

In-situ visual strength grading of softwoods and hardwoods

+ In-situ strength grading

Strength grading provides a means of assessing the strength of a piece of timber.

In-situ grading is the visual assessment of existing timber elements for calculating their load bearing capacity. Strength grading information can be used by architects, surveyors and engineers in the repair of existing buildings or in their change of use. An assessment of grade (timber quality) is carried out by certified H+R graders on the basis of grain deviation, density, wane, knot area ratio and fissures among other strength reducing characteristics. This work is carried out in accordance with the methods described in BS 4978: 2007 (for softwoods) or BS 5756: 2007 (for hardwoods).

+ Timber species identification

The strength of a piece is largely dependent on its species and moisture content. Identification of the timber species is therefore carried out on timber components that are to be assessed for strength grade. This involves removing a small sample from the timber under assessment. The sample will then be examined for gross characteristics and also microscopically for anatomical features, and matched with reference timber samples or published literature.

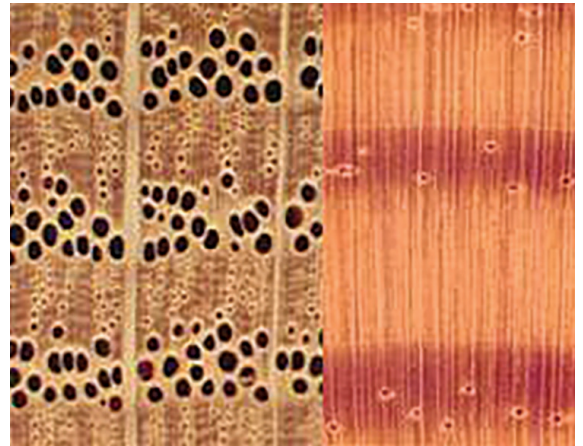
+ Strength class allocation

The combination of the above strength grading and species identification exercises enable an indicative strength class (C14 to C30 for softwoods or D30 to D70 for hardwoods) to be assigned. The associated design values can then be presented to a structural engineer for calculation purposes (assuming that the timber is included in BS 5268 pt2: 2002).



+ Why grade?

- In order to assign accurate design values (BS 5268 or Eurocode 5)
- Removes risk of design value judgements that are based on the 'general quality' of the timber
- In the absence of in-situ grading, engineers frequently assume a C16 (for softwoods) strength class generally. In-situ strength grading often enables the engineer to assume the higher C24 strength class. Costly, time consuming and unnecessary strengthening works may therefore be avoided
- The Building Regulations require that strength graded timber is used in all structural applications. If ungraded timber has been used, in-situ strength grading can avoid the need to remove and replace the previously ungraded timber, and the associated costs.



Visual strength grading

H+R can offer in house timber strength grading by qualified graders as one of their portfolio of integrated specialist investigative services to construction industry professionals. These include damp penetration, timber decay or masonry surveys and monitoring systems