

# INFORMATION SHEET

# STRUCTURAL DESIGN



## DESIGN METHODS

## TEST METHODS AND DATA ANALYSIS

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)

Test methods and data analysis for in-grade testing are described in the joint Australian/New Zealand Standard AS/NZS 4063.

Briefly stated, the 5th-percentile strength of the population is estimated with 75% confidence using:

$$R_k = 1 - \frac{2.7v_R}{\sqrt{n}} R_{0.05}$$

where

$R_{0.05}$  is the 5th-percentile strength value from in-grade testing

$v_R$  is the coefficient of variation of the strength values

$n$  is the number of specimens tested (minimum 30)

### Characteristic stresses for dry mechanically graded timber, radiata pine and Douglas fir

Grade	Bending $f_b$ (MPa)	Compression parallel $f_c$ (MPa)	Tension $f_t$ (MPa)	Shear in beams $f_s$ (MPa)	Compression perpendicular $f_p$ (MPa)
MSG15	41.0	35.0	23.0	*	8.9
MSG12	28.0	25.0	14.0	*	8.9
MSG10	20.0	20.0	8.0	*	8.9
MSG8	14.0	18.0	6.0	*	8.9
MSG6	10.0	15.0	4.0	*	8.9

NOTES:\*

Shear strength for dry radiata pine shall be taken as  $f_s = 3.8$  MPa.

Shear strength for dry Douglas fir shall be taken as  $f_s = 3.0$  MPa.

MSG grades shall be verified as required by NZS 3622.