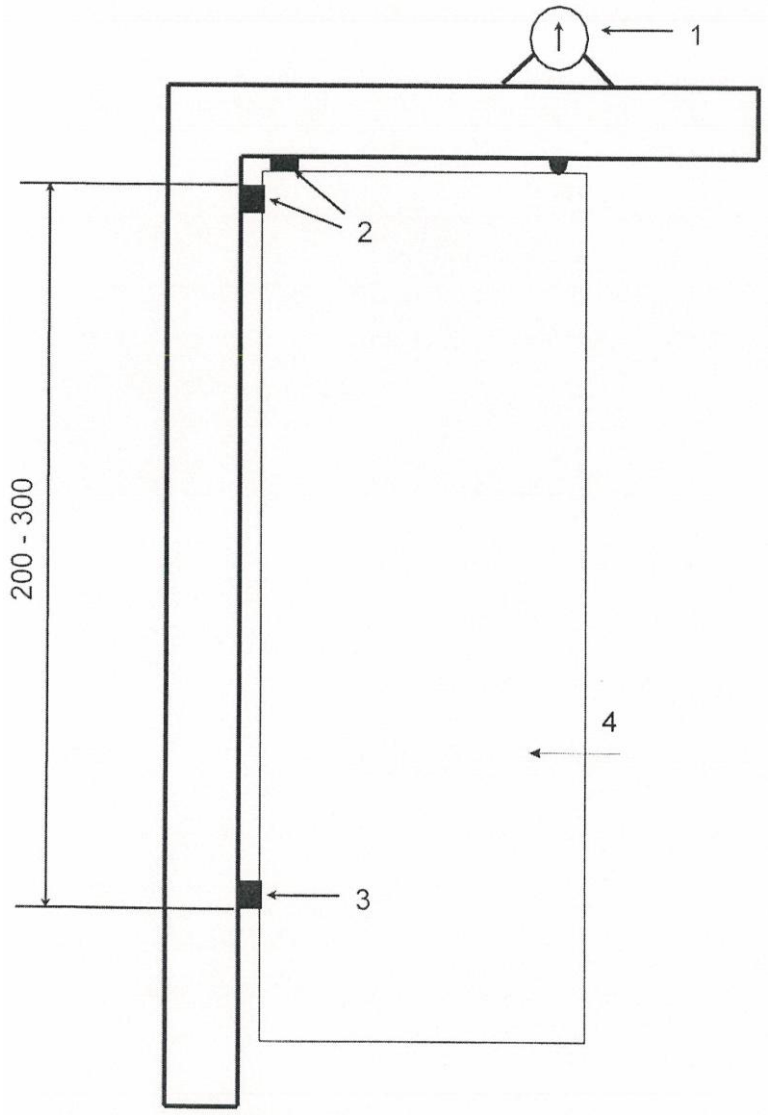
k) each individual result according to the test method;

l) the mean value and/or the minimum and/or maximum dimension of the element as given in the product standard.

Annex A
(informative)

Apparatus for square cut elements

Dimensions in millimetres



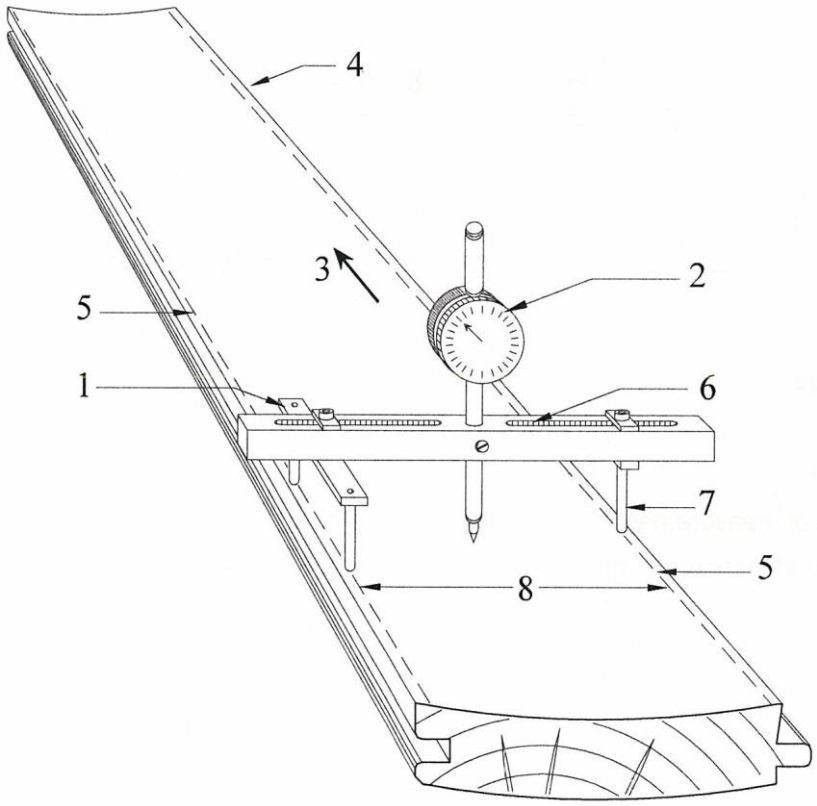
Key

1 Mobile gauge
2 Fixed feeler
3 Adjustable feeler
4 Element (viewed from above)

Figure A.1 – Square

Annex B
(normative)

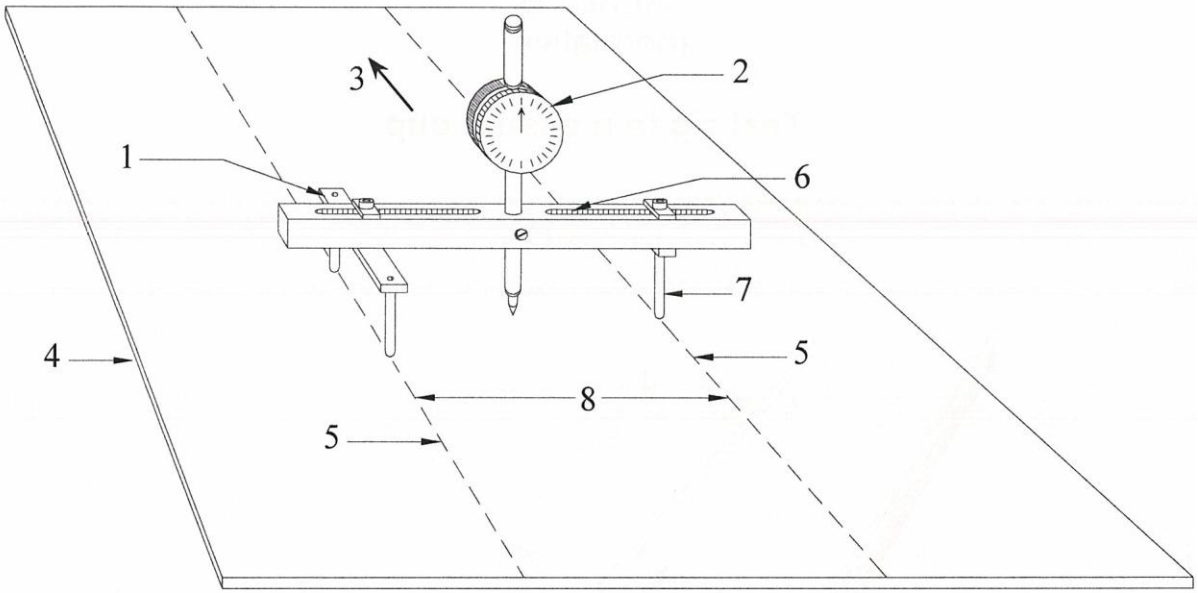
Test rig to measure cup



Key

1 Adjustable bridge
2 Gauge
3 Length direction
4 Transverse line of measurement
5 Longitudinal line of measurement
6 Groove
7 Adjustable pin
8 Span

Figure B.1 – Test rig to measure cup



Key

1 Adjustable bridge
2 Gauge
3 Length direction
4 Transverse line of measurement
5 Longitudinal line of measurement
6 Groove
7 Adjustable pin
8 Span

Figure B.2 – Gauging test

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