

Tasmania Timber

Radiata Pine Properties

Availability & Appearance	
General Availability	Freely available and continuously harvested.
Appearance Grade	Available
Plantation	Available
Structural Grade	Available
Sizes	Dressed seasoned timber 40 to 190 mm wide by 12 to 90 mm thick. Undressed seasoned timber 50 to 200 mm wide by 19 to 100 mm thick. Lengths up to 5400 mm long are available, with the bulk of production between 2400 and 4800 mm long.
Colour	Cream to light straw.
Grain	Grain is usually straight. Knots are common and growth rings are prominent.
Texture	Fine but uneven.

Density	Unseasoned	Seasoned
Density (per standard)	800 kg/m ³	550 kg/m ³

Seasoned density is based on moisture content of 12%. Unseasoned density is an approximation as it depends on the moisture content at the time of measurement. Measured kg/m³.



Tasmanian timber is sustainably grown, harvested and processed to meet the highest standards in quality and environmental practice.

For further information contact:

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Durability	
Above-Ground	Class 4: 0-5 yrs
In-Ground	Class 4: 0-7 yrs
Susceptible to Lyctid Borer	No
Marine Borer Resistance	0-20 yrs (usually 5 yrs)
Termite Resistant	No

Species Specific Notes: Termite resistance of heartwood: Not resistant. Refer to AS 5604 — 2005 Timber — Natural durability ratings. In-ground performance of untreated Radiata Pine is poor. It can be preservative treated to any durability class.

Durability is defined as the inherent resistance of a timber species to decay, or to insect or marine borer attack. All references to durability refer to the heartwood only. A scale of low to high - durability class 4 = low (0-5yrs); 3 = (5-15yrs); 2 = (15-25yrs) ; 1 = high (25yrs+) - has been adapted for in-ground durability.

Environmental Details	
Resource	Plantation
Reserves	28% of Tasmania's plantations are Radiata Pine
Certification	Available
Chain of Custody	Available
Carbon Storage	242 kg/m ³
R Values	0.74 (100mm)



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Fire Properties	
Average Specific Extinction Area	< 250 m ² /kg
Bushfire Resistance	BAL 12.5 & 19 - All AS 3959 Required Applications
Critical Radiance Flux - Higher	> 2.2 < 4.5; same for ply ≥ 17mm kW/m ²
Critical Radiance Flux - Lower	> 2.2 < 4.5; same for ply ≥ 17mm kW/m ²
Smoke Development Rate	< 750; same for ply ≥ 17mm% per min
EFH Ignitibility: 14	
EFH Smoke-Develop Index: 3	
EFH Spread-of-Flame Index: 7	
Fire Properties Group Number: 3	

Species Specific Notes: Fire Properties Group Number is the same for plywood ≥ 6mm.

Average Specific Extinction Area is determined by the volume of smoke measured over the mass loss of the tested sample per test carried out in accordance with 'Cone Calorimeter Test' AS/NZS 3837. It is measured in units of m²/kg.

Bushfire Attack Level (BAL): Naturally bushfire-resisting timbers are those with inherent bushfire-resisting properties. Some species have been tested and a number are in the process of being tested. Resistance is measured by BAL. BAL-12.5: Ember attack, BAL-19: Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux between 12.5 and 19 kW/m², BAL-29: Increasing levels of ember attack and burning debris ignited by windborne embers together with increasing heat flux between 19 and 29 kW/m².

Critical Radiance Flux measures the radiant (heat) energy required to sustain burning. It is used in Australia to regulate floor coverings. The requirements are set out in BCA Specification C1.10a, providing CRF values for floor coverings based on Class of building, the location within the building (general use or use in fire isolated exits) and whether or not the building is sprinkler protected or not. CRF is measured in kW/m².

Smoke Development Rate is the speed at which smoke increases as determined by testing flooring materials in accordance with AS ISO 9239.1. The rate is expressed in terms of percent/minutes. For buildings not protected with a sprinkler system, a maximum smoke development rate of 750 percent/minute applies.

EFH Ignitibility is a measure of the tendency of a material to ignite measured on a scale of 0-19. An index of 0 indicates that the material did not ignite during the 19 minutes that the test takes. An index of 19 indicates that the material ignited in the first minute.

EFH Smoke-Developed Index is a measure of the concentration (measured by optical density) of smoke a material emits as it burns. It is based on an arbitrary scale of 0 to 10. The higher the index, the greater the hazard from smoke is likely to be.

EFH Spread-of-Flame Index is a material's propensity to burn rapidly and spread flames based on a scale of 0 to 10 where 0 means that the materials will not cause flames to reach the ceiling and 10 indicates that the material could be expected to cause flames to reach the ceiling of a room within 10 seconds of ignition.

Fire Properties Group Number: is rated from 1-4 - 1 (Non-Combustible), 2 (Reasonably Non-Combustible), 3 (Slightly Combustible), 4 (Combustible).



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Joint	Unseasoned	Seasoned
Joint Group	J4	JD4

Tasmanian Oak is listed here as reasonably high but is open to conjecture. The joint group is a classification of the strength of a species in joint design. The values are from 1 (very high strength) to 6 (very low strength).

Mechanical Properties	Unseasoned	Seasoned
Hardness (Janka)	2.1 kN	3.3 kN
Impact	12 J	6.9 J
Maximum Crushing Strength	19 MPa	42 MPa
Modulus of Elasticity (MOE)	8 GPa	19 GPa
Modulus of Rupture (MOR)	42 MPa	81 MPa
Toughness (IZOD)	15-24 Nm	Low - up to 15 Nm

Modulus of Rupture (MOR) is a measure of maximum stress which timber can momentarily sustain when loaded slowly and continuously as a beam. Measured in MPa.

Modulus of Elasticity (MOE) is of importance in determining the deflection of a beam under load, the greater the stiffness, the less the deflection. Measured in GPa.

Maximum Crushing Strength, also referred to as compression strength, measures the ability of the timber to withstand loads applied on the end grain. Measured in MPa.

Impact provides the Izod value, which is the energy taken in joules (J) to fracture the timber.

Toughness is a measure of timber's ability to resist shocks and blows, and is synonymous with impact strength. It is measured in Nm.

Hardness refers to the Janka hardness test and is a measure of timber's resistance to indentation. This value is as listed on the CSAW website.



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Movement	
Radial	0.27% per 1% MC change
Tangential	0.20% per 1% MC change

Radial and tangential movement is the percentage of dimensional change for each 1% moisture content change between about 3% moisture content and the fibre saturation point for the particular species. Between (FSP) 25% and 5%MC. Figures are approximate.

Shrinkage	
Radial	3.0%
Tangential	5.0%

Species Specific Notes: Negligible collapse or shrinkage

Tangential shrinkage is the measure of the percentage reduction in dimension from the unseasoned to 12% moisture content condition. Radial shrinkage is perpendicular to the growth rings, it is shrinkage in the direction towards the centre of the tree. Measurement is % value. Green to 12%MC. Figures are approximate.

Stress	Unseasoned	Seasoned
Common Structural Grades	Structural #3: F5	Structural #3: F8
Structural Grades	S1:F8, S2:F7, S3:F5, S4:F4	S1:F14, S2:F11, S3:F8, S4:F7, S5:F5

Species Specific Notes: Normally machine graded to MGP10 & 12

A stress grade is defined in AS 1720 as the classification of timber for structural purposes by means of either visual or machine grading. The stress grade indicates the basic working stresses and stiffnesses to be used for structural design purposes. Measured in MPa.

Strength	Unseasoned	Seasoned
Strength Group	S6	SD6

Strength groups are given for unseasoned (S1-S7) and seasoned (SD1-SD8) timber in accordance with AS 2878. S1 and SD1 yield the highest strength and stiffness whereas S7 and SD8 yield the lowest.



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Workability	
General Workability	Usually easy to work away from knots.
Bending	A good bending timber. 25mm material bends well to a radius of 100mm.
Blunting	Moderate. Can be severe in knotty material.
Boring	Easy to drill. Holes tend to be oversize.
Finishing	Readily worked to a smooth, flat surface. Stains readily, and finishes adhere very well.
Gluing	Glues well with most common adhesives.
Moulding	Satisfactory.
Nailing	Very easy to nail. Twisted shank nails may be necessary to achieve satisfactory hold.
Planing	Smooth surfaces easy to attain. Knots can be hard on cutters.
Rebating + Mortising	Generally produces good results.
Sawing	Easy, normally fairly clean.
Turning	Satisfactory. Density variations across growth rings can cause problems.

Source: Centre for Sustainable Architecture with Wood (CSAW), Wood Solutions



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