



Softwood Property Guide

The aim of this document is to provide **indicative** guidelines for comparing different species and to help match the best resource to the specific application. We hope that it will help to provide a quick and easy way to better understand resource specific properties.

NOTE due to the age effect and variability within the stem there is considerable variation in properties and the values provided are meant as an indicative guide only.

Origin	Australia	New Zealand	Chile	Spain	Australia	Europe	Europe	America	America	America	Brazil	
Common Names	Radiata ²⁾	Radiata ³⁾	Radiata ⁴⁾	Radiata ¹⁰⁾	Slash Pine ¹⁾	Spruce, White wood/pine ⁵⁾	Red Pine, Baltic Pine ⁵⁾	Douglas Fir, Oregon Pine "DF" ⁸⁾	Western Hemlock, often mixed with fir & sold as "HEMFIR" ⁸⁾	Taeda Pine(Brazil), Loblolly Pine or mixed as Southern Yellow Pine (USA) ⁸⁾	Araucaria, Parana Pine (Brazil) ⁸⁾	
Scientific names	<i>Pinus radiata</i>	<i>Pinus radiata</i>	<i>Pinus Radiata</i>	<i>Pinus Radiata</i>	<i>Pinus elliottii</i>	<i>Picea abies</i>	<i>Pinus sylvestris</i>	<i>Pseudotsuga menziesii</i>	<i>Tsuga heterophylla</i>	<i>Pinus taeda</i>	<i>Araucaria angustifolia</i>	
Density @12% MC	Kg/m3	450	420	435 ¹⁰⁾	450 ¹⁰⁾	516	430 ⁷⁾	490 ⁷⁾	510	465	570	545
Mechanical - indicative mean values at 12%												
Bending MOE	MPa	11,480	7,788	8,365	11,480	12,500	11,000	12,000	12,170	11,340	12,300	11,370
Bending MOR	MPa	87.2	79.36	64.42	87.2	78	78	100	86.2	77.9	88.3	92.3
Shear Strength	MPa	11.3	10.99	7.45	11.3	10.3	6.7	10	7.8 ⁶⁾	8.6 ⁶⁾	9.6 ⁶⁾	-
Compression parallel	MPa	41.93	31.25	36.28	41.93	41.6	50	55	47.9	37.3	49	52
Hardness side	N	3,354	3,324	2,842	3,354	3,370	3,200	4,000	2,760	2,400	3,070	3,610
Shrinkage (Green to 0% MC)												
Radial %		5.2	3.5	4.2	5.2	6.1	3.6	3.6	4.5	4.2	4.8	3.8
Tangential %		7.8	7	7.1	7.8	7.9	7.9	7.8	7.3	7.8	7.4	7.4
Gluing	Good					Good but avoid high resin	Good	Fair-good, as long as limited resin content	Good			
Machining	Good planing, moulding and turnery, excellent nailing					Moderate, some chipout	Good	Good	Typically machines well, but has a moderate blunting effect on cutters	Overall working properties are good	Good, excellent nail holding capacity	Easy to work with hand or machine tools
Finishing	Good - uniform staining and good paint retention					Not easy due to resin content	Good	Good, as long as limited resin content	Good	Good	Good, as long as limited resin content	Good
Treatability (pressure)	Excellent for sapwood					Excellent for sapwood	Difficult to virtually impossible ⁹⁾	Sapwood easy, Heartwood difficult to viratually impossible ⁹⁾	Difficult to virtually impossible ⁹⁾	Easy to moderately easy to treat ⁹⁾	Excellent for sapwood	Easy to moderately easy to treat ⁹⁾

- Sources**
- 1) CSIRO Forest Products Newsletter, No 394,1973
 - 2) CSIRO Division of Building Research Technical Paper (second Series) No.9, 1975
 - 3) NZ FRI Bulletin No. 41, 1999
 - 4) Caracterización de la Madera de Pinus radiata de Forestal Celco S.A., Proyecto FONDEF, D9712006. Informe Técnico BFM N° 049, Bioforest S.A, Julio 2001, 50pp
 - 5) Wagenfuehr, R.; Scheiber C.: Holzatlas, Leipzig, Germany, 1989
 - 6) Forest Products Laboratory. 1999. Wood handbook—Wood as an engineering material.Gen. Tech. Rep. FPL-GTR-113. Madison, WI: U.S. Department of Agriculture, Forest Service, Forest Products Laboratory. 463 pp.
 - 7) NB oven dry density
 - 8) <http://www.wood-database.com> as viewed on 3 April 2018
 - 9) British Standard BS EN350-2:1994
 - 10) Figures are derived from ITS company observations