

BS 2482:2009



BSI Standards Publication

Specification for timber scaffold boards

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 24, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 30 June 2009. It was prepared by Subcommittee B/514/42, *Access and working platforms*, under the authority of Technical Committee B/514, *Access and support equipment*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 2482:1981, which is withdrawn.

Information about this document

This is a full revision of the standard, and introduces the following principal changes.

- a) 50 mm thick boards are no longer included within the standard.
- b) The method of selection of 38 mm thick boards has been revised and two grades with different maximum support centres (1.2 m and 1.5 m) are now specified.
- c) The method of selection of 63 mm thick boards has been revised and a single grade with maximum support centres of 2.5 m is now specified.
- d) Annex A provides updated information on the performance characteristics of boards conforming to this standard.
- e) Annex B provides information on support centres, which are defined in terms of a 'target span' with a setting-out allowance.

Guidance on the use of scaffold boards in access scaffolding is given in the National Access and Scaffolding Confederation's technical guidance notes, *A guide to good practice for scaffolding with tubes and fittings (TG20:08)* [1] and also BS EN 12811 for scaffold platforms.

Attention is drawn to the UK government's timber procurement policy, which requires that timber used at construction sites for all central government projects is from a legal and sustainable source. Guidance on implementation is offered by the Central Point of Expertise for Timber Procurement (CPET).¹⁾

Product certification/inspection/testing

Users of this British Standard are advised to consider the desirability of third-party certification/inspection/testing of product conformity with this British Standard. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

¹⁾ Available at www.proforest.net/cpet.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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

1 Scope

This British Standard specifies requirements for timber scaffold boards with a width of 225 mm and a thickness of either 38 mm or 63 mm.

It covers board sizing, board construction, and timber quality and grading, for which it specifies:

- a) two grades for 38 mm thick scaffold boards, as follows:
 - 1) 1.2 m support centre – a grade that is suitable for support at centres up to 1.2 m, which may be selected by visual or machine strength grading;
 - 2) 1.5 m support centre – a grade that is suitable for support at centres up to 1.5 m, which may only be selected by machine strength grading.
- b) a single grade for 63 mm thick scaffold boards that is suitable for support at centres up to 2.5 m, which may be selected by visual or machine strength grading.

This British Standard does not cover laminated or finger-jointed scaffold boards.

NOTE Annex A provides information on performance characteristics. Annex B provides information on support centres.

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.

BS 1706, *Method for specifying electroplated coatings of zinc and cadmium on iron and steel*

BS 4978, *Specification for visual strength grading of softwood*

BS 6100-4, *Glossary of building and civil engineering terms – Part 4: Forest products*

BS 6338, *Specification for chromate conversion coatings on electroplated zinc and cadmium coatings*

BS EN 10143, *Continuously hot-dip coated steel sheet and strip – Tolerances on dimensions and shape*

BS EN 13183-1, *Moisture content of a piece of sawn timber – Part 1: Determination by oven dry method*

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

3 Terms and definitions

For the purposes of this British Standard, the nomenclature given in BS EN 13556, and the terms and definitions given in BS 6100-4 and the following apply.

3.1 scaffold board

board intended to provide part of the support surface or platform in scaffolding when supported at appropriate centres and subjected to anticipated loadings

NOTE Alternative names include “scaffold plank” and “scaffold batten”.

3.2 target span

support centres for which the grading rules for the scaffold board have been developed

4 Types of timber

Timbers for scaffold boards shall be selected from those specified in Table 1 or Table 2, as appropriate.

Table 1 **Timbers for machine grading of scaffold boards, for which settings have been derived**

Standard name	Botanical species	Other common names
Europe		
Redwood	<i>Pinus sylvestris</i>	European redwood
Whitewood	<i>Picea abies</i>	European whitewood
	<i>Abies alba</i>	European whitewood

Table 2 **Timbers for visual grading of scaffold boards**

Standard name	Botanical species	Other common names
Europe		
Redwood	<i>Pinus sylvestris</i>	European redwood
Whitewood	<i>Picea abies</i>	European whitewood
	<i>Abies alba</i>	European whitewood
Canadian species combinations		
Douglas fir – larch	<i>Pseudotsuga menziesii</i>	Douglas fir
	<i>Larix occidentalis</i>	Western larch
Hem – fir	<i>Tsuga heterophylla</i>	Western hemlock
	<i>Abies amabilis</i>	Amabilis fir
	<i>Abies grandis</i>	Grand fir
Spruce – pine – fir	<i>Picea mariana</i>	Black spruce
	<i>Picea engelmanni</i>	Engelmann spruce
		Eastern Canadian spruce
	<i>Picea rubens</i>	Red spruce
	<i>Picea glauca</i>	White spruce
	<i>Pinus banksiana</i>	Jack pine
	<i>Pinus contorta</i>	Lodgepole pine
	<i>Pinus ponderosa</i>	Ponderosa pine
	<i>Abies lasiocarpa</i>	Alpine fir
	<i>Abies balsamea</i>	Balsam fir

Table 2 **Timbers for visual grading of scaffold boards** (*continued*)

Standard name	Botanical species	Other common names
USA		
Southern yellow pine	<i>Pinus echinata</i>	Shortleaf pine
	<i>Pinus palustris</i>	Longleaf pine
	<i>Pinus elliottii</i>	Slash pine
	<i>Pinus taeda</i>	Loblolly pine
<i>NOTE 1 The most commonly available timber is European whitewood.</i>		
<i>NOTE 2 This table lists those timbers known to be suitable for use for the production of scaffold boards. No attempt has been made to list timbers in such a manner as to indicate their relative strengths.</i>		

5 Dimensions and tolerances

Basic cross-sectional sizes, when measured at 20% moisture content in accordance with BS EN 13183-1, shall conform to Table 3.

Table 3 **Target cross-sectional sizes**

Thickness mm	Width mm
38 ±2	225 ±5
63 ±3	225 ±5

It shall be assumed that the thickness and width of a board:

- increase by 0.25% for every 1% of moisture content higher than 20% up to 27%; and
- decrease by 0.25% for every 1% of moisture content lower than 20%.

A finished scaffold board shall be of the length described by the supplier, with a tolerance of ±25 mm, except in the case of boards of basic length greater than 3.9 m, for which the tolerance on length shall be ±50 mm.

NOTE 1 If more precise lengths than those specified are required for system (prefabricated) scaffolds, the tolerances should be those defined as acceptable by the scaffold manufacturer.

NOTE 2 Crosscutting is permissible as this does not affect the structural integrity of the board. For visually graded boards, all defects will have been visually assessed. For machine graded boards, the board will have been mechanically assessed along its length.

6 Construction

6.1 General

The face surface shall be sawn, edges shall be sawn or planed, and corners shall be left square. Ends shall be protected from splitting by the use of either end bands (see 6.2) or nailplates (see 6.3), fitted in such a manner as to avoid causing injury.

6.2 End bands

6.2.1 General

End bands shall be so finished as to avoid causing injury through sharp ends.

6.2.2 38 mm thick boards

End bands shall be made from zinc-coated mild steel conforming to BS EN 10143, with a thickness of not less than 0.6 mm. The width of the end bands shall be not less than 20 mm and not greater than the thickness of the board. They shall extend for a minimum of 150 mm along the edge of the board.

The end bands shall be secured to the edge of the board along each side with:

- a) not fewer than two 30 mm × 3.0 mm clout nails, galvanized in accordance with BS 1706 or zinc-plated and chromate-conversion-coated in accordance with BS 6338; or
- b) not fewer than two 1.8 mm wire × 11.3 mm crown × 30 mm long staples, galvanized to BS 6338 or made from stainless steel.

NOTE 1 When using staples to secure the end band to the board, the crowns of the staples should be fitted perpendicular to the edge of the board.

The end bands shall be secured to the end of the board with:

- 1) not fewer than three 30 mm × 3.0 mm clout nails, either galvanized in accordance with BS 1706 or zinc-plated and chromate-conversion-coated in accordance with BS 6338; or
- 2) not fewer than three 1.8 mm wire × 11.3 mm crown × 30 mm long staples, galvanized to BS 6338 or made from stainless steel; or

NOTE 2 When using staples to secure the end band to the board, the crowns of the staples should be fitted perpendicular to the end of the board.

- 3) not fewer than 28 teeth, stamped or pressed from the end band in such a way that sharp strips of steel are bent from the slots to project at approximately 90° from the inner face of the band.

6.2.3 63 mm thick boards

End bands shall be made from zinc-coated mild steel conforming to BS EN 10143, with a thickness of not less than 0.6 mm. The width of the end bands shall be not less than 47 mm and not greater than the thickness of the board. They shall extend for a minimum of 100 mm along the edge of the board.

The end bands shall be secured to the edge of the board along each side with:

- a) not fewer than two 30 mm × 3.0 mm clout nails, galvanized in accordance with BS 1706 or zinc-plated and chromate-conversion-coated in accordance with BS 6338; or
- b) not fewer than two 1.8 mm wire × 11.3 mm crown × 30 mm long staples, galvanized to BS 6338 or made from stainless steel.

NOTE 1 When using staples to secure the end band to the board, the crowns of the staples should be fitted perpendicular to the edge of the board.

The end bands shall be secured to the end of the board with:

- 1) not fewer than three 30 mm × 3.0 mm clout nails, either galvanized in accordance with BS 1706 or zinc-plated and chromate-conversion-coated in accordance with BS 6338; or
- 2) not fewer than three 1.8 mm wire × 11.3 mm crown × 30 mm long staples, galvanized to BS 6338 or made from stainless steel; or

NOTE 2 When using staples to secure the end band to the board, the crowns of the staples should be fitted perpendicular to the end of the board.

- 3) not fewer than 28 teeth, stamped or pressed from the end band in such a way that sharp strips of steel are bent from the slots to project at approximately 90° from the inner face of the band.

6.3 Nailplates

Nailplates shall be made from galvanized sheet steel, by stamping or pressing a pattern of slots so that sharp strips of steel are bent from the ends of the slots to project at approximately 90° from the inner face of the plate.

The plates shall have a thickness of not less than 0.7 mm (22 gauge) with a width of not less than 27 mm and length of not less than 190 mm.

There shall be not fewer than 42 teeth per plate and at least 50% of these teeth shall have a length of not less than 8 mm. At least two plates shall be attached across each end of the board (one on each face) and shall be positioned within 230 mm of the end of the board.

The nailplates shall be attached by being pressed into the face of the scaffold board until the upper surface of the nailplate is flush with that of the board. Before the nailplate is inserted, pressure shall be applied to the edges of the board in order to close any fissures that might be present. The size limits of fissures shall conform to 7.2.2.4.

7 Timber quality

7.1 General

Timber shall be assessed in accordance with 7.2 or 7.3, as appropriate.

Both visual and machine strength grading operations shall be carried out by a competent, adequately trained and supervised person.

NOTE 1 If testing of scaffold boards described as conforming to BS 2482 is required to validate the grading, the method described in Annex C should be used. Under no circumstances should attempts be made to proof load scaffold boards intended for subsequent use, as such loading might seriously impair their strength.

NOTE 2 Minimum requirements of a factory production control system are specified in Clause 8.

7.2 Visual grading of 38 mm thick, 1.2 m support span boards and 63 mm thick boards

7.2.1 Methods of measurement

7.2.1.1 Knots

NOTE Typical knots, and groups of knots, together with their measurements are shown in Figures 1a) to f).

Knots shall be measured at right angles to the length of the board. In the case of the following types of knots, the dimension of the knot shall be disregarded.

- a) For knots visible on the edge but whose axis is essentially perpendicular to the face, the dimension on the edge shall be disregarded [see Figure 1a)].
- b) For all splay knots, the dimension of the knot on the face shall be ignored [see Figure 1c)].

Where more than one knot occurs within any 100 mm length along the board, the knots shall be considered as a group [see Figure 1f)].

Subject to the exclusions specified in item a), each appearance of every knot on both edges shall be measured and summed.

Subject to the exclusions specified in item b), each appearance of every knot on both faces shall be measured and summed.

7.2.1.2 Characteristics other than knots

Characteristics other than knots shall be measured in accordance with BS 4978.

Figure 1 Typical knots and groups of knots

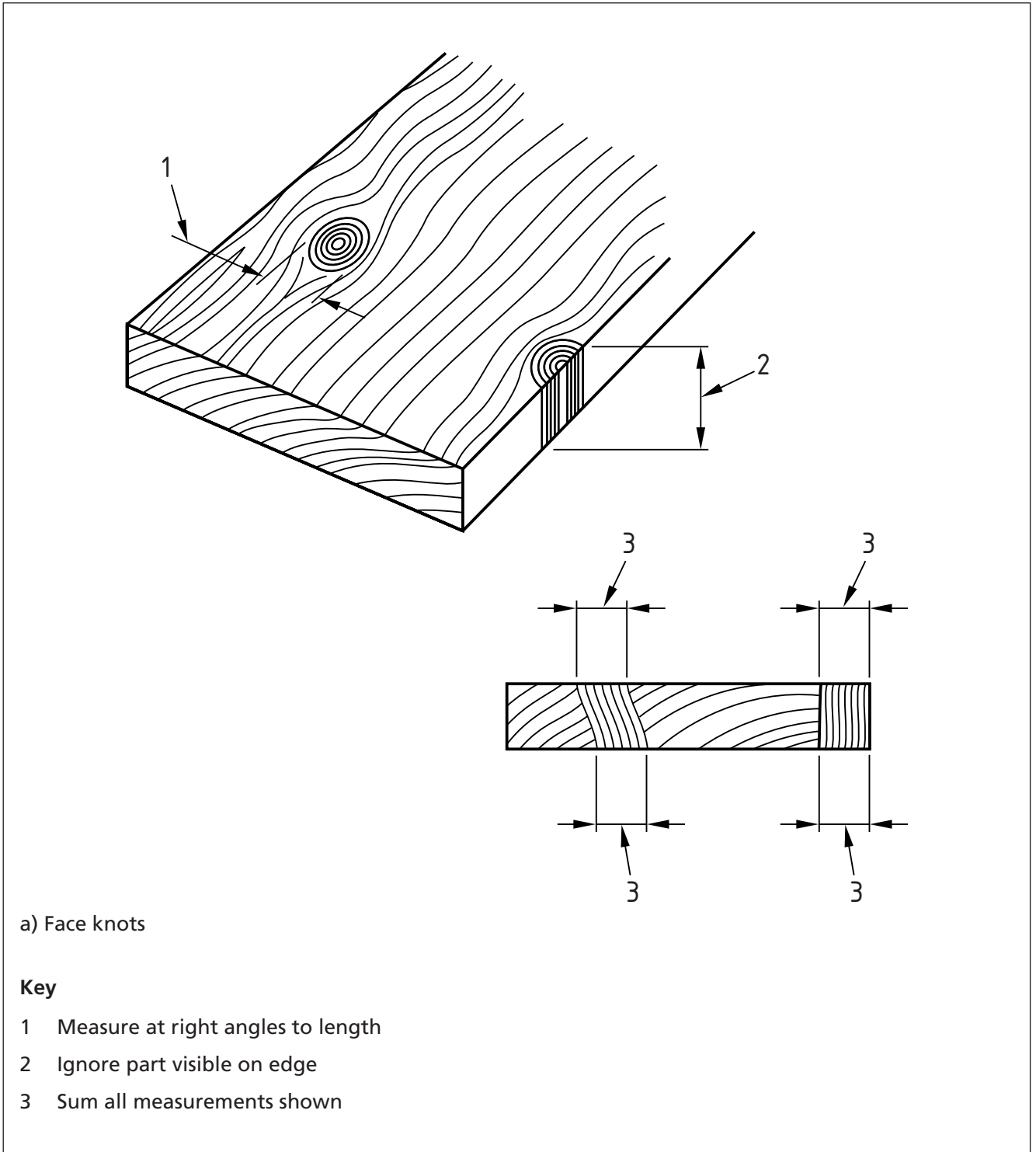


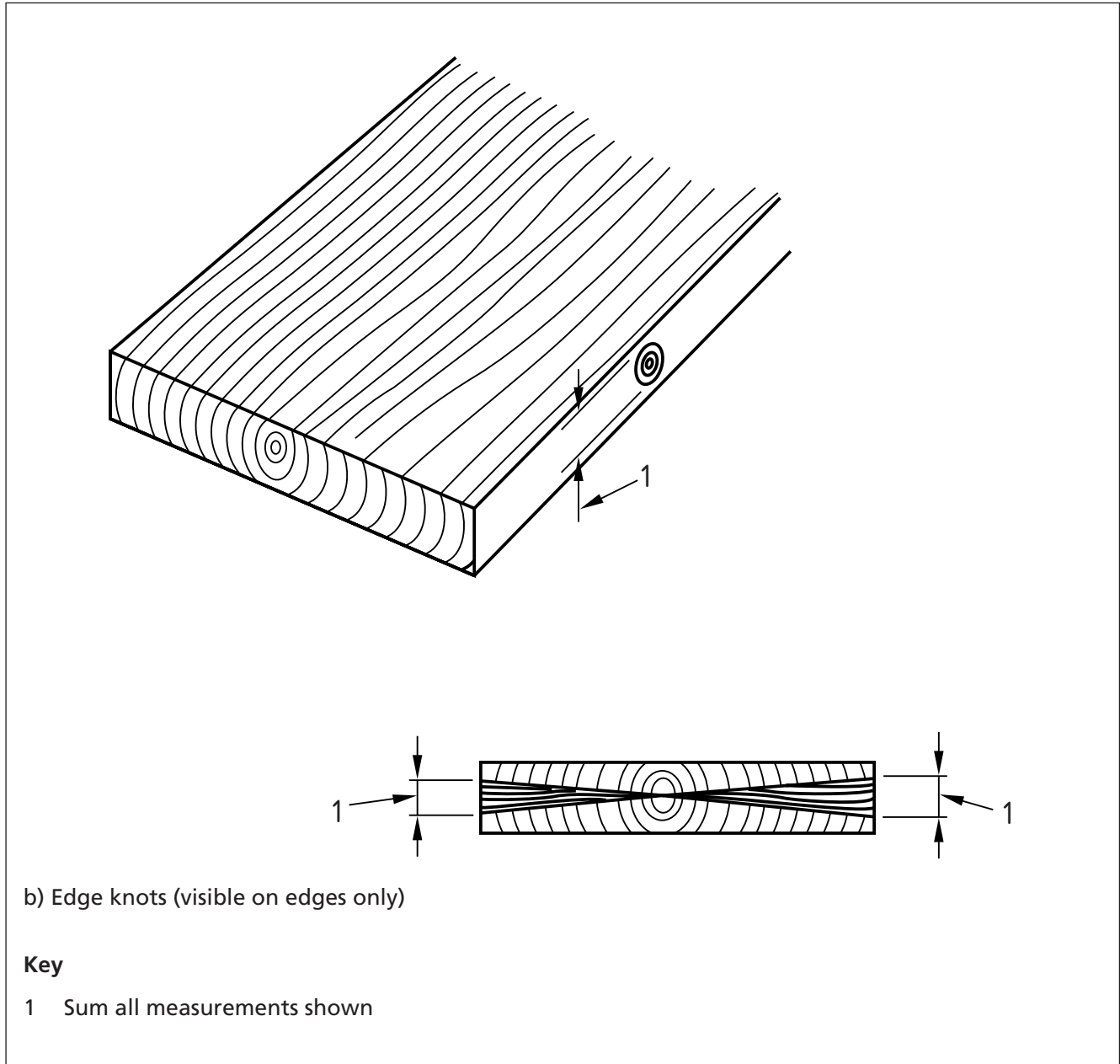
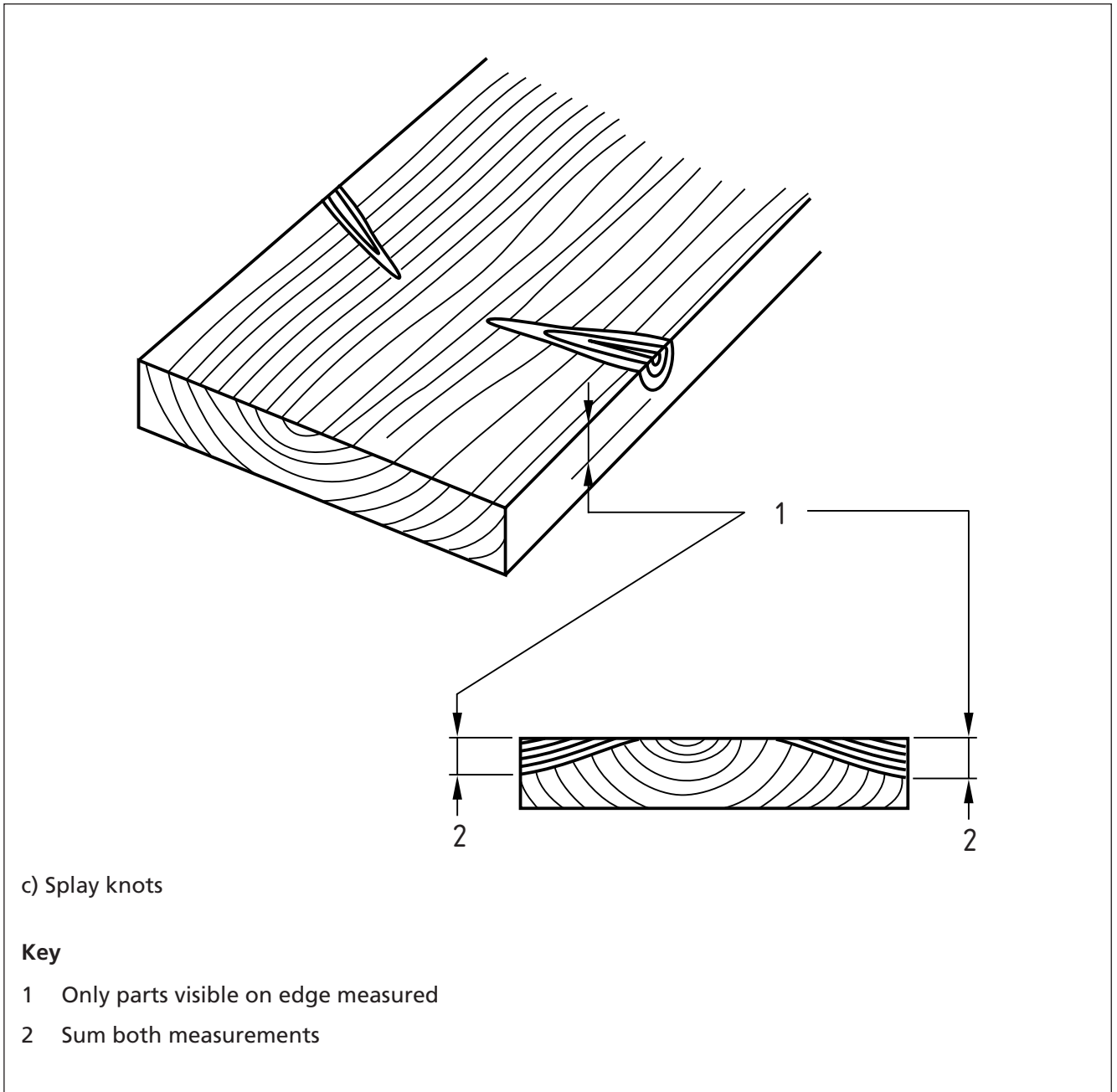
Figure 1 Typical knots and groups of knots (*continued*)

Figure 1 Typical knots and groups of knots (continued)



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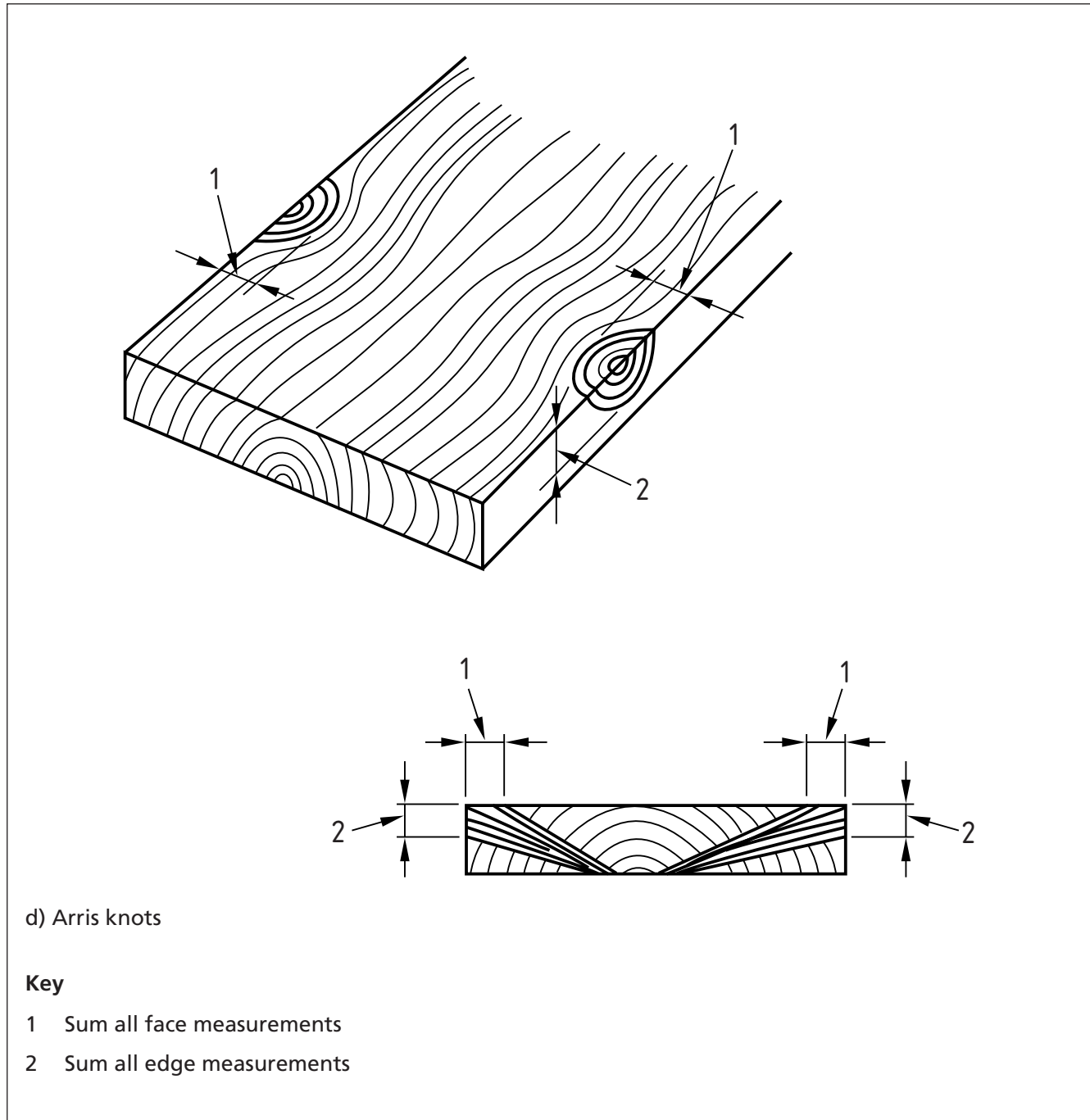
Figure 1 Typical knots and groups of knots (*continued*)

Figure 1 Typical knots and groups of knots (continued)

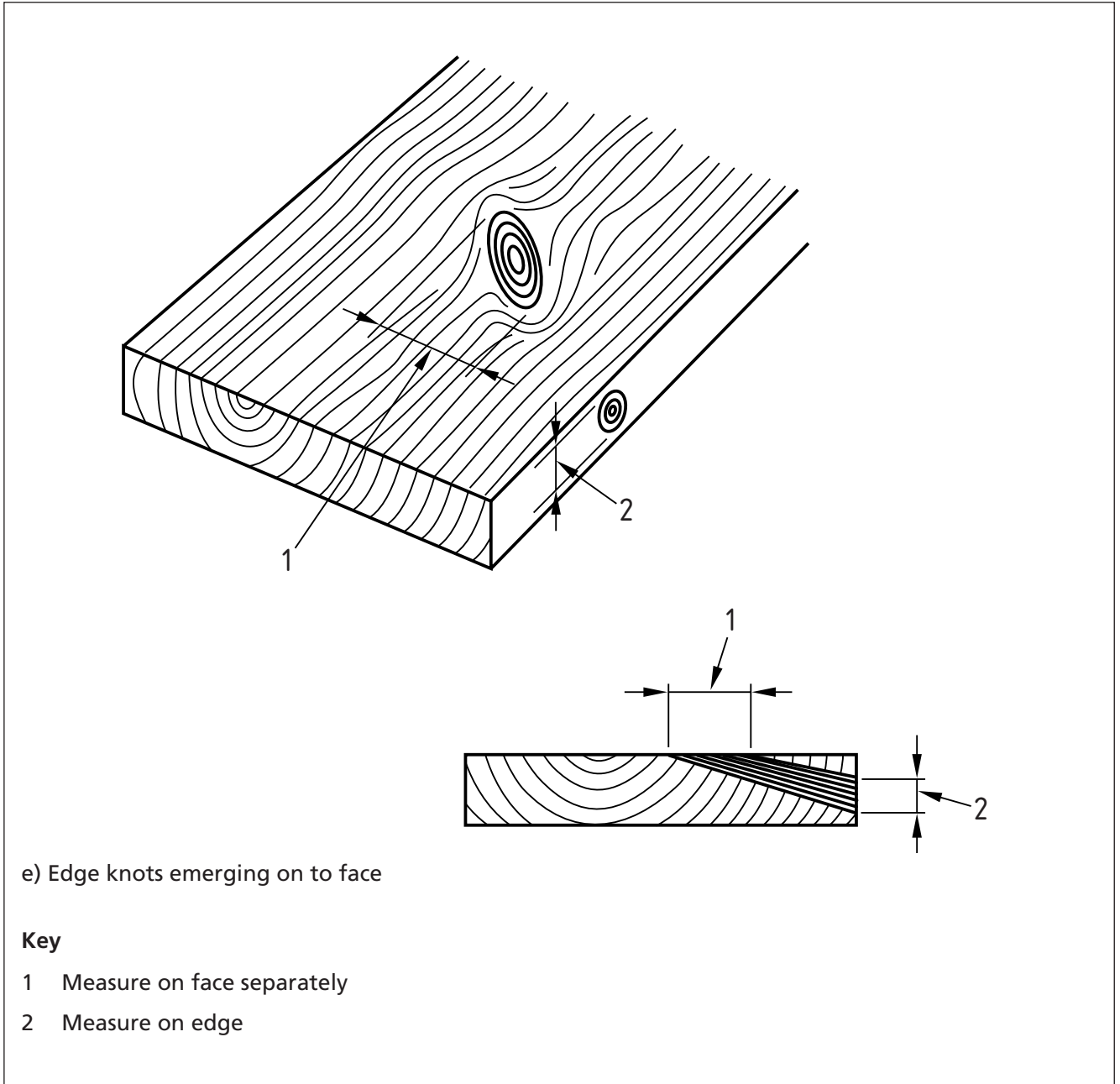
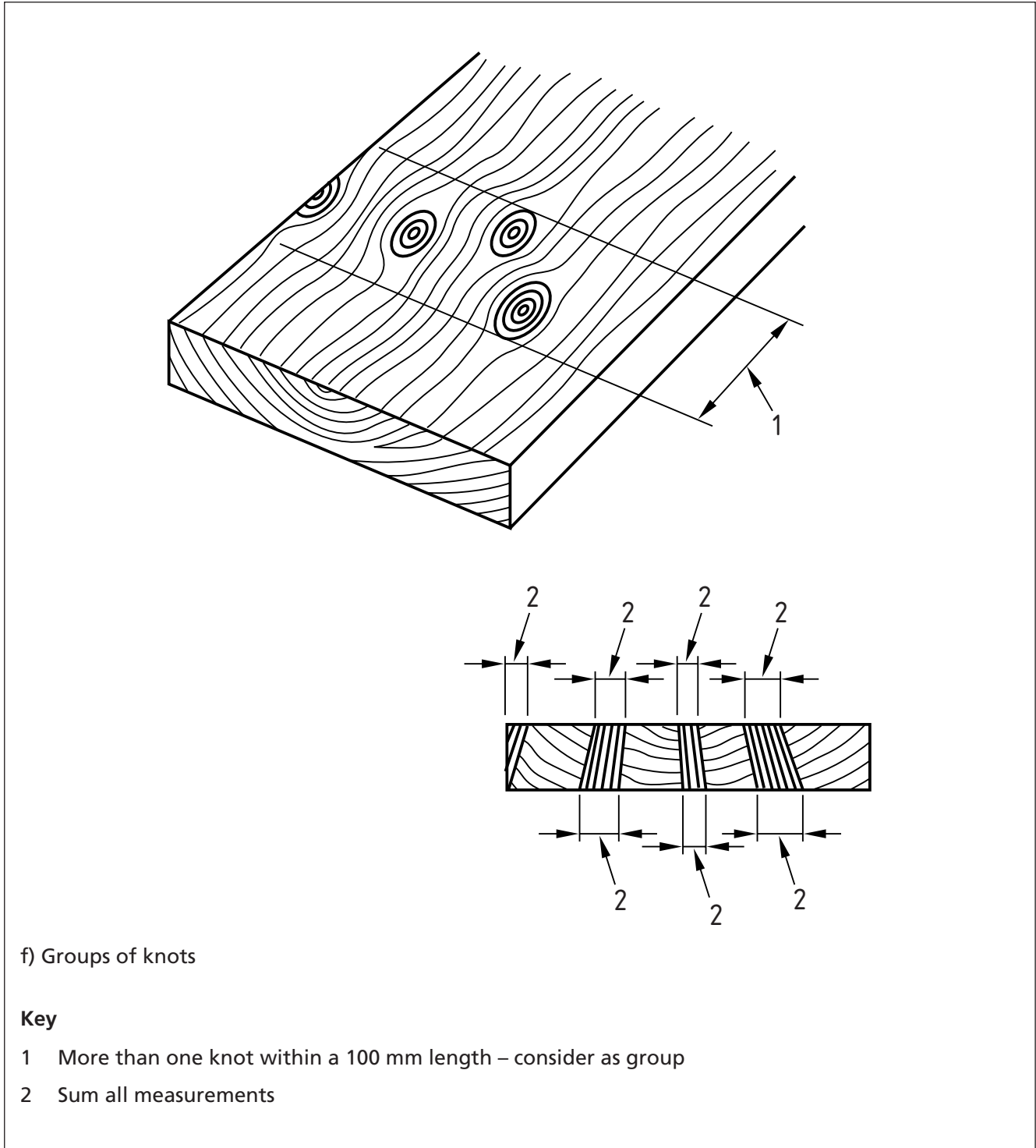


Figure 1 Typical knots and groups of knots (continued)

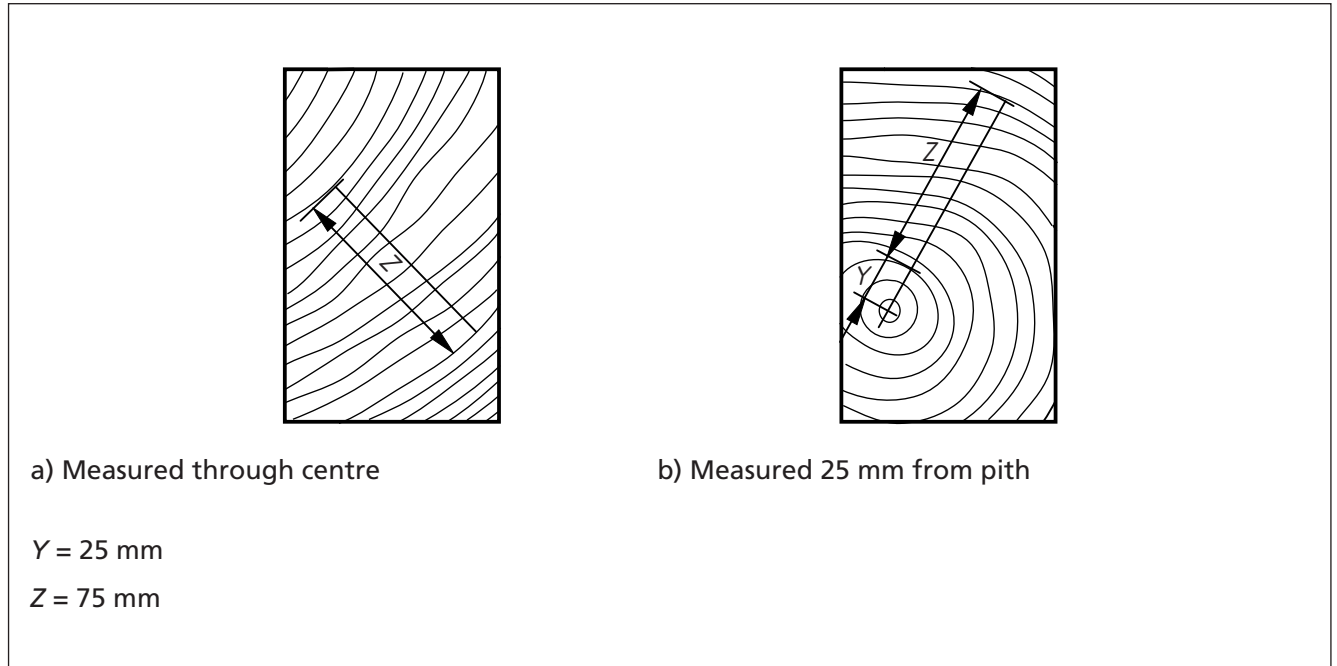


7.2.2 Limiting characteristics

7.2.2.1 Rate of growth

The board shall be rejected if there are fewer than 5 growth rings per 25 mm, when measured in accordance with Figure 2.

Figure 2 Measurement of rate of growth



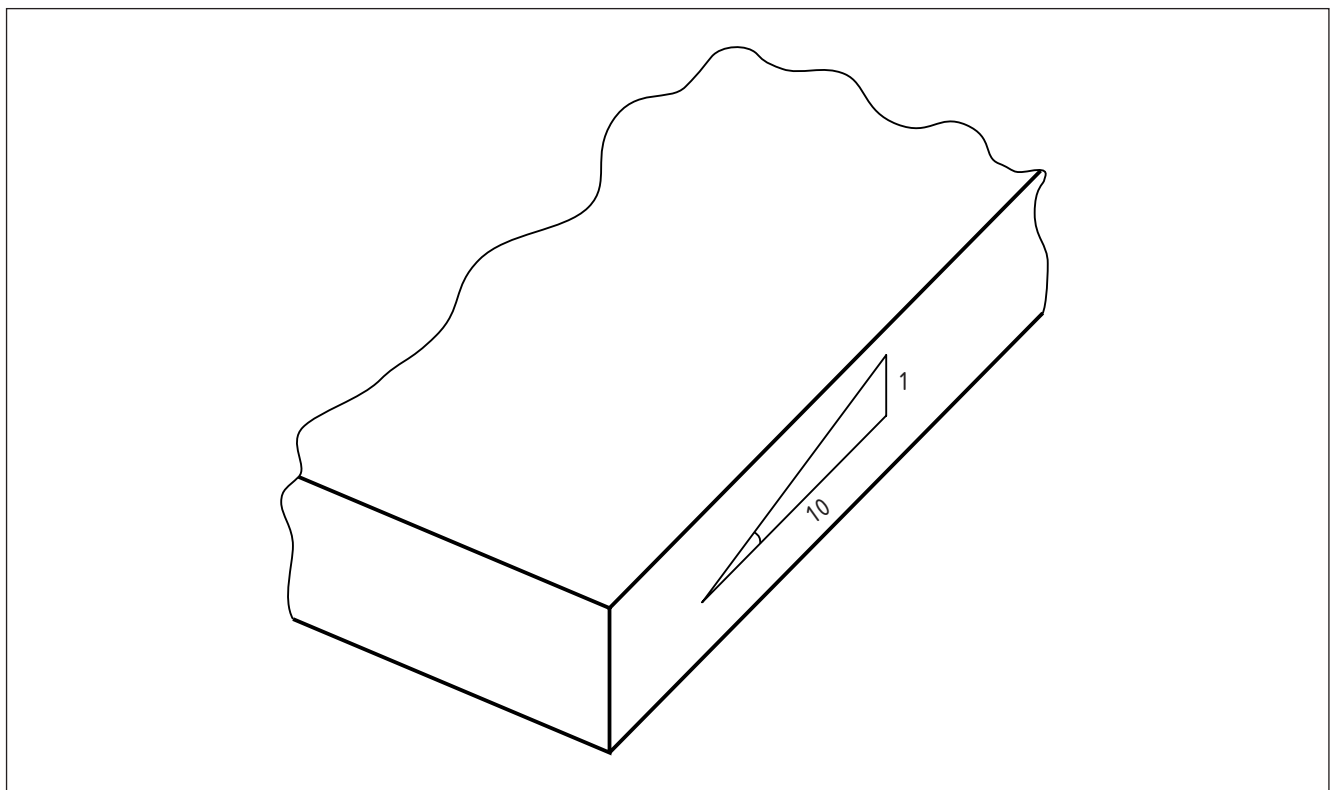
7.2.2.2 Slope of grain

The board shall be rejected if the slope of grain exceeds 1 in 10 on the face or on the edge (see Figure 3).

NOTE 1 Grain should run parallel to the face of the board.

NOTE 2 A scribe should be used when visually assessing the board for slope of grain.

Figure 3 Measurement of slope of grain



7.2.2.3 Knots

The board shall be rejected if:

- the measurement of any single knot on the face (except splay knots as excluded in 7.2.1.1) exceeds 75 mm;
- the sum of knot measurements on both edges, noting the exclusions of 7.2.1.1, exceeds 28 mm for 38 mm thick boards or 35 mm for 63 mm thick boards;
- the sum of knot measurements on both faces, noting the exclusions of 7.2.1.1, exceeds 150 mm.

Where knots or groups of knots of maximum size occur in more than one position, the board shall be rejected unless there is at least 150 mm of clear timber between such occurrences.

7.2.2.4 Fissures and resin pockets

The board shall be rejected if fissures on either face, with a depth exceeding 12 mm, are longer than 225 mm.

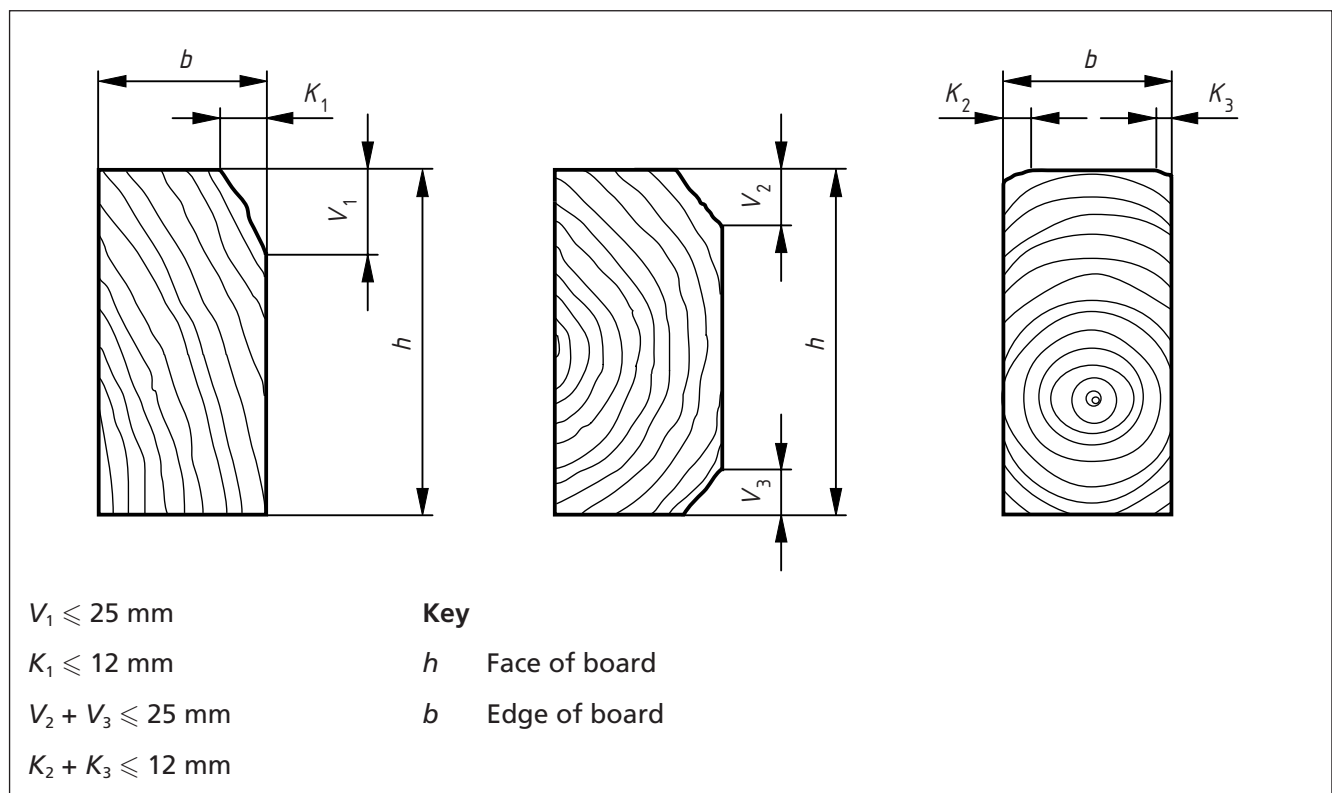
Resin pockets shall be assessed as fissures.

NOTE Unlimited minor surface checks are permitted.

7.2.2.5 Wane

The board shall be rejected if wane reduces the full edge dimension by more than 12 mm and the face dimension by more than 25 mm, when measured in accordance with Figure 4. When end bands are fitted, wane shall not extend on the edge such that the edge of the band is unsupported.

Figure 4 Measurement of wane



7.2.2.6 Distortion

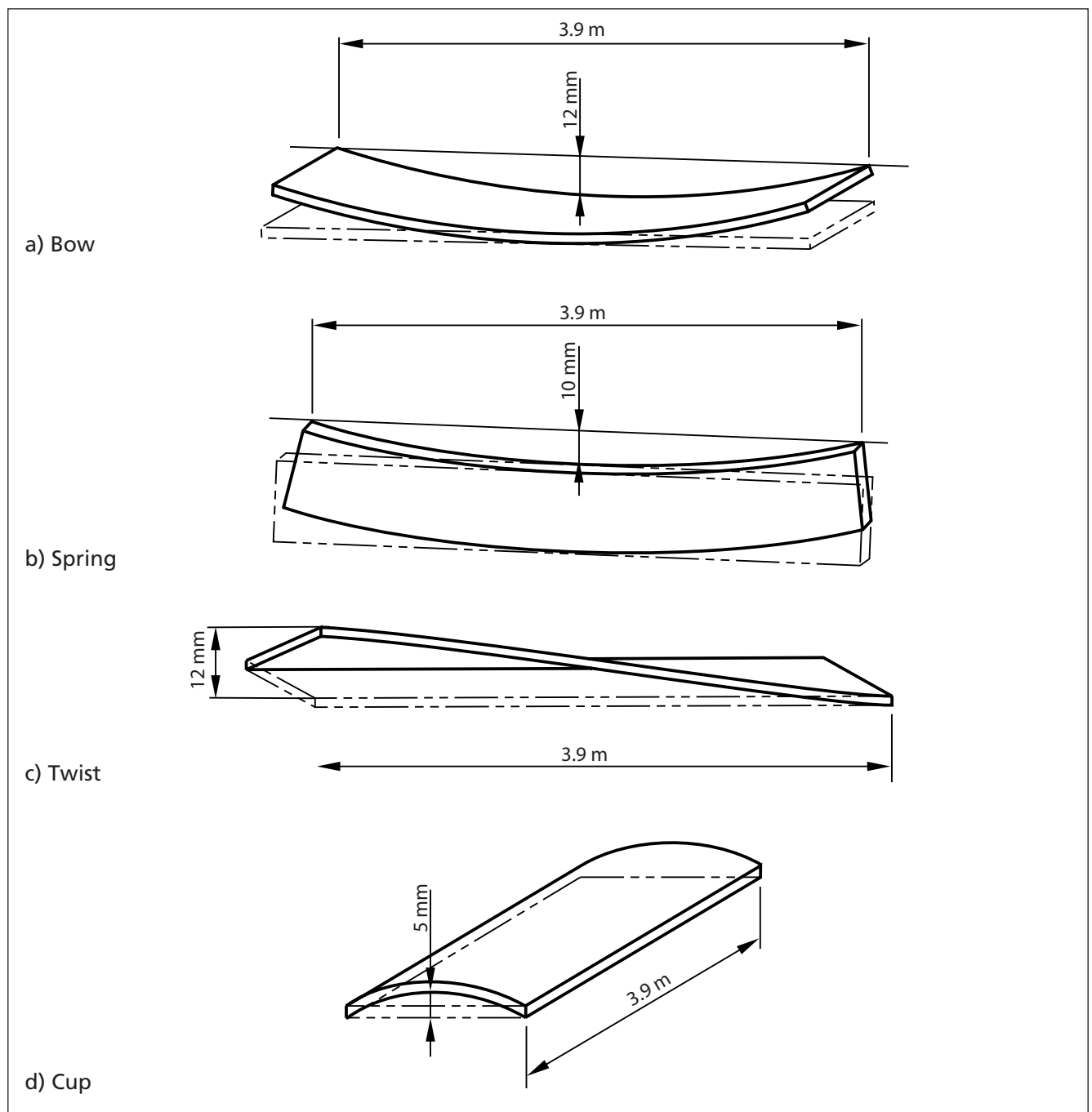
A board with a length of 3.9 m shall be rejected if:

- bow exceeds 12 mm;
- spring exceeds 10 mm;
- twist exceeds 12 mm over the full width of the board;
- cup exceeds 5 mm.

For shorter board lengths, these limits shall be reduced in direct proportion to the ratio of the board length to 3.9 m.

NOTE The measurement of bow, spring, twist and cup is shown in Figure 5.

Figure 5 Measurement of bow, spring, twist and cup for a 3.9 m board



7.2.2.7 Insect holes

The board shall be rejected if it contains wormholes and wood wasp holes or if there is active infestation of the timber.

7.2.2.8 Abnormal features

The board shall be rejected if it contains reaction wood and other abnormal features detrimental to strength.

7.2.2.9 Decay

The board shall be free from fungal decay; however, blue stain in sapwood is permissible.

7.2.2.10 Damage

The board shall be rejected if affected by damage that is likely to cause a greater reduction in strength than other admissible characteristics or that is likely to prejudice safe footholding or cause injury whilst handling.

7.3 Machine grading of boards**7.3.1 Methods of measurement****7.3.1.1 Mechanically assessed characteristics**

Excluding those characteristics limited by 7.3.2.2, timber quality shall be measured by passing the board through a Cook Bolinder²⁾, Computermatic or Micromatic³⁾ strength grading machine. The strength grading machine shall be operated, calibrated and serviced in accordance with the manufacturer's recommendations.

7.3.1.2 Visually assessed characteristics

The limiting characteristics specified in 7.3.2.2 shall be measured in accordance with BS 4978. Where visual assessment of knots is necessary for mechanically assessed boards (see 7.3.2.2), such knots shall be measured in accordance with 7.2.1.1.

²⁾ Cook Bolinder is a method of machine strength grading and is the trade name of a product supplied by Techmach Ltd. This information is given for the convenience of users of this standard and does not constitute an endorsement by BSI of the product named. Equivalent products may be used if they can be shown to lead to the same results.

³⁾ Computermatic and Micromatic are trade marks owned by MPC Ltd, Unit 2, Tabrums Industrial Estate, Battlesbridge, Essex SS11 7QX, and are the trade names of a product supplied by MPC Ltd. This information is given for the convenience of users of this standard and does not constitute an endorsement by BSI of the product named. Equivalent products may be used if they can be shown to lead to the same results.

7.3.2 Limiting characteristics

7.3.2.1 Mechanically assessed characteristics

The board shall be accepted by a strength grading machine set to the limiting values specified in either Table 4 or Table 5, as appropriate.

Table 4 Cook Bolinder grade settings

Target thickness mm	Target span of board m	Fixed deflection mm	Load kN
38	1.2	7.1	2.21
38	1.5	7.1	3.41
63	2.5	3.7	5.54

Table 5 Computermatic and Micromatic grade settings

Target thickness mm	Target span of board m	Fixed load N	Deflection limits Bits of 0.19 mm
38	1.2	3 062	53
38	1.5	3 062	34
63	2.5	8 505	29

7.3.2.2 Visually assessed characteristics

Over the full length of the board, characteristics and defects shall conform to 7.2.2.4 to 7.2.2.10. In addition, where a machine does not fully grade to within 600 mm of both ends of a board, a visual check for knots shall be made on the non-graded portion. If, upon assessing this portion, it is found to have a knot larger than the maximum permitted in 7.2.2.3, and if such a knot is also larger than any existing in the fully graded portion, the board shall be rejected.

8 Factory production control

A production control system shall be established, documented and maintained to ensure that all products placed on the market conform to the stated characteristics. The system shall consist of documented procedures, with regular inspections and assessment to control the raw material, equipment and processes.

The system shall incorporate the following elements relating to the control and supervision of the strength grading of scaffold boards.

- A representative shall be responsible for the operation of the graders and shall review the grading records on a weekly basis.
- Steps shall be taken to ensure that rejected timber is not re-graded and is stored separately from timber conforming to BS 2482.
- Graded timber shall be protected in storage and during transport to the extent necessary to minimize downgrading of the timber.

- d) The following records shall be kept for each parcel of graded timber:
- 1) the job or order number;
 - 2) the customer's name, if known, or identifying reference;
 - 3) the timber species or species combination and its source;
 - 4) timber size and surface finish (planed or sawn);
 - 5) the number of pieces in each grade and the number of rejects;
 - 6) the date of grading;
 - 7) the grader's name or identification number;
 - 8) the average moisture content;
 - 9) the highest moisture content reading.

NOTE 1 When strength grading for stock or in a continuous process, the requirement to keep records as in items 1), 2) and 5) may be modified.

NOTE 2 When recording the timber source in item 3), it is sufficient to record the shipper's end mark, where this exists.

9 Marking

Each board shall bear the following information, marked in a legible manner upon the means of end protection (see Clause 6), upon a specially provided identification plate or by means of brands on the surface of the board:

- a) the number and year of this British Standard, i.e. BS 2482:2009⁴⁾;
- b) the identification mark of the supplier;
- c) the letter M or V denoting machine or visual grading;
- d) the word "support", followed by the target span in metres up to which the board may be supported (see Table B.1);
- e) where appropriate, the identification mark of a third-party certification body.

⁴⁾ Marking BS 2482:2009 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity.

Annex A (informative) Properties of scaffold boards

Scaffold boards conforming to this British Standard would be expected to provide the strength properties shown in Table A.1.

Table A.1 Strength properties

Board thickness mm	Target span m	Working moment of resistance of a single board where:	
		An applied load acts only on an individual board kNm	An applied load is spread uniformly ^{A)} across a minimum of 4 boards kNm
38	1.2	0.50	0.61
38	1.5	0.65	0.81
63	2.5	1.25	1.48

NOTE This data is based on a load of five days duration on a board measured at 27% moisture content.

^{A)} For example, via a rigid building product pack or similar.

Annex B (informative) Support centres

The scaffold boards specified in this British Standard are designed to operate up to the target spans given in Table B.1. However, a tolerance of +100 mm is allowed over this span when setting out supports. When correctly supported, the scaffold boards are designed to meet the loadings stipulated by BS EN 12811 for scaffold platforms.

Table B.1 **Target spans**

Board type mm	Span m
38	1.2
38	1.5
63	2.5

Annex C (informative) Method of test for determining bending strength

C.1 Sampling

C.1.1 If testing individual boards, take any board, at a moisture content of 27% or greater.

C.1.2 If testing a batch of boards, take at least 20 boards, at a moisture content of 27% or greater.

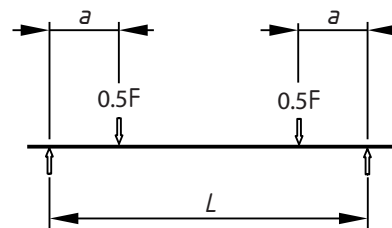
C.2 Procedure

Position the test specimen as a plank over a span of 1.2 m for 38 mm thick boards or a span of 1.7 m for 63 mm boards, having placed the board's worst visual defect in the central half of the span. Support the specimen on rollers and a fixed knife edge reaction, or by other devices which achieve an acceptable free support condition without significant local indentation of the specimen. Load the specimen as shown in Figure C.1, at a continuous rate adjusted so that maximum load is reached within 300 ± 120 s, until failure occurs.

Repeat the test for each specimen.

NOTE The loading equipment used needs to be capable of measuring loads to an accuracy of 1% or better.

Figure C.1 Set-up for testing of scaffold boards



For 38 mm thick boards, $a = 0.3$ m, $L = 1.2$ m.

For 63 mm thick boards, $a = 0.425$ m, $L = 1.7$ m.

Key

- a Distance from support to load point
- F Total load applied to test specimen
- L Span

C.3 Expression of results

Calculate the ultimate moment of each test specimen using the formula:

$$M_{ult} = 0.5 \times a \times F_{ult}$$

where:

- a is the distance from support to load point, in m (see Figure C.1);
- M_{ult} is the ultimate moment of the board, in kNm;
- F_{ult} is the maximum total load applied to the board, in kN.

C.4 Interpretation of results

C.4.1 An individual board conforming to one of the target spans given in this British Standard would be expected to achieve the respective minimum ultimate moment given in Table C.1, when tested in accordance with C.2.

C.4.2 A batch of boards conforming to one of the target spans given in this British Standard would be expected to:

- a) have no more than 1 in 20 boards with an ultimate moment less than the respective lower fifth-percentile ultimate moment given in Table C.1;
- b) have no board with an ultimate moment less than the respective minimum ultimate moment given in Table C.1.

Table C.1 **Ultimate moments to be achieved in load tests**

Board thickness mm	Target span m	Lower fifth-percentile ultimate moment kNm	Minimum ultimate moment of any board kNm
38	1.2	0.90	0.77
38	1.5	1.30	1.19
63	2.5	2.50	2.10

NOTE Because of the nature of timber and the factors affecting its performance, values of bending strength obtained by testing in accordance with C.2 ought not to be used as design values without taking due account of various modifying factors. For instance, the duration of the test load is very much shorter than that likely to be found in actual use, and this is an important modifying influence.

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 12811 (all parts), *Temporary works equipment*

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