
British Standard Specification for
**Softwood grades for
structural use**

Bois tendres pour la construction — Spécifications

Weichholz für das Bauwesen

Foreword

This British Standard has been prepared under the direction of the Timber Standards Committee. It supersedes BS 4978 : 1973 which is withdrawn.

The first edition of this 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, it has been necessary to amend the title of this revision of BS 4978 to reflect its sole application to softwoods.

This revision contains five sections as follows.

Section one. General

Section two. Visual stress grading

Section three. Visual stress grades for laminating

Section four. Machine stress grading

Section five. The acceptance of stress grading machines.

This standard specifies the means of assessing the quality of softwood for which grade stresses are given in BS 5268 : Part 2. Provision is made for both visual stress grading and machine stress grading and for machine grading to the strength classes given in BS 5268 : Part 2.

Performance requirements for stress grading machines, which grade timber for structural use, are included.

This revision has taken account of and includes certain of the provisions contained in the 'ECE recommended standards for stress grading and finger-jointing of structural coniferous sawn timber' published by the United Nations Economic Commission for Europe.

It is a requirement of this standard that both visual and machine stress grading shall be subject to independent third party quality assurance by an accepted grading agency (see 3.1 and BS 5268 : Part 2).

Appendices A to G deal with the following areas.

(a) Appendix A gives guidance on the determination of knot area ratio in cases of dispute.

(b) Appendix B specifies the minimum requirements for the control of stress grading operations.

(c) Appendix C gives guidance on the determination of slope of grain.

(d) Appendix D gives guidance on species marking.

(e) Appendix E specifies a method for determining the settings for grading machines in *machine controlled* systems.

(f) Appendix F specifies a method for determining the settings for grading machines in *output controlled* systems.

(g) Appendix G specifies a method for determining the quality control of grading in *output controlled* systems.

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

Amendment No. 1
published and effective from 28 June 1991
to BS 4978 : 1988

Specification for softwood grades for
structural use

Revised text

AMD 6400
June 1991

Table 1. Permissible limits for the SS and GS visual stress grades
Under the characteristic 'Fissures', in the third column, delete '10 mm in depth' and substitute 'half the thickness'.

AMD 6400
June 1991

Clause 3.6 Acceptance limits for visually graded softwood and visually graded characteristics of machine graded softwood
In the final paragraph, delete 'fifty' and substitute 'ten'.

AMD 6400
June 1991

Clause 5. Grade requirements
In the last line of the first paragraph, delete '5' and substitute '4'.

AMD 6400
June 1991

Clause 6. Marking
In item (a), delete 'and date' and ': 1988'.
In the footnote, delete ': 1988'.
In item (c), delete note 2 entirely.
In the last line of the final paragraph of this clause, delete ': 1988'.

AMD 6400
June 1991

Clause 9.4.2 Fissures, wane, resin pockets, distortion and worm holes
Delete the existing title for this subclause and substitute the following:
'Fissures, wane, resin pockets, distortion, worm holes and bark pockets'.

AMD 6400
June 1991

Clause B.3.5
Delete 'annual certification' and substitute 'certification every 2 years'.

Amendment No. 2
published and effective from 24 December 1991
to BS 4978 : 1988

Specification for softwood grades for structural
use

Revised text

AMD 6915
December 1991

Table 1. Permissible limits for the SS and GS visual stress grades (as amended by Amendment No. 1)

Below note 2, insert the following.

'NOTE 3. For measurement of characteristics refer to 4.4, 4.5, 4.6 and 4.7.'

AMD 6915
December 1991

Clause 3.3 Processed timber

In line 3 and in line 4, delete '150' and substitute '100'.

AMD 6915
December 1991

Clause 4.5 Fissures

At the end of the clause insert the following.

'Measurement shall be taken at the time of grading.'

AMD 6915
December 1991

Clause 4.7 Distortion

Delete line 5 and substitute the following.

'assessed using the limits for bow. Measurement shall be taken at the time of grading.'

AMD 6915
December 1991

Figure 3. Typical knot area ratios and the resulting grades

Delete the existing figure 3 and substitute the attached new figure.

AMD 6915
December 1991

Clause 6 Marking (as amended by Amendment No. 1)

In item (c), after Note 1, insert the following.

'NOTE 2. It is an option that each piece of visually stress graded timber may be marked with a strength class in addition to the species and grade or species combination and grade assigned to the piece'.

AMD 6915
December 1991

Clause 9.4.2 Fissures, wane, resin pockets, distortion, worm holes and bark pockets (as amended by Amendment No. 1)
At the end of the clause, insert the following.
'Measurement shall be taken at the time of grading.'

AMD 6915
December 1991

Clause 10 Marking
In item (a), in line 1, delete 'and date'. In line 2, delete ': 1988'.

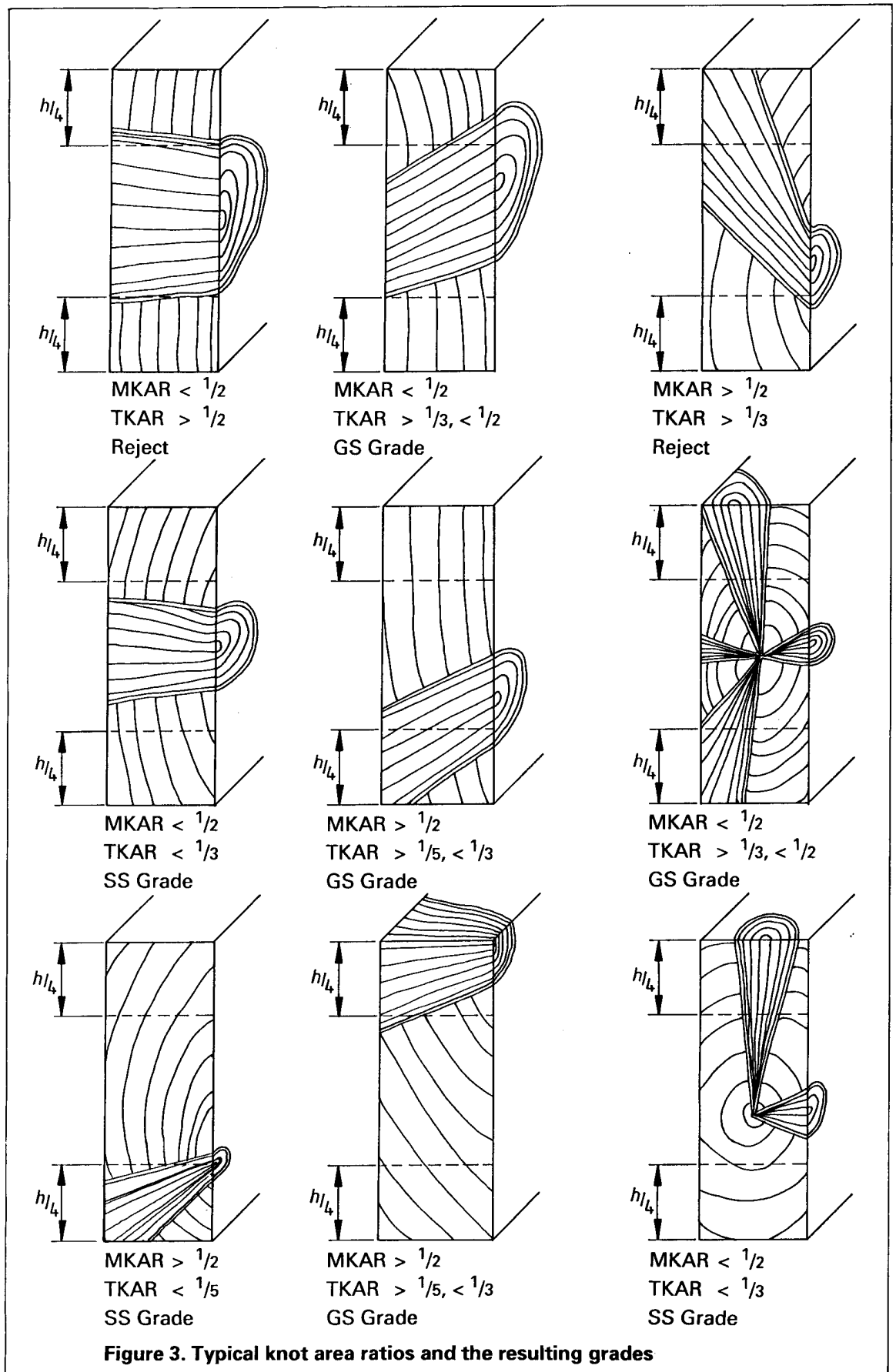
In line 1 of the † footnote, delete ': 1988'.

In line 17 of paragraph 2, delete ': 1988'.

AMD 6915
December 1991

Table 2. Visual requirements for machine grades

Under the characteristic 'Fissures', in the third column, delete '10 mm in depth' and substitute 'half the thickness'.



Amendment No. 3
published and effective from 15 December 1994
to BS 4978 : 1988

Specification for softwood grades for structural use

Revised text

New clause 2.15 high moisture environment

After **2.14** insert the following new clause.

'2.15 high moisture environment. Climatic conditions characterized by a moisture content in the materials corresponding to a temperature of 20 °C and relative humidity of the surrounding air in excess of 85 % for a significant period, or where the timber is permanently or frequently in contact with water.

NOTE. In such conditions, most timbers will attain an average moisture content exceeding 20 %.'

AMD 8449/December 1994

New clause 3.6 Moisture content

After **3.5** insert the following new clause **3.6** and renumber the existing clause **3.6** as **3.7**.

'3.6 Moisture content

Unless the softwood is specified for a high moisture environment or has a basic thickness of 100 mm or more, fissures and distortion shall be assessed when the parcel being stress graded has an average moisture content of 20 % or less, with no reading to exceed 24 % moisture content.'

AMD 8449/December 1994

Table 1. Permissible limits for the SS and GS visual stress grades
(as amended by Amendments No. 1 and No. 2)

In note 1 delete 'Distortion' and substitute 'Fissures and distortion'.

AMD 8449/December 1994

Clause 6 Marking (as amended by Amendments No. 1 and No. 2)

After note 2 to item (c) insert items (d) and (e) as follows.

'(d) unless the softwood is specified for a high moisture environment or has a basic thickness of 100 mm or more, the word 'DRY', or if kiln dried, 'DRY' or 'KD'.

(e) if fissures and distortion have been assessed at a moisture content higher than that specified in 3.6, the word 'WET'.

NOTE. For example, because the softwood has been specified for a high moisture environment.'

In line 8 of the paragraph after new item (e) delete 'and (c)' and substitute '(c), (d) and (e)'.

After item (6) insert items (7) and (8) as follows.

'(7) unless the softwood is specified for a high moisture environment or has a basic thickness of 100 mm or more, the words 'dry softwood', or if kiln dried, 'dry softwood' or 'kiln dried softwood'.

(8) if fissures and distortion have been assessed at a moisture content higher than that specified in 3.6, the words 'wet softwood'.

NOTE. For example, because the softwood has been specified for a high moisture environment.'

AMD 8449/December 1994

Table 2. Visual requirements for machine grades (as amended by Amendment No. 2)

In note 1 delete 'Distortion' and substitute 'Fissures and distortion'.

AMD 8449/December 1994

Clause 10 Marking (as amended by Amendments No. 1 and No. 2)

After note 2 to item (c) insert items (d) and (e) as follows.

'(d) unless the softwood is specified for a high moisture environment or has a basic thickness of 100 mm or more, the word 'DRY', or if kiln dried, 'DRY' or 'KD'.

(e) if fissures and distortion have been assessed at a moisture content higher than that specified in 3.6, the word 'WET'.

NOTE. For example, because the softwood has been specified for a high moisture environment.'

After item (5) insert the following new items (6) and (7) and renumber the existing item (6) as (8).

'(6) unless the softwood is specified for a high moisture environment or has a basic thickness of 100 mm or more, the words 'dry softwood', or if kiln dried, 'dry softwood' or 'kiln dried softwood'.

(7) if fissures and distortion have been assessed at a moisture content higher than that specified in 3.6, the words 'wet softwood'.

NOTE. For example, because softwood has been specified for a high moisture environment.'

AMD 8449/December 1994
