

# INFORMATION SHEET

# STRUCTURAL MATERIALS



## PLYWOOD

## DESIGN PROCEDURES

The information provided below has been taken from the New Zealand Timber Design Guide 2007, published by the Timber Industry Federation and edited by Professor A H Buchanan. To purchase a copy of the Timber Design Guide, visit [www.nztif.co.nz](http://www.nztif.co.nz)

### MODIFICATION FACTORS

Stresses, design capacities and deflections can be calculated directly using manufacturer-specified or calculated values with the characteristic stresses and modification k factors in NZS3603.

For plywood stressed at angles other than parallel to the grain, the modification factors k15 and k16 are given in Tables 6.2 and 6.3 of NZS 3603:1993.

Manufacturers' literature will often contain all of the information required to carry out specific design of plywood structures without having to calculate the basic section properties from first principles. Each manufacturer's plywood veneer lay-ups may vary slightly so it is important to use the appropriate design properties and state in your design documentation that substitutions must be approved by the engineer to ensure equivalent performance.

### FIXINGS

For fixing of shear walls and diaphragms, nails should be at maximum 150 mm centres on edges, and 300 mm centres within the sheets. Structural design may require closer nail spacing for actions like shear in diaphragms or wind suction in roof decking.

Deflection usually governs structural floor design because plywood bending under face loads can deflect huge amounts before failure occurs. The critical load case is usually a concentrated point load on a small area, for which the calculation is complex and of limited accuracy. Spans in manufacturer's tables have been determined both from calculation and testing using standard loading tools and an acceptable compliance level.

Tongue and groove panel edges are available on a number of 15 to 25 mm thick plywood panels, to prevent relative movement of adjacent panels. Otherwise edge support should be provided by blocking. When all edges are supported by framing it is not common to utilise two-way plate action for uniformly distributed loads, though this could provide economies for mass produced items such as bin floors or highly engineered plate structures.