

TIMBER GRADING IN THE 21ST CENTURY

Timber with a few knots on display can be straighter, stiffer and stronger than a piece of clear timber!

This is why the industry moved away from visual grading and towards **Mechanical Stress Grading** over the past two decades. Mechanically testing each board is far more accurate than making an assumption based on appearance.

Timber has always had visual characteristics and this is why **Visual Grading Standards** were introduced in 1938. The fact that it was introduced 80 years ago illustrates that visual characteristics in this natural and versatile product are not a recent event.

What has changed, particularly in the past 20 years, is how we allow for the natural features of wood during the design and construction of new buildings.

For many years timber was visually graded – that is, the strength and stiffness of a board was assumed by visual inspection. This method was found to be grossly flawed as a perfectly clear piece of timber may have vastly inferior structural properties when compared to a piece with visible elements but which has been tested to have proven performance.



Metrigard Mechanical Stress Grader: 20 years more modern than any similar grader in New Zealand

Over and above this, one piece in 600 is chosen at random and re-tested in a separate process to confirm the results. If this were not enough, to be certain, 3rd party auditors visit the Red Stag Timber site periodically and undertake a random test of product to verify our processes are 100% dependable.

Mechanical Stress Grading is a process whereby each and every board is subjected to a known deflection and the force to do this is measured to determine how stiff that piece is. This is all accomplished automatically, at high speed, and with each board being assigned a stiffness value (MOE – or Modulus of Elasticity). Based on the least stiff section of a given board, a structural grade is applied so it can be used in a structural load bearing application requiring the allocated grade. The mechanical stress grader cannot see the board it is measuring – so the grade is not based on visual characteristics but on measured mechanical properties, i.e. it is no longer guess work but is based on hard, reliable evidence.



Proof Loader: One in 600 pieces is re-tested to confirm the mechanical testing process



As well as providing structural timber that is proven to be strong and stable, Red Stag Timber understands that builders and homeowners continue to apply value to the cosmetic appearance of timber. Guidelines are therefore put in place to ensure our SG graded timber meets visual criteria **in addition** to the strict mechanical properties that have already been verified.

Red Stag Timber has invested \$5 million to install an **Optical Scanning System** that measures knot size, finished dimension, detects (and then rejects) pith as well as looking for wane and other visual features to ensure every piece is within a predetermined range of parameters. This system is far more reliable and consistent than relying on the human eye to perform a similar function. The timber coming from Red Stag Timber will still show a few knots, because trees need knots to grow, but these knots will be within a strict criteria enforced at Red Stag Timber and will still be at or above the grade shown on each board, i.e. **stiffness and strength are not compromised** and the **timber will perform well in a frame or truss application** that demands this grade of timber.



GradExpert: Optically grades for visual consistency and removes boards that fail to comply with this specification

Red Stag Timber's criteria for rejecting visual characteristics is more stringent than most in the market. Our visual over-ride **rejects pith** which is the dead wood in the low density centre of the log as this region is prone to cupping, bowing and twisting.

For this reason Red Stag Timber will remain straighter and easier to work with on site. Builders and Homeowners will end up with a job that meets and exceeds expectations with less wastage, less time and therefore lower overall cost and a better home.



Red Stag Timber was specified for the prestigious Clearwater development in Christchurch

The resources and systems that Red Stag Timber applies to quality control means the timber that arrives on site can be **Trusted by the builder to perform, and when accompanied by professional workmanship, the homeowner can have total confidence in the completed structure.**

SUPERIOR STRUCTURAL TIMBER

For a more complete technical training on Red Stag Structural Timber products, please contact your Red Stag Timber Specialist