

# **Some properties of selected South American hardwoods**

**For Matthei Timbers**

**September 2017**

This publication has been compiled by Forest Product Innovations, Department of Agriculture and fisheries.

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The following datasets have been collated from the range of source materials listed in the back of this document. DAF has not undertaken any testing on these timber species.

Not all of the properties requested for each timber were able to be found in the literature, for example only in-ground durability ratings were available, not above-ground durability ratings. It can be assumed that the above-ground ratings would be equivalent or 1 class better than the published in-ground ratings.

Provisional strength groups have been provided where possible, using the data sourced from the literature and the interpolations described in AS/ NZS 2878:2000. Based on the provisional strength groups, stress grades per cross-arm grade are listed as per AS 3818:2010.

Suitability for construction, window joinery and doorframes in bushfire-prone area was determined in accordance with the relevant sections of AS 3959:2009 – Construction of buildings in bushfire-prone areas.

Where conflicting results were found, the standard recommendation is to use the lower (worst) value or rating as a conservative approach.

Marketing name	<b>araracanda</b>	Reference/s
Botanical name	<i>Aspidosperma macrocarpon</i>	
Synonym	<i>Macaglia macrocarpon</i>	
Common names	araracanda, pao pereira	1
Air-dry density	750 kg/m <sup>3</sup>	5
Janka hardness	8 kN	3
Suitable for general construction in bushfire-prone areas where specified in Sections 5, 6 and 7 of AS3959:2009	yes	8
Suitable for window joinery and doorframes in bushfire-prone areas where specified in Sections 5 and 6 of AS3959:2009	yes	9
Bending strength	97 MPa (green), 143 MPa (dry); 93 MPa (dry)	3; 5
Stiffness	17 GPa (green), 19 GPa (dry); 14.3 GPa (dry)	3; 5
Indicative strength group based on published MOR and MOE data	Data from reference 3: (S2), (SD2) Data from reference 5: (SD5)	6
Indicative strength group based on published density data	(S5), (SD5) Insufficient for cross-arms	6 7
In-ground durability	1 (lab test)	1
Uses	Heavy construction, light construction, boats, turnery, panelling; furniture, turnery, railway crossties	3

Marketing name	<b>Southern spotted</b>	Reference/s
Botanical name	<i>Dipteryx odorata</i>	
Common names	tonka, cumaru, Brazilian teak, sarrapio, ebo	
Air-dry density	1,060 kg/m <sup>3</sup>	2
Suitable for general construction in bushfire-prone areas where specified in Sections 5, 6 and 7 of AS3959:2009	yes	8
Suitable for window joinery and doorframes in bushfire-prone areas where specified in Sections 5 and 6 of AS3959:2009	yes	9
Janka hardness	9.7 kN	3
Bending strength	132 MPa (green), 188 MPa (dry)	3
Stiffness	18.5 GPa (green), 20.9 GPa (dry)	3
Indicative strength group based on published MOR and MOE data	(S1), (SD2)	6
Indicative strength group based on published density data	(S2), (SD3)	6
Stress grade when cross-arm graded in accordance with AS 3818:2010	Grade 1 cross-arm: F22 Grade 2 cross-arm: F17	7
In-ground durability	1 (test unknown), 4 (field test); 'very durable'	1; 3
Uses	Heavy construction, light construction, boats, turnery, panelling; barge and dock fenders, railroad cross-ties, tool handles, bearings	2; 3

Marketing name	<b>Pacific Crow's ash</b>	Reference/s
Botanical name	<i>Apuleia moralis</i>	
Common names	garapa, ferro	
Air-dry density	900-1,000 kg/m <sup>3</sup>	4
Suitable for general construction in bushfire-prone areas where specified in Sections 5, 6 and 7 of AS3959:2009	yes	8
Suitable for window joinery and doorframes in bushfire-prone areas where specified in Sections 5 and 6 of AS3959:2009	yes	9
Indicative strength group based on published density data	(S3), (SD4)	6
Stress grade when cross-arm graded in accordance with AS 3818:2010	Grade 1 cross-arm: F17 Grade 2 cross-arm: F14	7
In-ground durability	'durable', (2)	4

## References

1. Scheffer, T.C. and Morrell, J.J. (1998). Natural durability of wood: a worldwide checklist of species. FRL OSU. Research Contribution 22.
2. IBDF (1988). Amazonian timbers- characteristics and utilization. Volume II.
3. Chudnoff, M. (1979). Tropical timbers of the World. US Forest Products Laboratory.
4. Bootle, K.R. (1985). Wood in Australia- types, properties and uses. McGraw-Hill.
5. ITTO. (no date). [www.tropicaltimber.info](http://www.tropicaltimber.info)
6. AS/NZS 2878:2000. Timber – Classification into strength groups.
7. AS 3818:4:2010 – Timber – Heavy structural products - Visually graded Part 4: cross-arms for overhead lines.
8. AS 3959:2009 – Construction of buildings in bushfire-prone areas. Appendix E Section E1.
9. AS 3959:2009 – Construction of buildings in bushfire-prone areas. Appendix E Section E2.