# Timber Characteristics and Terminology

Timber is a product of nature. It contains visual characteristics that may affect performance in the selected application. These characteristics are loosely termed 'defects'. The impact of these characteristics will depend on the intended use of the timber. Some defects, such as knots, are considered not to be a major concern if the timber has been machine stress graded, as this process mechanically tests each piece for stiffness.

WANE: A board coming from the outside of the log has the best mechanical properties and can sometimes be identified by the curved portion along the edge.

INTERGROWN KNOT: Occurs where there is strong connection between the knot and the surrounding wood fibre.
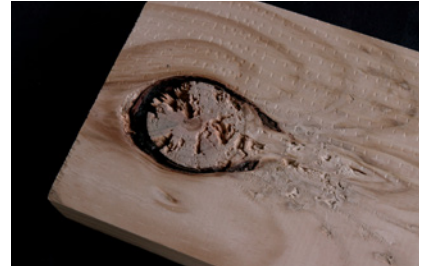
BARK ENCASED KNOT: Occurs where there is minimal connection between the knot and the surrounding wood fibre.

LOOSE KNOT: Occurs where there is no connection between the knot and the surrounding wood fibre.

HOLE: A Hole is where a loose knot has fallen out. Structurally, a hole is considered no differently from a knot.

CUPPING: Can be caused by a moisture gradient between the timber faces or by differences in the timber density through the piece which results in differential shrinkage during drying.

CROOK: Is distortion in the direction of a joist. It can be caused by moisture differential through the piece or by corewood on one edge leading to uneven shrinkage during drying.

BOW: is distortion in the direction of a plank. It can be caused by moisture differential through the thickness or by a mix of corewood on one side and leading to uneven shrinkage during drying.

TWIST: Is distortion caused by angular orientation of the wood cells. It is more pronounced in corewood, often exceeding 5 degrees and less evident in sapwood being less than 1 degree.

PITH: Is the dead cell structure at the very centre of the log. It indicates the centre of the corewood area and timber sourced from this region is lower density, has lower structural properties and is prone to distortion because of the angular grain.

CHECKING: Is the term used for surface wood cell separation sometimes inherent in the log but can be worsened by aggressive kiln drying. It can lead to splitting.

SPLITTING: Results near the end of a board, aggravated by aggressive kiln drying and further by rough handling, poor moisture control and mechanical force (e.g. strapping in the packet).


SKIP OR SKIP DRESSING: Describes a surface area of a board where gauging has not been performed correctly. It can occur because the feedstock is not the correct dimensions and the planer head fails to make contact with the wood surface.

SLOPING GRAIN: Describes the grain angle, usually near a knot on a board or from angular grain in corewood. The grain runs at an angle to the length of the board and is likely to reduce the mechanical properties in that area.

DOUBLE SPIKE KNOT: Is where a spike knot enters the board from either edge in the same area of the board. The resulting grain deviation is likely to reduce mechanical properties in that area.
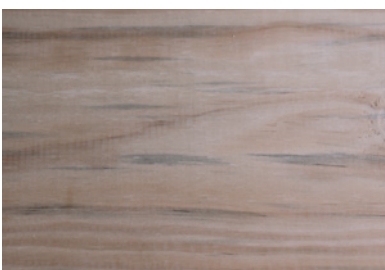
SAP STAIN: Denotes an area of discolouration. The discolouration is from harmless fungi that feed on sap sugars in the log prior to kiln drying. Sap stain does not affect the mechanical properties of timber.

NEEDLE FLECK: Is the term used to describe pine needles that have become encased in the log as it grows in diameter. It is a visual defect but does not affect the mechanical properties of the timber.

COMPRESSION WOOD: A tree with constant stress in one direction (wind or gravity) may develop compression wood to compensate for the force.
This wood fibre has different cell structure indicated by the dark bands and is likely to be prone to distortion.

For more information on the examples shown, including accepted methods for measurement, refer to NZS 3631:1998 New Zealand Timber Grading Rules

Note, NZS 3631 was produced before the introduction of machine stress grading.