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Current changes to the strength grading of UK softwoods-
European harmonisation

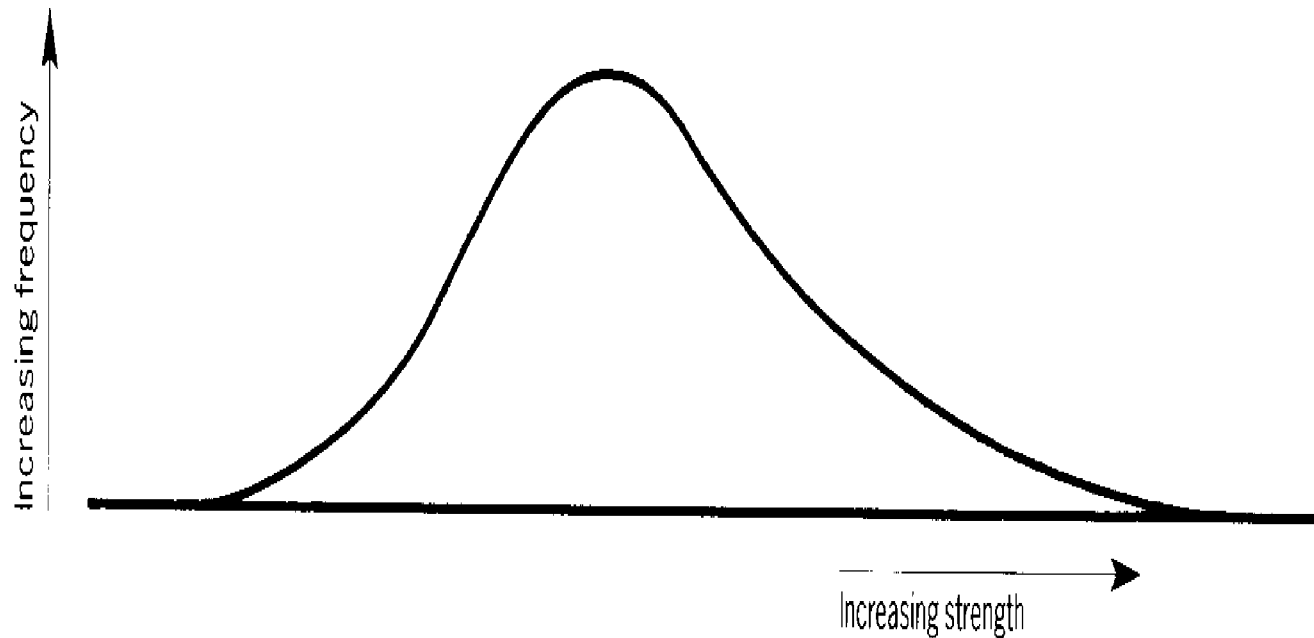
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Materials and Engineering

The basics of machine strength grading

- The strength class criteria are based on statistical distributions of the samples and not on the strength of the individual pieces.
- Strength is determined at the ranked 5th percentile value of the sample, MOE and density values are determined at levels appropriate to the 5th percentile strength.

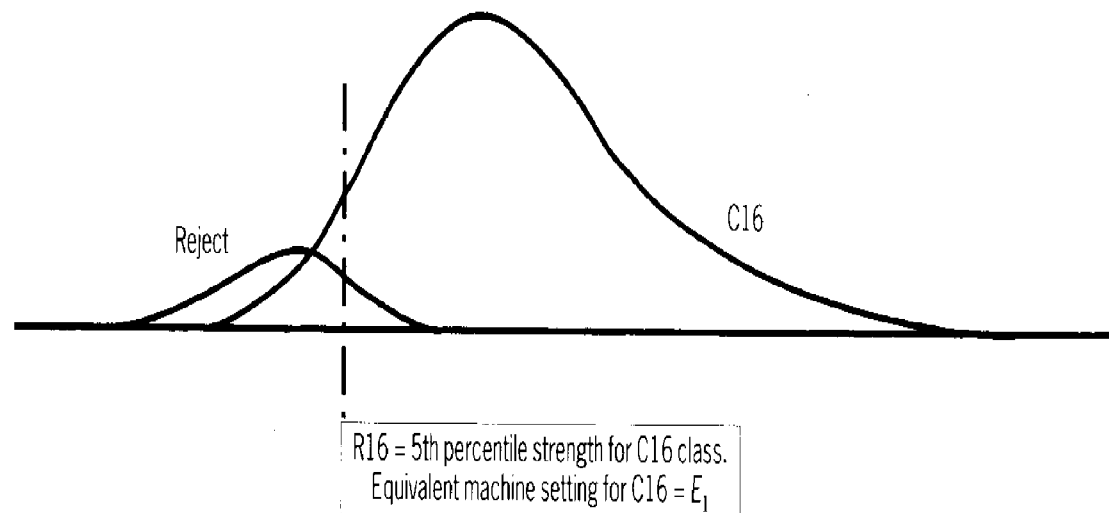
The influence of grade boundaries

- The figure below shows a typical distribution for strength, with the sample skewing to the lower end of the distribution. Current machine settings are based on a sample that reflects the strength range and geographical distribution of the species as a whole.



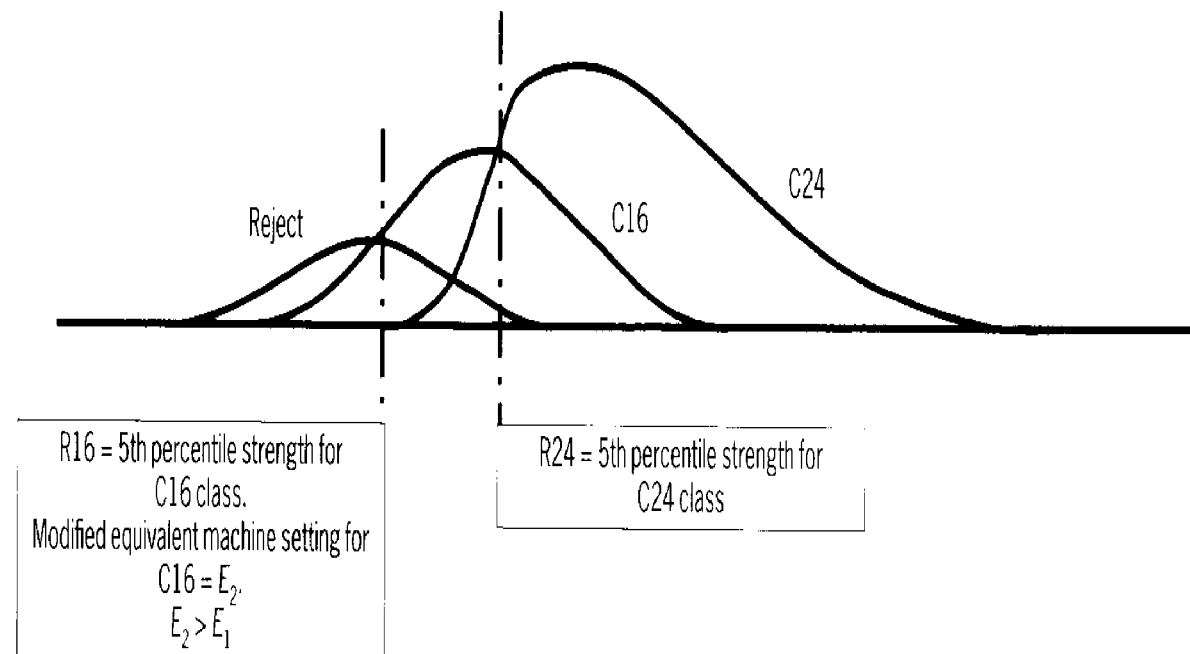
Single grade distribution (C16)

- This figure shows the same strength distribution, but also indicates the C16 boundary (5th percentile) for the sample.
- The diagram shows that the C16 grade includes 5% of values below the target value for the strength class and a spread of strength values. Some of these are well in excess of the C16 requirement. All this sample would be stamped C16.



Combination grade (C16/C24)

- This figure shows the same distribution, but for the grade combination C16/C24. Again both strength classes have material below the target value for each strength class, but the C16 material is limited by the C24 grade boundary



Harmonisation of European structural codes – Grading.

- The structural timber codes have undergone a process of harmonisation and their implementation is underway. The UKTGC is meeting today to decide the date for implementation of the new standard, possibly 1st of Jan 2007. For grading this means the introduction of a new head standard that replaces the current grading codes.
- BS EN 14081: Parts 1 to 4 was published last year and now covers all aspects of strength grading rectangular timber.

The 4 parts are:

- BS EN 14081 – 1: 2005, Timber structures. Strength graded structural timber with rectangular cross section. General requirements.
- BS EN 14081 – 2: 2005, Timber structures. Strength graded structural timber with rectangular cross section. Machine grading. Additional requirements for type testing.
- BS EN 14081 – 3: 2005, Timber structures. Strength graded structural timber with rectangular cross section. Machine grading. Additional requirements for factory production control.
- BS EN 14081 – 4: 2005. Timber structures. Strength graded structural timber with rectangular cross section. Machine grading . Grading machine settings for machine controlled systems.

The changes

- BS EN 519 and BS EN 518 will be withdrawn.
- BS 4978 and BS 5756 will both remain. These are both national codes that comply to BS EN 14081: Part 1.
- BS EN 1912 becomes more important. (National visual grades attributed to strength classes).
- Most other BS EN standards relating to structural timber remain.

Implications for the UK industry and the customers

- The main implication is that compulsory third party certification is no longer required. The UKTGC is trying to address this issue.
- CE marking will make graded timber acceptable across Europe. The UK has no requirement for CE marking.
- BS EN 1912 will allow CE marked timber into the UK based on other European Union countries visual grading systems.
- Saw millers will be able to calculate their own machine setting data. These will no longer be issued by UKTGC.
- BS 5268 will remain in use for the time being, but will eventually be replaced by Eurocode 5

Machine settings

- Tony Fewell has produced, at the request of the UKTGC, a simple spread sheet based programme that will calculate the settings to the BS EN 338 strength classes for a range of species and dimensions for both the Computermatic and Cook-Bolinder machines.
- These programmes will be made available to the Certification Bodies that are registered with the UKTGC for supply to their customer.

Standard titles

- BS EN 518: Structural timber – Grading – Requirements for visual strength graded timber
- BS EN 519: Structural timber – Grading – Requirements for machine strength graded timber and grading machines
- BS 5268 Part 2. Code of practice for permissible stress design. Materials and workmanship
- BS EN 1912 Structural timber – Strength classes – Assessment of visual grades and species
- BS EN 338 Structural Timber – Strength classes
- BS 5756 Specification for visually strength graded hardwoods
- BS 4978 Specification for visually strength graded softwoods