

Graded Timber for Shoring Operations

Scope

This document details the methods used to grade timber and provides guidance as to the selection of graded timber suitable for temporary shoring operations.

The only timber to be used for the construction of shores and cribbing when undertaking shoring operations will be C16 constructional grade or a higher grade material. This will normally be supplied as pre-graded product by timber suppliers and loaded onto USAR Module 1 and USAR Module 5.

However, there may be occasions where only un-graded timber product is available. In these situations, those USAR technicians who have received appropriate training may grade timber on site. Guidance within SOP SHO004 – Selection of Ungraded Timber for Shoring Operations, details the procedure to be carried out when selecting ungraded timber.

Timber Grading

The strength of timber is related to the species, so structural graded timber is grouped into strength classes that contain grades and species with similar strength properties. The strength classes are based on the characteristic values for bending strength and are defined in BS EN 338.

Grades C14-C40 apply to softwood species and Grades D30-D70 apply to hardwoods.

C16 and C24 are the most commonly available grades of softwood in the UK.

The temporary shoring systems in use in the UK are based on timber with a minimum grade of C16.

Grading of Structural Timber

Both visual grading and machine grading are used and both are equally valid.

Visual grading assesses the size, frequency and positions of defects in the timber, such as knots and sloping grain, and compares them to grading rules that define the allowable size, type and number of defects for each grade. Visual grading produces two strength grades - GS (General Structural) and SS (Special Structural). BS 4978 governs visual strength grading of softwoods.

Machine grading measures the resistance of the timber member to flexing, which gives a measure of the strength of the piece. Machine grading is carried out to the requirements of BS EN 519.

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All strength grading, whether visual or machine, must be carried out under the control of a third party quality assurance scheme. All structural timber members must be clearly marked with their strength grade and/or class and a quality assurance mark.

Graded timber for internal construction use in the UK will have a further mark, 'DRY', 'KD' (Kiln Dried) or 'WET'. For temporary shoring, graded timber marked 'DRY' or 'KD' is preferred as it offers:

- Greater strength
- Easier handling and transportation
- Better machining
- Reduced susceptibility to mould and decay fungi
- Less shrinkage and distortion

Identifying Graded Timber

Each piece of graded timber is clearly marked and provides vital information. The key elements of these marks are:

- The moisture content condition at the time of grading, i.e. DRY, KD or WET
- The strength grade or strength class of the piece
- The timber species or species combination
- Identification of the grader and company responsible for grading
- The relevant British/European Standard number
- The mark of the independent certification body

'KD' indicates that the timber has been kiln dried as opposed to air dried. 'DRY' indicates that either air drying or kiln drying has been undertaken.

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Typical Graded Timber Marks

Figure 1: [SOP_SHO003]
Typical machine graded timber mark.

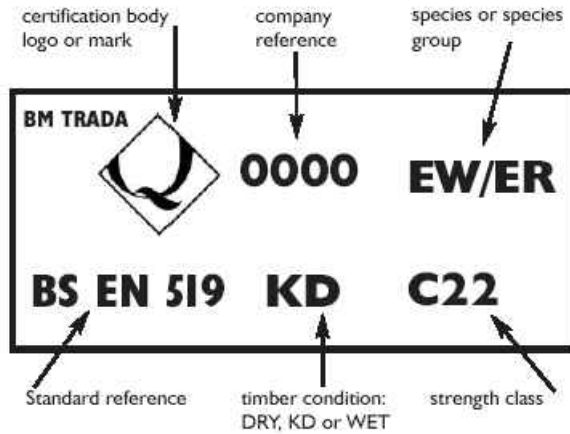
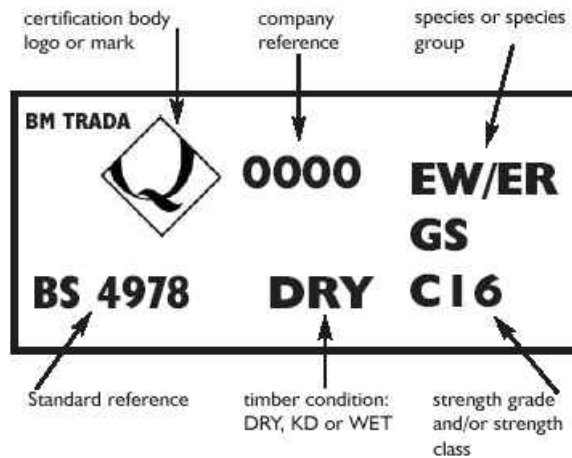


Figure 2: [SOP_SHO003]
Typical visual graded timber mark.



Selecting Graded Timber

It is essential that every piece of timber to be used for temporary shoring purposes is strength graded and appropriately marked.

All pieces of timber, marked as C16 (or a higher grade), are suitable for temporary shoring operations. A higher number indicates a higher grade. Notwithstanding this, all timber should be visually checked for defects prior to use.

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DRY or KD is preferred, but WET would be acceptable for use at an incident in the event that dry or kiln dried timber is not available. Timber marked as WET would not be acceptable for storage on Module1 or Module 5.

If there are any doubts about the validity of grade marks on timber then either the timber supplier or the certification company should be consulted.

Timber not graded or appropriately marked must be set aside and reference made to SOP SHO004 – Ungraded Timber for Shoring Operations. Only personnel with the appropriate training may select ungraded timber.

Pre-Graded Timber Loads

All timber stowed on the USAR modules will be graded and have a sawn finish. The sizes are nominal and can vary up to 5mm from the nominal dimension.

A complete Module 1 load contains the following timber elements:

100mm x 100mm x 3.9m
 150mm x 50mm x 3.9m
 Pre-cut 50mm wedges
 18mm sheets waterproof sheathing ply 1.2m x 1.2 m

A complete Module 5 load contains the following timber elements:

100mm x 100mm x 4.8m
 100mm x 50mm x 4.8m
 150mm x 50mm x 4.8m
 200mm x 100mm x 3.0m
 200mm x 100mm x 1.8m
 Pre-cut 50mm wedges - 50mm - 0mm in 300mm x 100mm wide
 Pre-cut 25mm shims - 25mm – 0mm in 300mm x 100 wide
 18mm sheets waterproof sheathing ply 1.2m x 1.2 m
 Pre-cut Gusset Plates of 18mm ply - 300mm x 300mm

References

BS EN 338, BS 4978 and BS EN 519
 SOP SHO004 – Ungraded Timber for Shoring Operations

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