

Specification for

Visual strength grading of softwood

ICS 79.040

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee B/518, Structural timber, to Subcommittee B/518/2, Solid timber, upon which the following bodies were represented:

- British Timber Merchants' Association
- British Woodworking Federation
- Bureau de Promotion des Industries du Bois
- Council of the Forest Industries (COFI)
- Department of the Environment (Building Research Establishment)
- Forestry Commission
- Institute of Building Control
- Institution of Civil Engineers
- National House-Building Council
- Southern Pine Council
- Timber Research and Development Association
- Timber Trade Federation
- Trussed Rafter and Fabricators' Association
- UK Timber Grading Committee
- United Kingdom Softwood Sawmillers' Association

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Contents

	Page
Foreword	ii
Specification	
1 Scope	1
2 References	1
3 Definitions	1
4 Strength graded timber	1
5 Measurement of characteristics	3
6 Grade requirements	8
7 Marking	8
Annexes	
A (normative) Determination of the knot area ratio in cases of dispute	10
B (normative) The control and supervision of strength grading operations	10
C (normative) Determination of slope of grain	11
D (informative) Species marking	11
Table	
1 Permissible limits for the GS and SS visual strength grades	7
Figures	
1 Edge, face and margin areas	2
2 Knot projection	3
3 Typical knot area ratios and the resulting grades	4
4 Measurement of rate of growth	5
5 Amounts of wane	6
6 Measurement of bow, spring and twist	6
7 Example of a mark on visually strength graded softwood	9
C.1 Swivel handled scribe for determination of slope of grain	11
C.2 Use of scribe	12
C.3 Measurement of slope of grain	12
List of references	Inside back cover

Foreword

This British Standard has been prepared by Subcommittee B/518/2. It supersedes BS 4978 : 1988 which is withdrawn.

The first edition of this British Standard was published in 1973 with the title *Specification for timber grades for structural use*. Consequent upon the publication of BS 5756 : 1980 *Specification for tropical hardwoods graded for structural use*, the title was changed to *Specification for softwood grades for structural use*.

This edition of this British Standard has been revised to take account of the publication of relevant European Standards.

(a) Changes have been made to the visual grading section in accordance with BS EN 518 *Structural timber — Grading — Requirements for visual strength grading standards*.

(b) Machine strength grading is now specified in BS EN 519 *Structural timber — Grading — Requirements for machine strength graded timber and grading machines*. The sections concerning machine strength grading have therefore been deleted and the title has been changed.

(c) The section concerning visual strength grades for laminations has been deleted. Additional requirements for laminations are now given in BS EN 386 *Glued laminated timber — Performance requirements and minimum production requirements*. Additional requirements for material for trussed rafters are given in BS 5268 *Structural use of timber Part 3 Code of practice for trussed rafter roofs*¹⁾.

This British Standard specifies the means of assessing the quality of softwood for which grade stresses are given in BS 5268 : Part 2.

It takes account of and includes certain of the provisions contained in the Economic Commission for Europe (ECE) *Recommended standard for stress grading and finger-jointing of structural coniferous sawn timber* [1].

This British Standard complies with EN 518 : 1995 *Structural timber — Grading — Requirements for visual strength grading standards*.

Annex A specifies the method to be used for the determination of knot area ratio in cases of dispute, annex B specifies the minimum requirements for the control of strength grading operations, annex C specifies the determination of slope of grain and annex D gives guidance on species marking.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

¹⁾ Currently being revised.

Specification

1 Scope

This British Standard specifies a method of strength grading softwood visually for structural use.

The permissible limits of characteristics for two visual strength grades of softwood, General Structural Grade (GS) and Special Structural Grade (SS) are specified.

This British Standard applies to softwoods graded both in the United Kingdom and abroad.

Softwood which is graded abroad under the supervision of a certification body approved by the UK Timber Grading Committee²⁾ and graded and marked in accordance with this British Standard does not have to be regraded in the United Kingdom, provided that it is not resawn into smaller sizes.

Where British Standards covering specific end use requirements specify permissible limits for grades covered by this standard, varying from those given in table 1, the requirements of those standards will replace or be additional to the requirements of table 1.

NOTE. Additional requirements for laminations and for material for trussed rafters are given in BS EN 386 and in BS 5268 : Part 3³⁾, respectively.

2 References

2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of any of the cited publications apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Definitions

For the purposes of this British Standard, the nomenclature given in BS 7359 and the definitions given in BS 5268 : Part 2, BS EN 518, BS EN 336 and BS 6100 : Part 4 apply together with the following.

3.1 parcel

Quantity of sawn timber of the same target size, quality and description.

3.2 fissure

Longitudinal separation of fibres, appearing on a face, edge or end of a piece of softwood, and including checks, shakes and splits.

3.3 margin

Area adjoining an edge of the cross-section, occupying one-quarter of the total cross-sectional area of the piece (see figure 1).

3.4 margin knot area ratio (MKAR)

Ratio of the sum of the projected cross-sectional areas of all knots or portions of knots in a margin intersected at any cross-section, to the cross-sectional area of margin.

3.5 sample

Number of specimens of one cross-sectional size and from one parcel.

3.6 strength class

Classification of softwood based on particular characteristic values of bending strength, density and mean modulus of elasticity parallel to the grain.

3.7 total knot area ratio (TKAR)

Ratio of the sum of the total projected cross-sectional areas of all knots intersected by any cross-section to the total cross-sectional area of the piece (see figure 2).

3.8 dry graded timber

Timber that is part of a batch that has been assessed for fissures and distortion at an average moisture content of 20 % or less, with no reading exceeding 24 % moisture content.

3.9 wet graded timber

Timber that is part of a batch that has been assessed for fissures and distortion at an average moisture content in excess of 20 %.

3.10 knot area ratio

Ratio of the sum of projected cross-sectional areas of the knots to the cross-sectional area of the piece.

4 Strength graded timber

4.1 Supervision of strength grading operations

Visual strength grading operations shall be carried out by a grader and/or grading company, under the supervision of a certification body approved by the UK Timber Grading Committee, all of whom shall be assessed in accordance with annex B.

²⁾ UK Timber Grading Committee, Timber Trade Federation, Clareville House, 26-27 Oxendon Street, London SW1Y 4EL.

³⁾ Currently being revised.

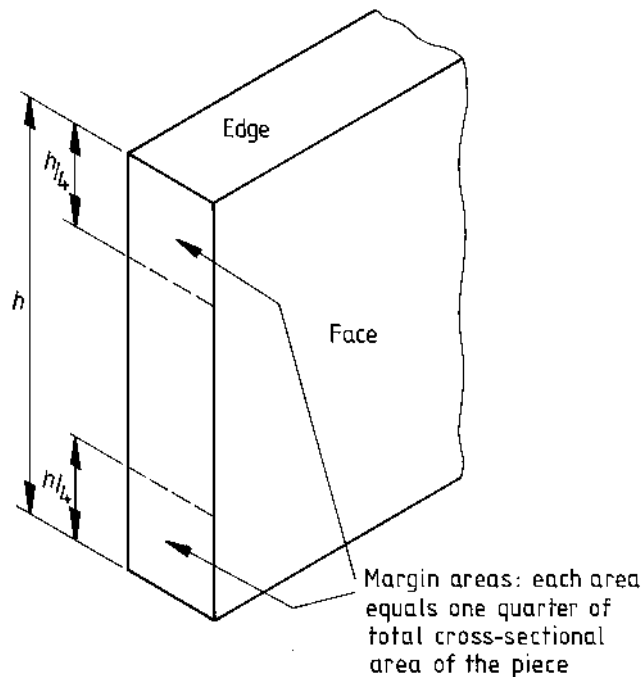


Figure 1. Edge, face and margin areas

4.2 Sizes

Unless otherwise specified, softwood graded to this standard shall conform to BS EN 336 with respect to permissible deviations and processing reductions applicable to constructional timber. It shall have a minimum cross-sectional area of 2000 mm² and a minimum thickness of 20 mm.

NOTE. Dimensional limits for laminations are given in BS EN 386.

4.3 Processed timber

If the grading has been carried out before processing, provided that the processing reduction from the target size is not greater than 3 mm for dimensions less than or equal to 100 mm, or not greater than 5 mm for dimensions greater than 100 mm, the grade shall not be considered to have been changed.

4.4 Resawing or surfacing

Where graded softwood is resawn or surfaced to an extent beyond the limits of 4.3, the softwood shall be regraded if it is to conform to this British Standard.

4.5 Cross-cutting

Cross-cutting shall be permitted provided that each resulting piece conforms to this British Standard.

4.6 Moisture content

4.6.1 Determination

The moisture content shall be determined in accordance with BS EN 336.

4.6.2 Dry graded timber

The fissures and distortion of a batch of timber being strength graded shall be assessed when the batch has an average moisture content of 20 % or less, with no reading exceeding 24 % moisture content.

4.6.3 Wet graded timber

Because thick timber is difficult to dry, 4.6.2 shall not apply to timber that has a target thickness of 100 mm or more. Neither shall 4.6.2 apply to timber that is specified for use in contact with water or in climatic conditions leading to a timber moisture content higher than 20 % (corresponding to service class 3, as defined in BS 5268 : Part 2).

4.7 Acceptance limits for visually graded softwood

When, on inspection of a representative sample of a parcel of graded softwood, it is ascertained that not more than 10 % of the pieces exceed the permissible limits of the grade and, provided that not more than 3 % of the pieces in the sample exceed the permissible limits by more than $\frac{1}{3}$, the parcel shall be considered as conforming to the grade.

Where the parcel contains less than 10 pieces, the permissible limits shall not be exceeded.