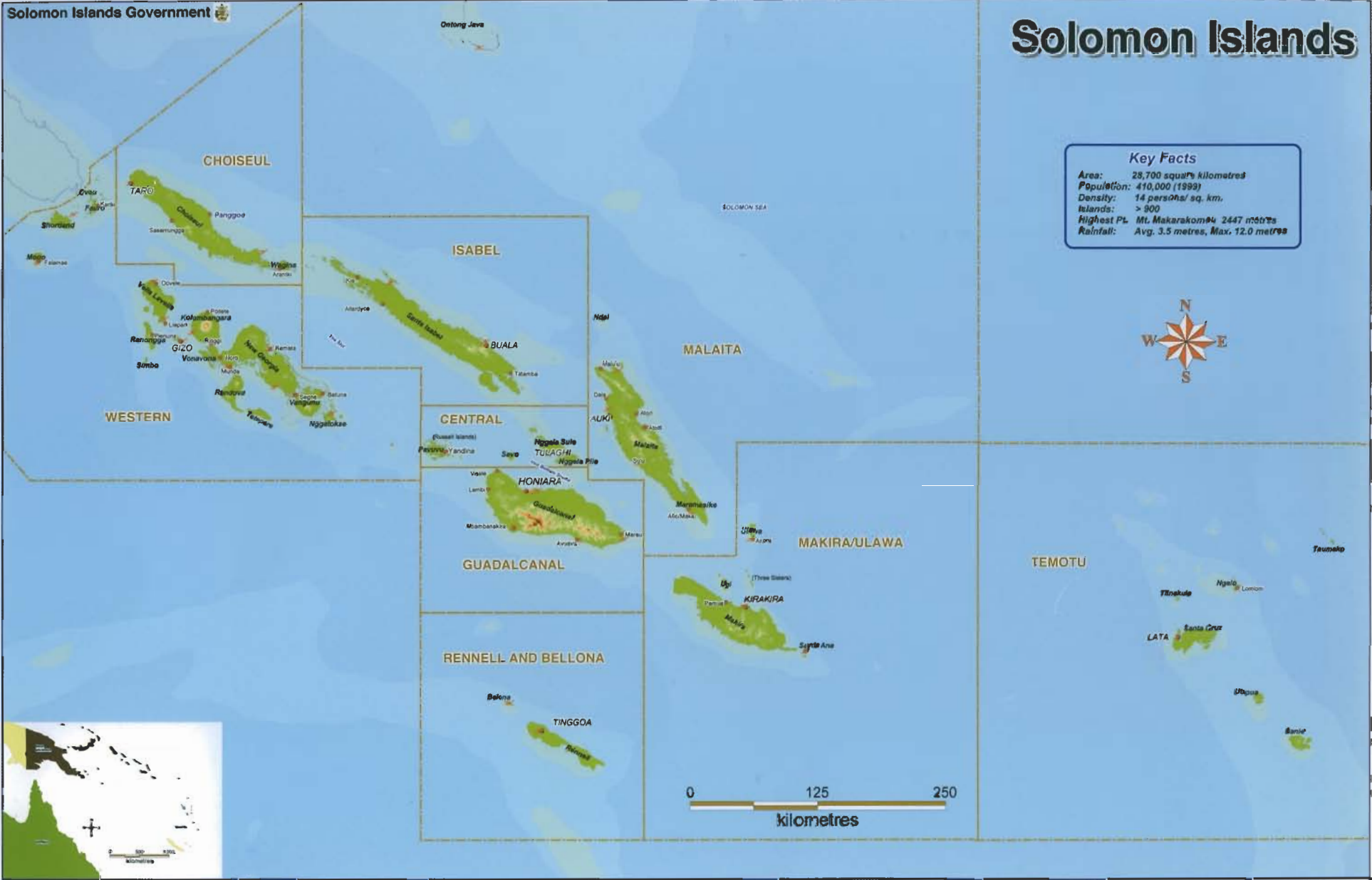


# Solomon Islands Timber



Australian Government  
AusAID



# Solomon Islands

**Key Facts**  
 Area: 28,700 square kilometres  
 Population: 410,000 (1999)  
 Density: 14 persons/ sq. km.  
 Islands: > 900  
 Highest Pt. Mt. Makarakombe 2447 metres  
 Rainfall: Avg. 3.5 metres, Max. 12.0 metres



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Front cover photographs: (top to bottom) • Mahogany (*Swietenia macrophylla*) plantation Guadalcanal, Solomon Islands.  
 • Portable sawmill cutting a mahogany log. • The finished product, furniture (dining table) manufactured from plantation-grown mahogany.

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## Foreword



### *Vision*

*To develop a strong export sector in value added timber products based on the high quality natural and plantation species grown in the Solomon Islands.*

Solomon Islands is blessed with a range of high quality, naturally occurring tropical hardwood timbers. These timbers have properties that make them ideal for a range of uses, including valuable structural and appearance grades, across the full spectrum of environmental conditions. Over the last twenty years, expanding areas of plantation have also meant that the country has a range of high quality tropical hardwood timbers that are already well known around the world.

Through the Solomon Islands Forest Management Project II, AusAID is helping to expand domestic processing in the Solomon Islands and establish export markets for timber products other than logs. This handbook forms part of that program by providing technical data for potential buyers on a range of key species that grow naturally and in plantations within Solomon Islands. This information will assist buyers to understand the unique properties and attributes of these timbers. Already some Solomon Islands species such as rosewood, kwila and vitex are well known and have good export markets. However, many other timbers grown in Solomon Islands have similar, and in some cases better, appearance, structural and handling properties than these timbers. This manual will assist those looking to develop the potential of all the timbers available from the Solomon Islands.

Value added timber products will bring many benefits to the people of Solomon Islands, including greater revenue to the country, new business activities and employment, a more sustainable industry and more direct value to landowners from their natural and plantation resources. This manual will assist in further developing the small, but strong processing industry within Solomon Islands.

Dan Raymond,  
Team Leader, Forestry Management Project II  
Solomon Islands

## Definition and Discussion of Terms

The twenty timber species described in this manual have been selected on the basis of occurrence and availability and as being of current commercial importance. Of the timbers included, there are fourteen indigenous species (natural forest growth) and six exotic species (introduced) as plantation grown species. Of the fourteen indigenous species, two species namely, *Camposperma brevipetiolata* and *Terminalia brassii*, have also been introduced into plantations with some success.

The physical and mechanical properties of the timbers together with their workability and seasoning properties are shown on the back (page 2) of each species sheet.

### 1. Properties

#### 1.1 Density

The density is expressed in kilograms per cubic metre ( $\text{kg/m}^3$ ) at 12% moisture content (seasoned).

#### 1.2 Colour

Colour of wood is a subjective matter; it varies from species to species and within a species. Colour is based on the true heartwood.

#### 1.3 Texture

The texture of wood is defined by the size, uniformity and distribution of the wood cells and by variation in wood structure e.g ring-porous as in **rosewood** and **teak**. Lustre (as included under Texture) is the property of wood enabling it to reflect light and/or to have a distinct sheen.

#### 1.4 Grain

Grain in wood refers to the direction of growth in the wood tissue. As wood is cellular in structure and made up mostly of fibres, the direction of the grain is simply the direction of the wood fibres. The major types of grain encountered are:-

##### 1.4.1 Straight Grain

The wood fibres run parallel to the longitudinal axis of the piece of wood

##### 1.4.2 Interlocked Grain

The fibres are at an angle to the longitudinal axis of a piece of wood, an angle which changes or reverses periodically in successive layers. Alternate helical or spiral grain in growth layers is a special case of interlocked grain.

##### 1.4.3 Tension Wood

Tension wood occurs in trees subject to prolonged stress as in **leaning trees** or those exposed to strong prevailing winds. Tension wood is invariably present in branch wood of hardwood trees.

#### 1.5 Figure

Figure in wood originates from its anatomical features or from variations in the natural colour, grain and texture patterns, and in the presence and composition of soft tissue. Wood with interlocked grain e.g **calophyllum**, produces a broad, striped or ribbon effect when quarter-sawn. Back-sawn wood produces a highly decorative cathedral or flame-like effect e.g **kwila**.

#### 1.6 Durability

The natural durability of wood is based on the heartwood and in its ability to resist the attack of decay fungi when 'in-ground' contact. The durability of heartwood is governed by the amount of chemical substances, often referred to as extractives, deposited within the heartwood during its growing stages. Durability ratings indicate a longer life expectancy in temperate climates as opposed to humid tropical conditions. Timbers exposed to the weather, but not in contact with the ground, can also be expected to have a much longer service life.

**Table 1 - Durability Classification - Untreated Heartwood**

Class	Probable in-ground service life	Probable above-ground service life
1	>25 years	>40 years
2	15 to 20 years	15 to 40 years
3	5 to 15 years	7 to 15 years
4	0 to 5 years	0 to 7 years

(Source: AS5604 - 2003)

**Class 1** - Very durable. Suitable for long term use in structures exposed to the weather and in contact with the ground.

**Class 2** - Durable. Suitable for use in the ground and for unprotected exterior use under normal conditions.

**Class 3** - Moderately durable. Suitable for protected exterior work. Not suitable for use in contact with the ground.

**Class 4** - Non-durable. Not suitable for exterior use unless treated with preservatives.

#### 1.7 Permeability

Based on the ease of penetrating the heartwood with preservatives, under pressure, at 1380 kilopascals.

#### 1.8 Lyctid Susceptibility

Lyctid borers attack the sapwood of many partly-dried hardwoods. They do not attack heartwood. Susceptibility is based on the starch content of the sapwood and on the pore or vessel size having a diameter greater than 0.09mm; sufficient to allow the adult female borer to insert her ovipositor to lay her eggs.

## 2. Workability

The working properties of wood are subject to a number of factors. The properties as listed are based on fully seasoned (10-12% m.c) timber. The presence of silica or silicon dioxide (SiO<sub>2</sub>), can cause rapid blunting of saw teeth and cutter blades. Specially hardened saw teeth and cutter edges (stellite tipped) alleviate many difficulties.

## 3. Mechanical Properties

The mechanical properties, as listed, are from test data undertaken on Papua New Guinea and Solomon Island timbers by the Commonwealth Scientific and Industrial Research Organisation of Australia (CSIRO) and other sources.

### 3.1 Strength

A system of strength grouping has been developed by the CSIRO and is designed to assist in marketing and in the appropriate use of timber for structural purposes. Each species is assigned to one of seven or eight strength groups depending on whether it is being used green or seasoned. Green timber has seven strength groups (S1 to S7); seasoned timber has eight strength groups (SD1 to SD8).

**Table 2** Gives the minimum standard test values of bending strength (modulus of rupture), stiffness (modulus of elasticity), compression parallel to the grain (maximum crushing strength) for green material in each of these groups. **Table 3** gives the sawn values for seasoned timber. All strength values quoted are based on testing of small clear specimens. The techniques used in strength grouping have been documented by the Standards Association of Australia (1979).

**Table 2 - Minimum values of strength groups for green timber Megapascals (MPa)**

Property	S1	S2	S3	S4	S5	S6	S7
Modulus of Rupture	103	86	73	62	52	43	36
Modulus of elasticity	16300	14200	12400	10700	9100	7900	6900
Maximum crushing strength	52	43	36	31	26	22	18

**Table 3 - Minimum values of strength groups for seasoned timber Megapascals (MPa)**

Property	SD1	SD2	SD3	SD4	SD5	SD6	SD7	SD8
Modulus of Rupture	150	130	110	94	78	65	55	45
Modulus of elasticity	21500	18500	16000	14000	12500	10500	9100	7900
Maximum crushing strength	80	70	61	54	47	41	36	30

### 3.2 Structural Grade

The grades, into which structural timber is sorted, are called stress grades. A stress grade may be defined as the classification of a piece of timber for structural purposes by means of visual or mechanical methods to indicate primarily the basic working stress in bending, for purposes of design, and, by implication, the basic working stresses for other properties normally used in engineering design. The stress grade is designated in a form such as F14, which indicates a basic working stress in bending of 14 MPa. The grade as given for each species is based on No. 1 Structural (select grade), seasoned.

Tables 4 and 5 refer to visually graded hardwood using Australian Standard 2082.

**Table 4 - Unseasoned Timber**

Strength group	Stress Grade			
	No. 1 Structural	No. 2 Structural	No. 3 Structural	No. 4 Structural
S1	F 27	F 22	F 17	F 14
S2	F 22	F 17	F 14	F 11
S3	F 17	F 14	F 11	F 8
S4	F 14	F 11	F 8	F 7
S5	F 11	F 8	F 7	F 5
S6	F 8	F 7	F 5	F 4
S7	F 7	F 5	F 4	F 3

**Table 5 - Seasoned Timber**

Strength group	Stress Grade			
	No. 1 Structural	No. 2 Structural	No. 3 Structural	No. 4 Structural
SD1	F 43	F 34	F 27	F 22
SD2	F 34	F 27	F 22	F 17
SD3	F 27	F 22	F 17	F 14
SD4	F 22	F 17	F 14	F 11
SD5	F 17	F 14	F 11	F 8
SD6	F 14	F 11	F 8	F 7
SD7	F 11	F 8	F 7	F 5
SD8	F 8	F 7	F 5	F 4

### 3.3 Izod Value

The izod value is a measure of resistance to the impact of sudden shock loads.

### 3.4 Janka hardness

Janka hardness measures the resistance of wood to denting. Hardness in dry timber is generally higher than in green timber though not invariably so.

**3.5 Maximum Crushing Strength**

Maximum crushing strength is a measure of the maximum stress a timber can sustain under a load slowly applied parallel to the grain. It indicates the relative suitability of timber for columns.

**3.6 Modulus of Elasticity**

Modulus of elasticity is a measure of the stiffness or rigidity of wood within its elastic limit. The modulus of elasticity is thus a measure of its resistance to deflection e.g. as a beam.

**3.7 Modulus of Rupture**

Modulus of rupture is the measure of the maximum compression or tension stress in the fibres at the point of fracture. It is a direct measurement of the strength of wood in bending when loaded as a beam.

**4. Seasoning**

**4.1 Movement**

Timber in service will equilibrate with the moisture in the atmosphere. In most instances this will be between 12% - 20%. In this range, the change in dimension which is known as hygroscopic movement, is proportional to the moisture content. Three classifications are referred to; Low, Medium and High.

**4.2 Shrinkage**

Timber shrinks by different amounts in the three cardinal directions. In the longitudinal direction, shrinkage is usually insignificant. Shrinkage in the tangential direction, for most species, is about twice as great as in the radial direction. Five classifications are referred to; Very Low, Low, Medium, High and Very High (see Table 8).

**Table 8**

Shrinkage Classification	Shrinkage from Green to Oven Dry	
	Tangential (%)	Radial (%)
Very Low	0 - 3.5	0 - 2.0
Low	3.6 - 5.0	2.1 - 3.0
Medium	5.1 - 6.5	3.1 - 4.0
High	6.6 - 8.0	4.1 - 5.0
Very High	8.1 & over	5.1 & over

**4.3 Kiln Drying Schedule**

Guidelines for conventional kiln drying are for 25mm thick material. These schedules are based on experimental work by the CSIRO and from other sources including, Eddowes P.J (Wood in Papuaasia - unpublished/in ed., and Commercial Timbers of Papua New Guinea - 1977). Some schedules may prove to be conservative, however, they should provide a starting point for later modification as may be desirable.

- ▶ 't' (mm) = Timber thickness in millimeters
- ▶ 'S.P' = Sawing profile
  - M = mixed (back-sawn & quarter-sawn)
  - B = Back-sawn
  - Q = Quarter-sawn
- ▶ m.c change = Progression in moisture content points from green condition to final m.c.
- ▶ DBT = Dry bulb temperatures
- ▶ WBD = Wet bulb depression

Part 1

# Native Forest Timbers



Satinash  
(*Syzygium* spp.)



## Akwa

## Recommended Uses (Major/specific)



Building Construction (F17).



Flooring & staircase materials.



Exterior joinery (out-of-ground): including screening, pre-treated decking, gazebos, pergolas.



Furniture: including custom made and production line.



Boat building: including ribs, planking.



Speciality uses: Musical instruments, including piano frames.



Interior: including joinery, door jambs.

Akwa • *Pometia pinnata*

**Akwa** is one of the major commercial timber species of the Solomon Islands. Medium to large size trees are found throughout the South West Pacific region. Akwa is readily available as a sawn timber in a full range of sizes.

- A popular timber in Japan for production-line furniture since it stains uniformly to a colour of choice. The timber has good moulding and finishing properties and has been used in Japan for piano frames.
- The timber ranges in colour from a pale pinkish-brown through to a reddish-brown. Some trees produce a fiddleback type figure, similar to that of **sapele** (*Entandrophragma cylindricum*) of West and Central Africa, thus making it an attractive and appealing timber for architects, furniture designers and furniture manufacturers.
- A very good multi-purpose timber, ideal for general building and construction purposes including bearers and joists. Due to its availability in large sections, it makes an excellent timber for staircase materials as well as for flooring. It also has excellent steam-bending properties, and is used in boat-building for a number of purposes, including ribs and planking.
- The timber can be kiln dried satisfactorily. However, preliminary air drying is recommended to alleviate degrade. All material should be quarter-sawn.
- When working with seasoned timber, sander dust may irritate the mucous membranes. Workshops should be well ventilated and staff should wear face masks or respirators.

## Other names:

Trade Names: **taun**

Local Name: **ako, dawa**

**Akwa • *Pometia pinnata*****PROPERTIES**

Density	680kg/m <sup>3</sup> (av.) @12% m.c
Colour	Pinkish brown to pale reddish brown.
Texture	Medium, slightly uneven; semi lustrous.
Grain	Usually straight; sometimes wavy.
Figure	Cathedral-like figure on back-sawn faces. Ribbon or banded figure on quarter-sawn faces.
Durability	Durable in exterior situations out of the ground.
Permeability	Heartwood, resistant to pressure impregnation.
Lyctid susceptibility	Susceptible.

**WORKABILITY**

General	Good working and finishing properties.
Sawing	Readily sawn with little blunting effect.
Planing	Reduction in cutting angle to 20° recommended.
Blunting	Low.
Boring	Good characteristics. Some slight burning may occur.
Turning	Good characteristics producing sharp arrises; finish sometimes slightly fibrous.
Nailing	Nails well, but pre-drilling advisable to prevent splitting on board ends.
Gluing	Glues well with all adhesives.
Finishing	Polishes very well, giving a lustrous surface.

**MECHANICAL PROPERTIES**

Strength	SD5 (seasoned).
Structural Grade	F17 (select grade).
Toughness (Izod)	14J (seasoned), 14J (unseasoned).
Hardness (Janka)	6.5kN (seasoned), 4.2kN (unseasoned).
Max. Crushing Strength	60 MPa (seasoned), 31 MPa (unseasoned).
Modulus of Elasticity	14 GPa (seasoned), 11 GPa (unseasoned).
Modulus of Rupture	106 MPa (seasoned), 67 MPa (unseasoned).

**SEASONING**

General	Seasons well but some collapse can occur. A high humidity re-conditioning treatment needs to be applied.
Movement	Medium.
Shrinkage	Medium.

**KILN DRYING SCHEDULE**

'T' (MM)	'S.P'	'M.C' CHANGE POINTS	DBT (°C)	'WBD' (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	50	3		
		60	50	4		
		40	55	5		
		35	55	5		
		30	60	8		
		25	65	10		
		20	70	15		
		15 - final	70	20	10	4 - 6

# Amoora

## Recommended Uses (Major/specific)



Building Construction (F17).



Flooring and staircase materials.



Exterior joinery; including screening.



Furniture; including custom made and production line, cabinet work.



Interior; including mouldings and architraves, window and door frames, wall linings.



Window joinery.

## Amoora • *Amoora cucullata*

**Amoora** is a large tree, widespread throughout the lowland rainforests from Papua New Guinea to the Solomon and Santa Cruz Islands. It does not occur in large volumes but small sawn parcels can be made available.

- **Amoora** is a very attractive wood, somewhat similar to **dark-red meranti** and **Philippine mahogany** (*Shorea* spp.). It produces a first class peeler log and had **been much** sought after for face veneer in plywood manufacture in **Japan**, South Korea and Taiwan.
- The timber is fairly uniform in **colour** with a straight or slightly interlocked grain. It saws **readily and works** well with both machine and hand tools to a smooth surface. Sands to a fine finish and takes a high polish, giving a satin lustre. Glues, screws and nails well.
- **Quarter-sawn material seasons well** with little degrade. Back-sawn material has a **tendency to cup and/or twist** especially in wide boards. Close stickering of boards at **450mm** intervals and weighting tops of stacks during **preliminary air-drying** and subsequent kiln drying is **advisable**.
- **Amoora** is suitable for high **quality** furniture and cabinet work. In its 'finished' state, boards **cut on the full quarter** and highly polished, bear a striking resemblance to **African sapele** (*Entandophragma cylindricum*), with its dark red colouring and attractive ribbon grain figure. It is also suitable for joinery, including window frames, door jambs, decorative (V.J) wall linings, mouldings, turning and outdoor (oil treated) screens; and makes an attractive flooring for light traffic.

### Other names:



Trade Name: **Pacific maple**

Local Name: **ulukwalo**

**Amoora • Amoora cucullata****PROPERTIES**

Density	550 kg/m <sup>3</sup> @ 12% m.c
Colour	Reddish-brown to deep brick-red.
Texture	Medium, slightly uneven; lustrous.
Grain	Straight or slightly interlocked.
Figure	Striped or ribbon figure on quarter-sawn faces.
Durability	Moderately durable in protected situations.
Permeability	Heartwood non-permeable to pressure impregnation. Sapwood also treats poorly.
Lyctid susceptibility	Susceptible.

**WORKABILITY**

General	Good working and finishing properties.
Sawing	Easy to saw with little blunting effect.
Planing	Excellent characteristics; produces smooth surface.
Blunting	Low.
Boring	Good.
Turning	Very good characteristics producing sharp arrises.
Nailing	Nails well.
Gluing	Glues well with all adhesives.
Finishing	Takes a high polish giving a lustrous surface.

**MECHANICAL PROPERTIES**

Strength	SD5
Structural Grade	F17 (select grade).
Toughness (Izod)	11J (seasoned), 8.8J (unseasoned).
Hardness (Janka)	3.8kN (seasoned), 2.7kN (unseasoned).
Max. Crushing Strength	46MPa (seasoned), 25MPa (unseasoned).
Modulus of Elasticity	12GPa (seasoned), 9.7GPa (unseasoned).
Modulus of Rupture	85MPa (seasoned), 49MPa (unseasoned).

**SEASONING**

General	Seasons well with little degrade.
Movement	Low.
Shrinkage	Medium.

**KILN DRYING SCHEDULE**

T (mm)	"S.P"	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	50	5		
		30	55	5		
		20 - final	60	10	6	3

# Brown Terminalia

## Brown Terminalia • *Terminalia brassii*

### Recommended Uses (Major/specific)



Building construction (F14); including light framing.



Speciality; including carving, sliced veneer (plantation grown).



Furniture; custom made, cabinet work (plantation grown).



Interior; including mouldings.

**Brown terminalia** is common in the Solomon Islands where the tree can reach a large size and form nearly pure stands. It is also a suitable plantation species. It prefers wet conditions including fresh water swamps.

- Both Japan and South Korea have imported large volumes of the timber from Papua New Guinea and the Solomon Islands mainly for rotary peeling and plywood manufacture. However, it also produces general purpose, lightweight, utility sawn wood for light construction and mouldings.
- Native forest timber is a pale brown with a pale yellowish caste. Chains of traumatic gum canals are often evident on sawn faces. The timber has similar properties and end uses to that of the paler coloured **meranti** group of timbers (*Shorea* spp.) at the lower end of their density range for which it could be considered as a suitable substitute.
- Material should be quarter-sawn to alleviate twist, cupping and surface checking. 25mm boards can be readily kiln dried from green. 38mm and 50mm thick material needs to be air-dried first to avoid degrade. Drying stacks need to be well stickered at 450mm intervals and stacks should be heavily weighted. Treatment is required at the point of felling and immediately after sawing to prevent blue stain and pinhole borer attack.
- Plantation grown material produces a much denser and more attractive heartwood with an irregular banded pattern and marked with fine black lines closely resembling **walnut** in appearance. It is suitable for decorative work including, furniture, cabinet work and sliced veneer. The heartwood is used by local artisans for the production of artefacts including decorative carved bowls.

### Other names:

Local Name: **dafo**

**Brown Terminalia** • *Terminalia brassii***PROPERTIES**

Density	450-550 kg/m <sup>3</sup> @ 12% m.c
Colour	Pale brown with pale yellowish caste (natural growth).
Texture	Coarse and somewhat uneven.
Grain	Interlocked; sometimes wavy. Spiral or cross-grain may be present.
Figure	Ribbon or banded figure on quarter-sawn face.
Durability	Non-durable.
Permeability	Heartwood, untreatable.
Lyctid susceptibility	Susceptible.

**WORKABILITY**

General	Satisfactory; care required due to grain irregularities.
Sawing	Saws well with little difficulty; sawn surface often woolly.
Planing	Grain can chip or tear.
Blunting	Low.
Boring	Fibrous.
Turning	Satisfactory, but rather woolly and soft.
Nailing	Nails easily and well.
Gluing	Glues well with all adhesives.
Finishing	Timber needs to be well seasoned to achieve good quality finish. Very sharp tools essential.

**MECHANICAL PROPERTIES**

Strength	SD6
Structural Grade	F14 (select grade).
Toughness (Izod)	8.3J (seasoned), 8.9J (unseasoned).
Hardness (Janka)	2.8kN (seasoned), 2.5kN (unseasoned).
Max. Crushing Strength	37MPa (seasoned), 21MPa (unseasoned).
Modulus of Elasticity	9.9GPa (seasoned), 8.3GPa (unseasoned).
Modulus of Rupture	68MPa (seasoned), 44MPa (unseasoned).

**SEASONING**

General	All material should be quarter-sawn.
Movement	Medium.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN: (days)	FROM 25% (days)
25	M	Green	50	3		
		60	50	4		
		35	55	5		
		30	60	8		
		25	65	10		
		20	70	15		
		15 - final	70	20	5	3

# Calophyllum

## Recommended Uses (Major/specific)



Building construction (F17); including framing, bearers, joists.



Flooring; light traffic (domestic).



Furniture; production line.



Interior; including mouldings, architraves.

## Calophyllum - *Calophyllum* spp.

**Calophyllum** is represented in the Solomon Islands by a number of species, the most common of which are; *C.neo-ebudicum*, *C. leleanii*, *C. peekelii* (formerly *C.kajewskii*) and *C.soulattri*. They are usually large-sized trees with long, clear cylindrical boles. The wood is available in sawn parcels and in a wide range of sizes.

- The timber is popular in Japan for a variety of end uses including furniture manufacture and cabinet work as well as for veneer and plywood manufacture. Large sawn volumes have been exported to New Zealand and some to Australia for manufacture of furniture, joinery, mouldings and turnery.
- The timbers range in colour from a pale pinkish-brown to pale red-brown to pale red. Quarter-sawn boards produce a distinct striped or ribbon effect, whilst back-sawn material is nicely figured with a fine tracery pattern.
- The timbers can be dried satisfactorily. Quarter-sawn material dries well with little degrade. Back-sawn material has a tendency to cup and twist especially in wide boards. Drying stickers should be spaced at 450mm intervals along each row of boards and stacks heavily weighted to alleviate warp.
- **Calophyllum** is a useful, general purpose timber. Due to its wide range in density, its mechanical properties can be variable. It is suitable for a wide range of end uses including; furniture and cabinet work, interior joinery, mouldings, architraves, door jambs, general building construction, flooring and exterior cladding, including weatherboards. It is often compared to **light red meranti** (Malaysia) or **red lauan** (Philippines). It can substitute for this group of species.

### Other names:

Trade Name: **kalofilum**

Local Name: **ba'ula, gwarogwaro**

**Calophyllum** • *Calophyllum* spp.**PROPERTIES**

Density	475-650 kg/m <sup>3</sup> @ 12% m.c
Colour	Pale pinkish-brown to pale red.
Texture	Moderately coarse and slightly uneven.
Grain	Interlocked.
Figure	Ribbon or striped effect on quarter-sawn faces.
Durability	Moderately durable.
Permeability	Heartwood resistant to pressure impregnation.
Lyctid susceptibility	Some species susceptible.

**WORKABILITY**

General	Reasonably good working and finishing properties.
Sawing	Readily sawn; some boards a little fibrous in nature.
Planing	Generally planes well dependent on grain and cutting angle. A reduction of cutter angle (20°) will assist.
Blunting	Low.
Boring	Good characteristics; may be a little fibrous.
Turning	Generally good; may be a little fibrous.
Nailing	Pre-drilling on board ends advisable to prevent splitting.
Gluing	Glues very well with all adhesives.
Finishing	With care, smooth finish obtainable. Polishes very well.

**MECHANICAL PROPERTIES**

Strength	SD5
Structural Grade	F17 (select grade).
Toughness (Izod)	12J (seasoned), 10J (unseasoned).
Hardness (Janka)	4.6kN (seasoned), 3.6kN (unseasoned).
Max. Crushing Strength	58MPa (seasoned), 34MPa (unseasoned).
Modulus of Elasticity	14GPa (seasoned), 11GPa (unseasoned).
Modulus of Rupture	102MPa (seasoned), 59MPa (unseasoned).

**SEASONING**

General	Seasons readily and well providing proper drying practices are adhered to re. stickering and weighting of stacks.
Movement	Medium.
Shrinkage	Medium.

**KILN DRYING SCHEDULE**

T (mm)	'S,P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	5		
		40	55	8		
		30	60	10		
		20 - final	70	20	6 - 8	3 - 4



# Camnosperma

## Camnosperma • *Camnosperma brevipetiolata*

**Camnosperma** is a medium to large tree, common throughout the North Solomons and the Solomon Islands, where it has also been introduced into plantations. There is potential for the timber to be made available in sawn parcels and in good volumes.

### Recommended Uses (Major/specific)



Furniture; including cabinet work, low cost furniture and components, drawer sides.



Exterior joinery (upon pressure treatment) including cladding, weatherboards, fascia.



Interior; including mouldings, architraves.



Speciality; including match splints, match boxes, chopsticks (disposable).

- The timber has considerable market potential. Its fine texture and pale colour make it much in demand for veneer and plywood, especially in Japan, where it is considered to be a substitute for **ramin** (*Gonystylus*). It was also imported into Australia (from Papua New Guinea) as veneer since it met face grade requirements for the manufacture of drawing boards and blackboards.
- Air dries readily, although tension wood causes bow and twist, especially in plantation grown timber. It should be treated immediately after felling and sawing to prevent blue stain and insect attack, especially pinhole borer. 25mm boards can be kiln dried from the green condition. Thicker stock needs preliminary air drying to 25% m.c before kiln drying.
- A soft, pale-coloured wood of low density, having the same properties and uses as that of **Malaysian Camnosperma**, (*terentang*). It is suitable for a number of uses since it produces wide, clean boards and can be pressure treated. Specific uses include mouldings, drawer sides, chopsticks, match splints, low cost furniture and blockboard and, because it can be pressure treated, it is suitable for exterior cladding.
- The bark exudes a sparse, whitish sap, which may cause skin irritation when logs are milled. Gloves should always be worn and safety goggles to protect eyes when milling.

### Other names:

Local Name: **ketekete**

**Camposperma*****Camposperma brevipetiolata*****PROPERTIES**

Density	400-450 kg/m <sup>3</sup> @ 12% m.c
Colour	Pinkish-grey sometimes with mauve tinge.
Texture	Very fine and even; lustrous.
Grain	Usually straight; occasionally slightly interlocked.
Figure	Small 'ray-fleck' on quarter-sawn face.
Durability	Non-durable.
Permeability	Heartwood, permeable to pressure impregnation.
Lyctid susceptibility	Resistant.

**WORKABILITY**

General	Reasonably good; care required to get high class finish.
Sawing	Tension wood, when present, can clog up saw gullets.
Planing	Reasonably good; some boards slightly fibrous.
Blunting	Moderate.
Boring	Good characteristics with clean holes.
Turning	Poor; due to timber softness and fibrous nature.
Nailing	Nails easily and well.
Gluing	Glues very well with most adhesives.
Finishing	With care, a high quality, smooth finish, obtainable.

**MECHANICAL PROPERTIES**

Strength	SD7
Structural Grade	F11
Toughness (Izod)	8J (seasoned), 6J (unseasoned).
Hardness (Janka)	4kN (seasoned), 1.5kN (unseasoned).
Max. Crushing Strength	35MPa (seasoned), 17.5MPa (unseasoned).
Modulus of Elasticity	8.5GPa (seasoned), 7.0GPa (unseasoned).
Modulus of Rupture	60.5MPa (seasoned), 37MPa (unseasoned).

**SEASONING**

General	Dries readily; care required in stacking to avoid degrade.
Movement	Low.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	50	10		
		30	55	10		
		25	60	15		
		20 - final	70	20	10	4 - 5

# Dillenia

## Dillenia • *Dillenia salomonensis*

**Dillenia** is widespread as a medium to very large tree, represented by a number of species. It is fairly common in the lowland forests of Papua New Guinea, Bismarck Archipelago, Vanuatu, Fiji, the North Solomons and the Solomon Islands but is absent from the Santa Cruz islands. It is an important timber species of the Solomon Islands and can be made available in sawn parcels in a full range of sizes.

- Round logs have, in the past, been exported to Japan, South Korea and other Asian countries, where they have been used for plywood and furniture manufacture. Sawn parcels have also been exported to New Zealand for a range of uses including furniture and cabinet work. The timber's full market potential is yet to be realised.
- The wood is reddish-brown in colour, sometimes with a faint, purplish caste. It has an attractive silvery 'oak-like' figure on radial faces, due to the timber's broad rays. Sometimes it has black bands on quarter-sawn faces. The wood is moderately coarse, but even in texture and slightly lustrous. Grain, straight or with slight interlock.
- The timber can be difficult to dry. It has a high shrinkage and requires great care in stacking and drying so as to alleviate distortion and degrade. All timber should be quarter-sawn since back-sawn boards are prone to severe twist, bow, cupping and checking. However, quarter-sawn boards tend to spring immediately after sawing.
- An attractive and decorative timber suitable for a range of end-uses. It has been successfully rotary-peeled for veneer and plywood. Slices very well producing an attractive and decorative face when cut on the full quarter. Suitable for flooring, furniture and cabinet work and interior wall linings. Its permeability to pressure impregnation renders it suitable for exterior joinery, posts and beams, and for boat-building. It is prone to blue stain and termite attack and requires a prophylactic treatment after milling.

### Other names:

Trade Name: **simpoh**

Local Name: **muđu**

For further information: [www.solomontimbers.com.sb](http://www.solomontimbers.com.sb)

### Recommended Uses (Major/specific)



Building Construction (F17).



Flooring; solid strip and overlay.



Exterior joinery (upon preservative treatment) including; gazebos, pergolas etc.



Furniture; including custom made and cabinet work.



Speciality uses; including sliced/decorative veneer.



Interior; wall linings (feature), panels.

**Dillenia** • *Dillenia salomonensis***PROPERTIES**

Density	530-620 kg/m <sup>3</sup> @ 12% m.c
Colour	Red-brown; sometimes with purplish caste.
Texture	Moderately coarse but even; slightly lustrous.
Grain	Straight or slightly interlocked.
Figure	Highly decorative; silvery 'oak-like' figure on radial faces due to presence of broad rays.
Durability	Non-durable.
Permeability	Variable in its uptake of salts under pressure.
Lyctid susceptibility	Sapwood is rarely susceptible.

**WORKABILITY**

General	With care, the timber works well.
Sawing	Saws without undue difficulty. Tendency for saw dust to clog the saw gullets.
Planing	Good characteristics; slight roughness on radial faces.
Blunting	Moderate.
Boring	Relatively easy but rough finish.
Turning	Turns well to smooth finish.
Nailing	Pre-drilling advisable when nailing near board ends.
Gluing	Satisfactory.
Finishing	With care, takes an excellent high polish.

**MECHANICAL PROPERTIES**

Strength	SD5
Structural Grade	F22 (select grade).
Toughness (Izod)	11J (seasoned), 9J (unseasoned).
Hardness (Janka)	6.5kN (seasoned), 4.2kN (unseasoned).
Max. Crushing Strength	45MPa (seasoned), 25MPa (unseasoned).
Modulus of Elasticity	12GPa (seasoned), 10GPa (unseasoned).
Modulus of Rupture	80MPa (seasoned), 50MPa (unseasoned).

**SEASONING**

General	Careful stacking and drying is essential.
Movement	Medium.
Shrinkage	Very high.

**KILN DRYING SCHEDULE**

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	5		
		40	60	8		
		30	65	10		
		25	65	15		
		20 - final	70	20	10 - 12	4 - 6

# Kauri Pine

## Recommended Uses (Major/specific)



Flooring; including domestic flooring (wide boards).



Furniture; including cabinet work.



Boat building; including masts, spars, oars, planking, decking.



Speciality uses; including musical instruments, bee-hives, vats, artificial limbs, pattern-making.



Interior; including lining boards, doors, mouldings, architraves.

## Kauri Pine • *Agathis macrophylla*

**Kauri pine**, as represented by a number of species, is a very large conifer (softwood). It occurs from Irian Jaya to Papua New Guinea, Bismarck Archipelago, Fiji, Australia, New Zealand and the Solomon Islands. In the Solomons, *A. macrophylla* is confined to the Santa Cruz Islands where it forms nearly pure stands of commercial proportions.

- **Kauri pine** is, arguably, one of the world's finest softwoods. It has been a popular timber for many years since it produces large wide boards, free of any defect, uniform in colour and free of tainting chemicals. Markets exist in Australia, New Zealand and Japan.
- The timber is a pale straw-brown to a honey-brown in colour often with darker streaks. A cathedral-like figure is sometimes evident on back-sawn faces and with a characteristic 'ray-fleck' pattern on quarter-sawn faces.
- The timber seasons readily with **little degrade**. Sawn material needs to be well stickered and stacks **weighted** to alleviate cupping. The timber has a very low shrinkage and very little movement in-service.
- Due to the timber's excellent working properties, ease of drying, pale uniform colour and very fine and even texture, it is suitable for a wide range of uses including specialty applications. It is in demand in countries **such as** Japan for internal joinery and flooring, where accent is placed on pale coloured woods of uniform colour especially in traditional housing and condominiums. It is also used for furniture, wall linings, cabinet work and cupboard doors. In Australia and New Zealand it has always been a popular and traditional timber for boat building including, masts, spars, oars, planking and decking.
- Its speciality applications include, musical instruments (violin and guitar bellies), pattern-making and artificial limbs. Due to its non-tainting properties it is suitable for bee-hives, bench tops and kitchen utensils (food preparation) and storage vats.

### Other names:

Trade Names: **agathis, Vanikolo kauri**

Local Name: **kauri**

# Kauri Pine

## Kauri Pine • *Agathis macrophylla*

### Recommended Uses (Major/specific)



Flooring; including domestic flooring (wide boards).



Furniture; including cabinet work.



Boat building; including masts, spars, oars, planking, decking.



Specialty uses; including musical instruments, bee-hives, vats, artificial limbs, pattern-making.



Interior; including lining boards, doors, mouldings, architraves.

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### Other names:

Trade Names: **agathis, Vanikolo kauri**

Local Name: **kauri**

Kauri Pine • *Agathis macrophylla*

## PROPERTIES

Density	450-550 kg/m <sup>3</sup> @ 12% m.c
Colour	Straw brown.
Texture	Very fine and even; slightly lustrous.
Grain	Straight.
Figure	Distinct 'ray fleck' on quarter-sawn faces.
Durability	Non-durable.
Permeability	Heartwood is permeable to pressure impregnation.
Lyctid susceptibility	Resistant.

## WORKABILITY

General	Excellent all round characteristics.
Sawing	Saws easily and well.
Planing	Excellent characteristics.
Blunting	Very low.
Boring	Excellent characteristics; clean exit hole.
Turning	Excellent characteristics producing sharp arrises.
Nailing	Excellent nailing and 'holding' ability.
Gluing	Glues very well with all adhesives.
Finishing	Takes an excellent polish, no filling required; high finish.

## MECHANICAL PROPERTIES

Strength	SD7
Structural Grade	F11 (select grade).
Toughness (Izod)	4.3J (seasoned), 8.1J (unseasoned).
Hardness (Janka)	2.8kN (seasoned), 2.6kN (unseasoned).
Max. Crushing Strength	43MPa (seasoned), 21MPa (unseasoned).
Modulus of Elasticity	9.3GPa (seasoned), 7.6GPa (unseasoned).
Modulus of Rupture	67MPa (seasoned), 41MPa (unseasoned).

## SEASONING

General	Excellent drying characteristics. Subject to blue stain if not treated.
Movement	Very low.
Shrinkage	Very low.

## KILN DRYING SCHEDULE

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
M	25	Green	55	4		
		60	55	5		
		40	60	8		
		30	65	10		
		25	65	15		
		20 - final	70	20	5 - 6	3

## Kwila

## Recommended Uses (Major/specific)



Building Construction (F34).



Flooring & staircase materials.



Exterior joinery (out-of-ground); including structural, screening, decking.



Furniture; custom made and cabinet work.



Boat building & ship building.



Engineering; including bridge and wharf superstructure (out of ground/salt water contact).



Speciality uses; including billiard tables, tool handles, turnery, sliced veneer, carving, artefacts.

Kwila • *Intsia bijuga*

**Kwila** is a medium to large tree, widespread throughout the South Pacific. It can be found throughout the Solomon Islands mainly in coastal forests although it is not of major occurrence. Small sawn parcels are available in a full range of sizes

- **Kwila** is a high quality, strong, durable hardwood. It has been a popular timber in Europe for many years where it finds a specialised use in velodrome / cycling tracks. It has also become popular in Australia and New Zealand where it is in demand for high quality applications including exterior joinery. It is a good substitute for **teak** (*Tectona grandis*) and is closely related to the well known **doussié** (*Azelia* spp.) of West Africa.
- The timber is either a yellowish-brown or dark brown in colour, darkening on exposure to light. In exterior situations it weathers slowly to a silvery-grey colour. Contrary to popular belief, **kwila** is not very durable in the ground, as the extractives, which contribute toward its durability, are prone to leaching. This leaching process leads to the timber 'bleeding' and imparting a dark brown stain which mars the contact surface. A sealant should be applied to the timber if it is to be in "contact" situations e.g window sills, when exposed to the weather.
- The timber seasons very well with little degrade. Preliminary air-drying to 25% moisture content is preferable before kiln drying. Board ends need to be heavily sealed with wax emulsion to avoid end splitting and surface checking during drying. After seasoning, it is a very stable timber with low hygroscopic movement.
- **Kwila** is suitable for superior joinery including staircase materials, handrails, ballustrading and posts. It produces high quality, hard wearing flooring and is also used for furniture (indoor and outdoor) and decking. It is a popular timber for boat and ship-building.

## Other names:

Trade Name: **merbau** (Malaysia)

Local Name: **u'ula**



**Kwila • *Intsia bijuga*****PROPERTIES**

Density	850 kg/m <sup>3</sup> @ 12% m.c
Colour	Yellow-brown or dark brown,
Texture	Medium but even; lustrous.
Grain	Straight or slightly interlocked, sometimes wavy.
Figure	Ribbon figure evident on quarter-sawn faces when interlocked grain present. Cathedral-like figure on back-sawn faces due to soft tissue.
Durability	Durable out of the ground in exterior situations.
Permeability	Heartwood, non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

**WORKABILITY**

General	Very good working and finishing properties.
Sawing	Saws well but saw blades may 'gum-up' after prolonged sawing.
Planing	Excellent planing characteristics, cutter edges may 'gum-up' after prolonged planing.
Blunting	Low.
Boring	Additional power required; some burning may occur; clean exit hole.
Turning	Good turning properties; smooth with sharp arrises.
Nailing	Pre-drilling recommended to alleviate splitting on board ends.
Gluing	Care required to get satisfactory bonding due to the timber's natural oiliness.
Finishing	Takes a high polish; lustrous surface.

**MECHANICAL PROPERTIES**

Strength	SD2
Structural Grade	F34 (select grade).
Toughness (Izod)	14J (seasoned), 18J (unseasoned).
Hardness (Janka)	8.6kN (seasoned), 7.6kN (unseasoned).
Max. Crushing Strength	81MPa (seasoned), 55MPa (unseasoned).
Modulus of Elasticity	18GPa (seasoned), 15GPa (unseasoned).
Modulus of Rupture	147MPa (seasoned), 103MPa (unseasoned).

**SEASONING**

General	Seasons well with little degrade.
Movement	Very low.
Shrinkage	Very low.

**KILN DRYING SCHEDULE**

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	8	10 - 12	5 - 7
		30	60	10		
		20 - final	70	20		

# Pencil Cedar

## Recommended Uses (Major/specific)



Flooring and staircase materials.



Furniture; including custom made and production line, cabinet work.



Boat building; including masts and spars.



Speciality uses; including sliced/decorative veneer, turnery, coffin boards.



Interior; including mouldings, window and door frames, architraves, louvre blades, blinds, shutters, interior/wall (V.J) linings.



Window joinery.

## Pencil Cedar • *Palaquium* spp.

**Pencil cedar** is represented by a number of species. Usually a large, well formed tree, it is scattered throughout the lowland rainforests of the region including Papua New Guinea, Bismarck Archipelago, Fiji, Vanuatu, Solomon Islands and North Queensland. It can be made available in small sawn parcels on a regular basis.

- **Pencil cedar** is a high quality hardwood. Due to its ease of working, uniform colour, fine texture and finishing characteristics, it is highly favoured in Japan for prestige cabinet work and custom-made furniture where it has been marketed successfully as 'royal cherry'.
- The timbers are pinkish-brown in colour. The grain is usually straight. The timbers may vary slightly in their density depending on species. Some silica (SiO<sub>2</sub>) is present but usually only in small quantities. This causes moderate blunting of cutter edges. The timbers work well with both machine and hand tools and have excellent moulding characteristics producing a smooth, high class surface. Takes an excellent high polish, producing a lustrous finish.
- The timbers season readily and well with little degrade. 25mm boards can be kiln-dried from the green condition. Back-sawn material has a tendency to cup or twist and stacks should be well stickered at 450mm intervals and tops of stacks heavily weighted. Wood should be treated immediately after felling and sawing to prevent pinhole borer attack and blue stain.
- **Pencil cedar** is highly regarded for quality furniture and cabinet work as well as for premium mouldings. Due to the variation in density between species, its mechanical properties can be variable. It has been long recognised as a prime face material for plywood. Ideally suitable for high quality joinery including window and door frames, louvre blades, shutters, interior wall linings, mouldings and turning; and as a domestic flooring material. Also suitable for a number of boat-building applications including masts, spars and interior fit-outs.

### Other names:

Trade Names: **red silkwood, nyatoh**

Local Name: **maliolo**

**Pencil Cedar - *Palaquium* spp.****PROPERTIES**

Density	550-750 kg/m <sup>3</sup> @ 12% m.c
Colour	Pinkish-brown.
Texture	Medium and even; lustrous sheen.
Grain	Straight.
Figure	Cathedral-like figure on back-sawn faces with wide bands of darker colour on quarter-sawn faces.
Durability	Non-durable.
Permeability	Heartwood, non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

**WORKABILITY**

General	Excellent working and finishing properties.
Sawing	Readily sawn with little dulling effect.
Planing	Excellent characteristics; very smooth surface.
Blunting	Moderate, dependent upon species and amount of silica present.
Boring	Excellent characteristics.
Turning	Excellent characteristics producing sharp arrises.
Nailing	Easy to nail.
Gluing	Glues very well with all adhesives.
Finishing	Takes an excellent high polish; lustrous surface.

**MECHANICAL PROPERTIES**

Strength	SD5 - SD6
Structural Grade	F14 - F17 (select grade).
Toughness (Izod)	10J (seasoned), 5J (unseasoned).
Hardness (Janka)	4.0kN (seasoned), 3.2kN (unseasoned).
Max. Crushing Strength	42MPa (seasoned), 27MPa (unseasoned).
Modulus of Elasticity	12GPa (seasoned), 10GPa (unseasoned).
Modulus of Rupture	70MPa (seasoned), 56MPa (unseasoned).

**SEASONING**

General	Seasons readily and well with little degrade.
Movement	Low.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

'T' (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	8		
		40	60	10		
		20 - final	70	20	6 - 8	3 - 4

# Pink Birch

## Pink Birch · *Schizomeria serrata*

### Recommended Uses (Major/specific)



Flooring; light traffic, solid strip and overlay.



Furniture; including custom made, cabinet work, cabinet doors.



Speciality uses; including sliced/decorative veneer, cooperage, coffin boards.



Interior; V.J wall linings (feature), panels, mouldings, doors.

**Pink Birch** is the common name for a number of species which form a medium to large tree throughout the region from Papua New Guinea, Bismarck Archipelago to North Queensland and the Solomon Islands. It occurs in lowland and montane forest. In the Solomon Islands, it is represented by only one species, generally scattered but locally common. Small sawn parcels could be made available by special order.

- A light to medium hardwood with consistent colouring and very attractive figure when cut on the full quarter. It is a highly decorative wood suitable for niche marketing. An attractive and appealing timber for architects, furniture designers and furniture manufacturers.
- The timber is pinkish-brown in colour, lustrous and with a straight grain. Exhibits a fine ribbon or striped figure on quarter-sawn faces and a fine zig-zag tracery on back-sawn material. Excellent machining and finishing properties. Good strength to weight ratio.
- The timber seasons readily; 25mm quarter-sawn boards can be kiln-dried from green with little degrade. Back-sawn material is subject to twist and cupping. 38mm and 50mm stock should undergo preliminary air drying. Material should be quarter-sawn for optimum drying and for aesthetic reasons. Drying stacks should be well stickered (450mm intervals) and tops of stacks heavily weighted. Wood should be treated as soon as possible after felling and milling, to avoid blue stain and pinhole borer attack. Low shrinkage and stable in-service.
- **Pink birch** fits well into specialised markets due to its attractive figure, fine texture and ease of working. Suitable for a range of high quality end-uses including furniture and cabinet work, joinery, sliced decorative veneer, feature panels and cupboard doors. Also suitable for cooperage, coffin boards and for flooring in light traffic conditions.

### Other names:

Local Name: **bea bea**

Pink Birch • *Schizomeria serrata*

## PROPERTIES

Density	550-650 kg/m <sup>3</sup> @ 12% m.c
Colour	Pinkish brown.
Texture	Fine and uniform; lustrous.
Grain	Usually straight.
Figure	Fine, decorative ribbon figure on quarter-sawn faces. Fine tracery pattern on back-sawn faces.
Durability	Non-durable.
Permeability	Heartwood is non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

## WORKABILITY

General	Excellent working and finishing properties.
Sawing	Saws well; some slight furring on face of green material.
Planing	Excellent characteristics; clean, smooth finish.
Blunting	Minimal.
Boring	Good characteristics.
Turning	Very good characteristics; sharp arrises.
Nailing	Nails well, good holding ability.
Gluing	Glues well with all adhesives.
Finishing	Takes stain and polish very well; finishes with a high polish and satin lustre.

## MECHANICAL PROPERTIES

Strength	SD4
Structural Grade	F17 (select grade).
Toughness (Izod)	10J (seasoned), 9.5J (unseasoned).
Hardness (Janka)	5.0kN (seasoned), 4.0kN (unseasoned).
Max. Crushing Strength	55MPa (seasoned), 32MPa (unseasoned).
Modulus of Elasticity	16GPa (seasoned), 14GPa (unseasoned).
Modulus of Rupture	95MPa (seasoned), 65MPa (unseasoned).

## SEASONING

General	Very good drying characteristics.
Movement	Low.
Shrinkage	Low.

## KILN DRYING SCHEDULE

T' (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	60	10	5 - 8	3 - 4
		30	70	20		
		25 - final	65	15		

# Rosewood

## Recommended Uses (Major/specific)



Flooring; strip and parquet, staircase materials.



Exterior joinery; including screening, gazebos, pergolas.



Furniture; high quality furniture and cabinet work.



Boat building; including structural and internal fit-outs.



Speciality; including musical instruments, gun stocks, rifle butts, knife handles, turnery, sliced veneer.

## Rosewood - *Pterocarpus indicus*

**Rosewood** is a major commercial species of the Solomon Islands. Small to medium sized trees are found throughout the lowland forests of the South West Pacific region, it attains large commercial proportions in the Solomon Islands and has been heavily exploited in the past.

- One of the finest furniture and cabinet woods on world markets due to its excellent working and finishing properties as well as its low shrinkage and stability in-service.
- Many trees are of poor form, having fluted, twisted or crooked boles. This affects sawn recovery and selling price. The wood, when left lying in water, turns the water an iridescent blue. The wood can vary in density and hardness. The darker coloured (reddish) woods are much denser and stronger than the paler coloured yellowish-brown woods.
- Produces a beautifully figured wood enhanced by the presence of 'ripple-marks' and its ring-porous wood structure. The timber varies in colour from yellowish-brown to golden-brown through to red-brown or sometimes a blood red colour. The grain is usually interlocked but not severely so; sometimes wavy. Produces a ribbon or banded figure on quarter-sawn faces and a cathedral-like figure on back-sawn faces. It has a pleasant, persistent, fragrant odour.
- The timber seasons readily and well. It is a remarkably stable timber with very low shrinkage and very little movement when in-service.
- Suitable for high quality furniture and cabinet work. Also suitable for flooring, finely turned articles, gun stocks, rifle butts and decorative sliced veneer. It is prized for carving local artefacts and in making ceremonial hand drums. It has good acoustic and tonal qualities, making it suitable for musical instruments.

### Other names:

Local Name: **liki**

**Rosewood** • *Pterocarpus indicus***PROPERTIES**

Density	525-625 kg/m <sup>3</sup> @ 12% m.c
Colour	Golden-brown, yellow-brown, red-brown to blood red.
Texture	Moderately coarse and uneven.
Grain	Usually interlocked; sometimes wavy.
Figure	Highly decorative.
Durability	Highly durable.
Permeability	Resistant to pressure impregnation.
Lyctid susceptibility	Susceptible.

**WORKABILITY**

General	Excellent all round characteristics.
Sawing	Readily sawn.
Planing	Excellent; some care required where grain irregularities occur.
Blunting	Low.
Boring	Excellent characteristics.
Turning	Excellent characteristics.
Nailing	Nails well.
Gluing	Glues well with all adhesives.
Finishing	Excellent; sands to a very fine finish and produces a high polish with golden lustre.

**MECHANICAL PROPERTIES**

Strength	SD4 (denser/redder timbers). SD5 (lighter, pale coloured timbers).
Structural Grade	F22 (denser/redder timbers). F17 (lighter, pale coloured timbers).
Toughness (Izod)	10J (seasoned), 13J (unseasoned).
Hardness (Janka)	4.7kN (seasoned), 4.2kN (unseasoned).
Max. Crushing Strength	58MPa (seasoned), 38MPa (unseasoned).
Modulus of Elasticity	12GPa (seasoned), 10GPa (unseasoned).
Modulus of Rupture	95MPa (seasoned), 74MPa (unseasoned).

**SEASONING**

General	Excellent drying properties. The denser (redder) timbers take longer to dry than the pale-coloured yellowish timbers.
Movement	Very low.
Shrinkage	Very low.

**KILN DRYING SCHEDULE**

'T' (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	8		
		40	60	10		
		30	65	20		
		20 - final	70	20	10	4

# Satinash

## Satinash - *Syzygium* spp.

### Recommended Uses (Major/specific)



Building Construction (F22 - F27).



Flooring & staircase materials.



Exterior joinery; including decking, gazebos, steps, treads, pergolas.



Engineering; including wharves, bridges, heavy decking.



Speciality; including truck bodies, railway sleepers, tool handles.

**Satinash** is a widespread group of species throughout the South West Pacific and is a major component of the lowland rainforests of Irian Jaya, Papua New Guinea and the Solomon Islands. It also occurs in North Queensland, Australia. Medium to large sized trees are fairly common in mountain areas of the Solomon Islands. Within the group there is little variation in their physical and mechanical properties.

- **Satinash** is a much under-utilised timber which, in fact, has good market potential. The perception that it is difficult to process and dry is incorrect. When properly 'finished' and stained, it is a good substitute for **American red oak**. It is an excellent, general purpose timber of good strength and durability, and is ideal for heavy engineering purposes.
- The timber ranges in colour from pale brown to dark brown or pinkish-brown often with a purplish or reddish caste. It is hard but not difficult to saw, has little blunting effect on cutter edges and does not contain silica (SiO<sub>2</sub>). The grain can be straight or interlocked.
- The timber dries slowly but with little difficulty. Quarter sawing is preferable as back-sawn material is prone to cup, twist and surface check. Board ends should be heavily sealed with wax emulsion to alleviate cracking and checking. Drying stacks should be well stickered and tops of stacks heavily weighted. Preliminary air drying to 25% moisture content, prior to kiln drying, is recommended.
- **Satinash** is a strong, tough and durable hardwood. It is an excellent timber for building construction including beams, bearers and joists. It is also suitable for heavy engineering works including, wharf and bridge construction, fenders and heavy decking, and for a number of exterior joinery applications including staircases. Quarter-sawn boards make attractive flooring.

### Other names:

Trade Name: **water gum**

Local Names: **aimela**



Satinash • *Syzygium* spp.

## PROPERTIES

Density	750-900 kg/m <sup>3</sup> @ 12% m.c
Colour	Brown, pale pinkish brown or reddish brown.
Texture	Moderately fine to fine and even; slightly lustrous.
Grain	Straight or interlocked, sometimes wavy.
Figure	Striped or ribbon figure on quarter-sawn face. Sometimes with cathedral-like figure on back-sawn face.
Durability	Durable in exterior situations, except in the ground.
Permeability	Heartwood, resistant to pressure impregnation.
Lyctid susceptibility	Susceptible.

## WORKABILITY

General	Quarter-sawing gives good results. Requires additional power compared to other hardwoods.
Sawing	Saws readily and well.
Planing	Planes well; reduction in cutter angle (20°) where (irregular) interlocked grain present.
Blunting	Medium.
Boring	Requires a lot of power, some burning.
Turning	Not recommended; grain can tear and arrises tend to chip.
Nailing	Pre-drilling is recommended to prevent splitting.
Gluing	Good bonding with most adhesives on seasoned material.
Finishing	Stains and polishes very well; good smooth surface.

## MECHANICAL PROPERTIES

Strength	S03-S04
Structural Grade	F22-F27 (select grade).
Toughness (Izod)	14J (seasoned), 16J (unseasoned).
Hardness (Janka)	7.7kN (seasoned), 4.2kN (unseasoned).
Max. Crushing Strength	68MPa (seasoned), 39MPa (unseasoned).
Modulus of Elasticity	16GPa (seasoned), 12GPa (unseasoned).
Modulus of Rupture	110MPa (seasoned), 66MPa (unseasoned).

## SEASONING

General	All material should be quarter-sawn; wood dries slowly but well; careful stacking and drying will alleviate drying degrade.
Movement	Medium.
Shrinkage	Medium.

## KILN DRYING SCHEDULE

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	45	3		
		40	50	5		
		30	55	5		
		25	60	10		
		20	70	10		
		15 - final	70	20	8 - 10	4 - 5

**Vitex** • *Vitex cofassus***Recommended Uses (Major/specific)**

Building Construction (F27).



Flooring & staircase materials.



Exterior joinery; including posts, poles, decking, gazebos, pergolas.



Furniture; including outdoor garden furniture.



Boat building; including ribs, planking, decking.



Engineering; including wharves, bridges.

**Vitex** is a major commercial species of the Solomon Islands. A medium sized to large tree found throughout the South West Pacific region but of more common occurrence in the North Solomons and the Solomon Islands.

- **Vitex** produces a beautiful olive-grey wood with an attractive banded or striped pattern on quarter-sawn faces. Often referred to as **New Guinea teak**, having similar properties and uses to that of **teak** (*Tectona grandis*), and belonging to the same family of Verbenaceae. Many trees are of relatively poor form, being heavily fluted in the bole, thus minimising sawn recovery. The wood is distinctly greasy to the touch.
- It is held in high esteem throughout the Solomons where it has been used for many years to make the large Kundu-type message drums, due its magnificent acoustics and wearing ability.
- The timber seasons very slowly with little degrade. Quarter-sawing is preferable for drying and a variety of end uses as well as for aesthetic reasons.
- An extremely popular timber, held in high regard for boat-building due to its durability, strength, excellent steam bending and working properties. Suitable for high quality joinery, flooring, decking, window sills, staircase materials and carving.

**Other names:**

Trade Names: **New Guinea teak**

Local Name: **vasa**

Vitex • *Vitex cofassus*

## PROPERTIES

Density	700 – 800kg/m <sup>3</sup> @12% m.c
Colour	Pale yellowish-brown to greyish, olive-brown.
Texture	Fine and even; slightly lustrous.
Grain	Sometimes straight but usually interlocked.
Figure	Distinct striped or ribbon figure on quarter-sawn faces.
Durability	Durable.
Permeability	Heartwood, impermeable to pressure impregnation.
Lyctid susceptibility	Resistant.

## WORKABILITY

General	Good working and finishing properties, where there are no grain irregularities.
Sawing	Readily sawn.
Planing	Good planing characteristics with the grain.
Blunting	Low.
Boring	Excellent characteristics.
Turning	Very good characteristics finishing with sharp arrises.
Nailing	Nails well, pre-drilling advisable to prevent splitting on board ends.
Gluing	Care required due to natural greasiness of wood.
Finishing	Works and sands to a smooth finish; takes an excellent polish.

## MECHANICAL PROPERTIES

Strength	SD3 (seasoned).
Structural Grade	F27 (select grade).
Toughness (Izod)	7.3J (seasoned), 15J (unseasoned).
Hardness (Janka)	5.6kN (seasoned), 5.1kN (unseasoned).
Max. Crushing Strength	64 MPa (seasoned), 42 MPa (unseasoned).
Modulus of Elasticity	14 GPa (seasoned), 12 GPa (unseasoned).
Modulus of Rupture	133 MPa (seasoned), 80 MPa (unseasoned).

## SEASONING

General	Seasons slowly, but well, with little degrade. Preferable to preliminary air dry prior to kiln drying. A high humidity equalizing treatment should be applied at end of drying cycle.
Movement	Medium.
Shrinkage	Medium.

## KILN DRYING SCHEDULE

T <sup>r</sup> (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	5		
		40	60	8		
		30	65	10		
		25	65	15		
		20-Final	70	20	10-12	6-8

# White Beech

## White Beech · *Gmelina moluccana*

### Recommended Uses (Major/specific)



Exterior joinery; including (out-of-ground) poolside decking, screening.



Furniture; including custom made and outdoor/garden, cabinet work.



Speciality uses; including pattern-making, turnery, carving, shives.



Boat building; including canoes, planking, decking, spars.



Window joinery.

**White beech** is a large tree of scattered occurrence throughout Papua New Guinea, Bismarck Archipelago and the Solomon Islands where it can be locally common. It has been regularly exported in the past and small, sawn parcels could be made available.

- A lightweight, pale-coloured, hardwood with very fine texture it has been compared, in appearance, to that of the West African **abura** (*Mitragyna ciliata*). It is highly regarded in the Solomon Islands as a traditional timber for dug-out canoes due to its ease of working, durability and natural water-repellency. It is in the same botanical family (Verbenaceae) as **teak** (*Tectona grandis*).
- The timber is off-white to pale yellowish-brown in colour, with a straight or slightly interlocked grain. It is uniform in colour with little or no distinct figure. The wood is greasy to the touch. It has a sweet aromatic odour when freshly sawn. Works well with both machine and hand tools; machine planes to a smooth surface; finishes well taking a good polish, with little or no filling required.
- The timber dries very slowly with little degrade. The moisture content of green wood varies greatly, and when drying quarter-sawn material the final moisture content must be carefully checked. The timber has low shrinkage and is very stable when dried and in service. Wood must be treated after felling and sawing to prevent blue stain.
- The timber has appeal where a neutral, pale-coloured wood is required. It is much sought after for boat-building including planking and decking and also for outdoor garden furniture. An excellent lightweight wood for joinery purposes including door and window frames, internal V.J linings, furniture and cabinet work. Also suitable for pattern making, turnery, carving and shives for casks. Good strength to weight ratio.

### Other names:

Local Names: canoe wood, arokoro

White Beech · *Gmelina moluccana*

## PROPERTIES

Density	500 kg/m <sup>3</sup> @ 12% m.c
Colour	Pale brown to honey brown.
Texture	Moderately fine and even, slightly lustrous.
Grain	Straight or slightly interlocked.
Figure	Not distinct.
Durability	Moderately durable, out of ground.
Permeability	Heartwood is non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

## WORKABILITY

General	Relatively easy to work with both machine and hand tools.
Sawing	Saws well.
Planing	Good characteristics, produces smooth surface.
Blunting	Low.
Boring	Good characteristics, some slight furring.
Turning	Good characteristics but arrives a little soft.
Nailing	Nails well.
Gluing	Care required due to greasiness of wood.
Finishing	Sands to a fine finish and takes a good high polish.

## MECHANICAL PROPERTIES

Strength	SD6
Structural Grade	F14 (select grade).
Toughness (Izod)	6.3J (seasoned), 8.7J (unseasoned).
Hardness (Janka)	2.0kN (seasoned), 2.1kN (unseasoned).
Max. Crushing Strength	36MPa (seasoned), 26MPa (unseasoned).
Modulus of Elasticity	8.8GPa (seasoned), 8.7GPa (unseasoned).
Modulus of Rupture	61MPa (seasoned), 47MPa (unseasoned).

## SEASONING

General	Dries very slowly with little degrade.
Movement	Low.
Shrinkage	Low.

## KILN DRYING SCHEDULE

'T' (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	55	8		
		40	60	10		
		30	70	20		
		20 - Final	80	25	10 - 12	5 - 6

Part 2

# Plantation Timbers



Kamarere  
(*Eucalyptus deglupta*)

# Balsawood

## Balsawood • *Ochroma lagopus*

### Recommended Uses (Major/specific)



Boat building; including hull (ship) lining, bulkhead linings and insulation.



Speciality uses; including model making, life rafts, life belts, aircraft construction, surgical splints.

**Balsawood** is native to tropical America. The main source of supply has been from Ecuador. Due to its fast growth in plantation conditions, it has been introduced recently into the Solomon Islands.

- **Balsawood**, although the lightest and softest of all commercial timbers, is, in scientific (taxonomic) terms, a hardwood. It has a very good strength to weight ratio and has been a popular timber for many years for model-making and also for life rafts due to its high buoyancy.
- The tree has excellent growth characteristics and recent research and silvicultural techniques, undertaken on plantation stock, has developed a high quality merchantable bole that is straighter and taller than native forest stock. It grows so fast it reaches maturity between 5-7 years of age. The trees have to be harvested when mature so as to avoid the onset of a pink, over-mature heart, which detracts from wood quality in both density and colour.
- The timber dries readily. Treatment is required, at point of felling and immediately after sawing, to prevent blue stain. Rapid conversion also prevents the risk of serious and extensive splitting due to growth stresses. It should be kiln dried as soon as possible after sawing to avoid degrade.
- **Balsawood**, due to its lightness and versatility is suitable for a wide range of end uses where a lightweight, soft and pale-coloured timber is required. The preferred density range for commercial use is from 125-175kg/m<sup>3</sup> (seasoned). It is used extensively for model-making including model boats and ships, model aeroplanes, gliders and building models. Due to its buoyancy, it is used for surfboards, life rafts and life belts. The end-grain wood is used as a core material in a sandwich construction for the lining of steel hulls on large vessels and tankers. It is also used as an insulation material in cold stores and drying kilns, in aircraft construction, for surgical splints and as a lightweight packaging material for fragile goods.

### Other names:

Local Name: **balsa**

**Balsawood** - *Ochroma lagopus***PROPERTIES**

Density	120-240 kg/m <sup>3</sup> @ 12% m.c
Colour	White to oatmeal.
Texture	Moderately coarse but even.
Grain	Straight.
Figure	None.
Durability	Non-durable/Perishable.
Permeability	Heartwood, permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

**WORKABILITY**

General	Care required due to softness of timber.
Sawing	Fine/thin gauge saws required.
Planing	Cutting edges need to be very sharp to prevent crumbling of wood tissue.
Blunting	Slight.
Boring	Satisfactory but soft.
Turning	Not suitable.
Nailing	Too soft, no 'holding' ability.
Gluing	Excellent.
Finishing	Satisfactory, but wood is very absorbent.

**MECHANICAL PROPERTIES**

Strength	SD8
Structural Grade	-
Toughness (Izod)	-
Hardness (Janka)	0.4J (seasoned).
Max. Crushing Strength	12MPa (seasoned).
Modulus of Elasticity	3.8GPa (seasoned).
Modulus of Rupture	19MPa (seasoned).

**SEASONING**

General	Kiln dries readily.
Movement	Low.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25-30	M	Green	70	10		
			60	15		
			40	20		
		30 - final	80	25	2 - 3	



# Kamarere

## Recommended Uses (Major/specific)



Building Construction (F8); light framing.



Flooring; light traffic.



Furniture; low cost production-line.



Interior; including mouldings and architraves.

## Kamarere • *Eucalyptus deglupta*

**Kamarere** is a very large tree indigenous to Papua New Guinea, Sulawesi (Indonesia) and the Southern Philippines. In plantations it grows very fast and has been introduced into a number of countries including the Solomon Islands. The standing tree is somewhat similar, in appearance, to that of the Australian **karri** (*Eucalyptus diversicolor*), both having multi-coloured bark.

- The wood from natural forests is darker in colour, denser and stronger than that from plantations. However, the plantation timber is more uniform and consistent in colour with little variation in its physical and mechanical properties. Plantation trees can reach very large dimensions.
- The wood is a pale pinkish-brown in colour with a medium to coarse but even texture. Grain is usually interlocked exhibiting a ribbon or striped effect on quarter-sawn faces. Immature stems may have tension wood, giving rise to a woolly surface when sawing. Mature stems produce a cleaner face.
- The timber dries well providing correct drying procedures are followed. It should be quarter-sawn to alleviate warp when drying. Preliminary air-drying is recommended to 25% moisture content, prior to kiln drying. Timber stacks should be well stickered at 450-600mm intervals (depending on thickness) and tops of stacks well weighted to alleviate cupping and/or twisting. Ends of boards should be sealed with a wax-emulsion sealant to prevent splitting. Shrinkage is medium to high.
- Fully seasoned mature wood, when cut on the quarter, produces an attractive and good quality flooring for domestic use. It closely resembles the Australian **rose gum** (*Eucalyptus grandis*). Quality dried boards are also suitable for furniture, interior joinery and architraves. It is an ideal substitute for **light red meranti** (*Shorea* spp.). Sulphate-pulp tests on plantation grown material from Papua New Guinea were very promising showing good yields and strength properties.

### Other names:

**deglupta**  
**bagras (Philippines)**  
**leda (Indonesia)**

**Kamarere • *Eucalyptus deglupta*****PROPERTIES**

Density	400-450 kg/m <sup>3</sup> @ 12% m.c
Colour	Pale pinkish-brown.
Texture	Coarse but even.
Grain	Interlocked.
Figure	Ribbon or striped figure on quarter-sawn faces due to interlocked grain.
Durability	Non-durable.
Permeability	Heartwood, non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood may be susceptible.

**WORKABILITY**

General	Satisfactory working and finishing properties.
Sawing	Saws readily and well.
Planing	Mature wood planes satisfactorily. A reduction in the cutter angle (25°) may be required to alleviate chipping or tearing of grain.
Blunting	Minimal.
Boring	Satisfactory; exit hole fibrous/stringy.
Turning	Relatively poor; fibrous.
Nailing	Easy to nail.
Gluing	Good gluing properties.
Finishing	Can be stained and polished satisfactorily.

**MECHANICAL PROPERTIES**

Strength	SD7
Structural Grade	F11 (select grade).
Toughness (Izod)	19J (seasoned), 18J (unseasoned).
Hardness (Janka)	5kN (seasoned), 4.4kN (unseasoned).
Max. Crushing Strength	70MPa (seasoned), 48MPa (unseasoned).
Modulus of Elasticity	14GPa (seasoned), 12GPa (unseasoned).
Modulus of Rupture	105MPa (seasoned), 71MPa (unseasoned).

**SEASONING**

General	Seasons satisfactorily, providing attention is paid to correct drying procedures.
Movement	Low to medium.
Shrinkage	Medium to high.

**KILN DRYING SCHEDULE**

"T" (mm)	"S.P"	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	45	8		
		40	50	10		
		30	60	15		
		20 - final	70	20	6 - 7	2 - 3

# Mahogany

## Recommended Uses (Major/specific)



Flooring; including light traffic, strip and parquet, staircase materials (decorative).



Furniture; including custom made, cabinet work.



Speciality; including decorative turnery, bowls, sliced veneer.



Interior; including V.J feature wall linings, decorative mouldings.

## Mahogany • *Swietenia macrophylla*

**Mahogany** is a medium-sized hardwood, native to Central America including the West Indies, Cuba and the adjacent mainland from Mexico to Brazil. Due to its excellent growth, it is now being planted in other tropical areas including the Solomon Islands.

- Naturally-grown **mahogany** is one of the world's classic furniture timbers. It is also a good plantation species, exhibiting excellent growth and form. It has good market potential as plantation material comes to maturity.
- The timber is highly decorative and can be placed in two colour categories of red-brown and yellow/orange brown. The timbers darken in colour on exposure to light. A distinct cathedral-like pattern can be observed on back-sawn material; a broad, banded or ribbon figure is evident on quarter-sawn faces due to interlocked grain. The timber also produces flared streaks due to changing grain patterns. Small, tight pin-knots are sometimes visible, which adds to the timber's decorative appeal.
- The timber dries readily with little degrade. It can be kiln-dried from the green condition (in 25mm boards) but thicker stock should undergo preliminary air-drying to 25-30% m.c. Quarter-sawn material is slower to dry than back-sawn. Care is required when determining moisture content of mixed sawn stock. The timber has a low shrinkage rate and is stable in-service.
- **Mahogany** is easy to work with both machine and hand tools. Cutter edges need to be kept well sharpened and cutter angles adjusted to ensure a high quality, smooth finish, since bands of woolliness can arise, when machining material from immature stems, due to the presence of tension wood.

### Other names:

Trade Names: **Honduras mahogany, Cuban mahogany, Spanish mahogany, Fiji mahogany, American mahogany**

**Mahogany** • *Swietenia macrophylla***PROPERTIES**

Density	550-700 kg/m <sup>3</sup> @ 12% m.c
Colour	Pale yellowish, orange-brown or pinkish/reddish-brown.
Texture	Fine to medium, uneven. Highly lustrous.
Grain	Interlocked, sometimes wavy.
Figure	Highly decorative; cathedral-like figure on back-sawn faces. Banded or flared effect on quarter-sawn faces.
Durability	Non-durable.
Permeability	Heartwood non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

**WORKABILITY**

General	With care, works very well with both hand and machine tools.
Sawing	Saws well; furriness or stiff bristle effect evident on sawn material where tension wood is present.
Planing	Good characteristics, cutter angles may need adjustment (20°) to ensure smooth finish.
Blunting	Low.
Boring	Good characteristics on wood from mature stems.
Turning	Good characteristics on wood from mature stems.
Naiting	Nails well.
Gluing	Glues well with all adhesives.
Finishing	Very good characteristics. Takes a high polish with very high lustre.

**MECHANICAL PROPERTIES**

Strength	SD6 - SD7
Structural Grade	F11 (select grade).
Toughness (Izod)	10J (seasoned), 8J (unseasoned).
Hardness (Janka)	3.6kN (seasoned), 3kN (unseasoned).
Max. Crushing Strength	45MPa (seasoned), 30MPa (unseasoned).
Modulus of Elasticity	9.3GPa (seasoned), 8.7GPa (unseasoned).
Modulus of Rupture	90MPa (seasoned), 69MPa (unseasoned).

**SEASONING**

General	Seasons readily and well with little degrade.
Movement	Low.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

T (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	60	10		
		35	60	15		
		30	60	20		
		20 - final	70	20	4 - 6	3 - 4

# Mangium

## Recommended Uses (Major/specific)



Building construction (F17).



Flooring and staircase materials.



Furniture: including production line, cabinet work.



Speciality uses: including sliced veneer, pulpwood and paper manufacture, tannins and tanning.



Interior: including joinery, door frames, architraves.

## Mangium • *Acacia mangium*

**Mangium** is a medium to large tree, native to Australia (North Queensland), Indonesia (Irian Jaya and small adjacent islands) and Papua New Guinea (Western Province). Due to its robust growing characteristics and adaptability it makes an excellent plantation species. It has been introduced into plantations throughout the region, including the Solomon Islands.

- **Mangium** belongs to the 'wattle' group of species which produces a number of sought-after woods for furniture and cabinet work including the well known **blackwood** (*Acacia melanoxylon*) of Tasmania. The timbers have excellent pulping properties (sulphate process), giving good pulp yields and bleached brightness levels. The 'wattles' are also well known for producing tannins from the wood and the bark, and are of commercial importance in tanning leather.
- **Mangium** is relatively uniform in colour from a pale olive brown to mid-brown with dark coloured bands on quarter-sawn faces. Timber is readily sawn with little or no blunting effect. Mature wood, when fully seasoned, works well with both machine and hand tools. Machine planes and moulds well producing a smooth surface and sharp arrises. Sands to a fine finish and takes a high polish, finishing with a golden lustre typical of the 'wattles'.
- The mature wood can be air-dried with satisfactory results. Quarter-sawn material is preferable to back-sawn, as the latter has a tendency to cup and twist. Stickers should be spaced at 450mm intervals along the boards and tops of stacks heavily weighted. Ends of boards should be brush-coated with wax-emulsion to alleviate end-splitting.
- **Mangium** is a versatile timber with a variety of end uses. Suitable for general building construction, furniture and cabinet work, mouldings, interior joinery including door and window frames, flooring, sliced/decorative veneer, pulp and paper manufacture. Also, as a source of tannin for tanning leather and for making composite wood products.

**Other names:** brown salwood, black wattle

For further information: [www.solomontimbers.com.sb](http://www.solomontimbers.com.sb)

**Mangium** · *Acacia mangium***PROPERTIES**

Density	450-600 kg/m <sup>3</sup> @ 12% m.c.
Colour	Pale brown to mid-brown.
Texture	Fine to medium and even; lustrous.
Grain	Usually straight.
Figure	Dark coloured bands on quarter-sawn face.
Durability	Moderately durable in protected situations.
Permeability	Heartwood, non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

**WORKABILITY**

General	Good working and finishing properties.
Sawing	Readily sawn; little blunting effect.
Planing	Good characteristics; smooth finish.
Blunting	Low.
Boring	Good characteristics.
Turning	Good characteristics; sharp arrises.
Nailing	Nails very well.
Gluing	Glues well with most adhesives.
Finishing	Takes an excellent high polish; golden lustre.

**MECHANICAL PROPERTIES**

Strength	SD5 - SD6.
Structural Grade	F14 - F17 (select grade).
Toughness (Izod)	14J (seasoned), 11J (unseasoned).
Hardness (Janka)	4kN (seasoned), 3.2kN (unseasoned).
Max. Crushing Strength	52MPa (seasoned), 30MPa (unseasoned).
Modulus of Elasticity	12GPa (seasoned), 11GPa (unseasoned).
Modulus of Rupture	88MPa (seasoned), 60MPa (unseasoned).

**SEASONING**

General	Air-dries and kiln-dries well.
Movement	Low.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

"T" (mm)	"S.P"	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	50	4		
		60	50	5		
		40	55	8		
		30	60	10		
		25	65	15		
		20 - final	70	20	8 - 10	4 - 6

# Teak

## Teak • *Tectona grandis*

### Recommended Uses (Major/specific)



Flooring; including strip and parquet.



Exterior joinery; including garden furniture.



Furniture; including custom-made and production line.



Boat building; including decking, wheelhouse structure and interior fit-out.



Speciality uses; including sliced veneer and carving.

**Teak** is a medium-sized to large hardwood, native to India, Thailand, Myanmar and Laos. It has been planted in a number of countries including the Solomon Islands due to its excellent growth and its value as a **high quality, durable** hardwood.

- **Teak** is one of the world's finest hardwoods. It has been used over the centuries for many purposes. It is a classic furniture, cabinet and joinery wood and is highly regarded due to its ability to consistently produce a high quality product. Long regarded as a prime boat-building timber, including decking and in external and internal fit-outs.
- The timber is consistent in colour; dark brown to golden-brown with fine, dark, pencil-like lines appearing occasionally on board faces. Material is of a paler brown colour when freshly sawn but darkens appreciably on exposure to light. Because it is ring porous, the texture is moderately coarse and uneven.
- Plantation material is of good quality especially in more mature stems. Its physical and mechanical properties compare favourably with natural forest wood from Thailand and Myanmar. Dependant on pruning and stage of growth, small tight knots may be observed at around 900mm intervals.
- The timber seasons slowly with little degrade. There may, however, be variations in the drying rate between individual boards. A mild schedule is recommended as collapse may occur if kiln temperatures are too high. The timber is stable in-service.
- The timber works well with machine and hand tools. Silica (SiO<sub>2</sub>) in the timber, however, blunts cutting edges, which must be frequently sharpened. The wood is greasy to the touch and has a characteristic 'leathery' odour. The dry sanding dust can irritate the mucous membranes and may also cause dermatitis in some persons. Workshop staff should wear face masks or respirators.

### Other names:

Trade Name: **Burmese teak**

**Teak** • *Tectona grandis***PROPERTIES**

Density	550-650 kg/m <sup>3</sup> @ 12% m.c
Colour	Golden-brown, darkening on exposure.
Texture	Moderately coarse and uneven.
Grain	Usually straight.
Figure	Cathedral-like figure on back-sawn faces.
Durability	Durable.
Permeability	Impermeable.
Lyctid susceptibility	Susceptible.

**WORKABILITY**

General	Excellent working and finishing properties; cutter edges must be kept well sharpened due to presence of silica (SiO <sub>2</sub> ).
Sawing	Saws well but with blunting effect.
Planing	Planes very well but with blunting effect; cutter angle of 20° recommended.
Blunting	Medium to high.
Boring	Good characteristics; clean exit hole.
Turning	Good characteristics producing sharp arrises; smooth (oily) finish.
Nailing	Nails well; good 'holding' ability.
Gluing	Care required due to greasy nature of wood.
Finishing	Takes an excellent high polish; satin lustre.

**MECHANICAL PROPERTIES**

Strength	SD5 (seasoned).
Structural Grade	F17 (select grade).
Toughness (Izod)	14J (seasoned), 8J (unseasoned).
Hardness (Janka)	4.6kN (seasoned), 4.8kN (unseasoned).
Max. Crushing Strength	49MPa (seasoned), 38MPa (unseasoned).
Modulus of Elasticity	11GPa (seasoned), 10GPa (unseasoned).
Modulus of Rupture	88MPa (seasoned), 76MPa (unseasoned).

**SEASONING**

General	Dries slowly with little degrade.
Movement	Low.
Shrinkage	Low.

**KILN DRYING SCHEDULE**

'T' (mm)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	M	Green	50	3		
		60	50	4		
		35	55	5		
		30	60	8		
		25	65	10		
		20	70	15		
		15 - final	70	20	12 - 14	6 - 8



# White teak

## White teak • *Gmelina arborea*

### Recommended Uses (Major/specific)



Flooring; light traffic, solid strip and overlay.



Furniture; including cabinet work, cabinet doors, custom made pieces.



Speciality uses:  
Musical instruments (including guitar bellies), sliced, decorative veneer, shop, office and bank fit-outs.



Interior; VJ wall linings (feature), panels.



Window joinery.

**White teak** is a small to medium-sized hardwood. It is native to India and Burma, but is now being planted in many tropical areas due to its good form and growth. It has become one of the major timber species planted in the Solomon Islands.

- Considered to have excellent market potential due to its decorative figure and pale silvery-coloured wood. It is in the same botanical family as **teak** (*Tectona grandis*).
- Some trees produce an unusual wavy/watered silk figure which is extremely attractive, likening it to that of the popular decorative timber **anegré** (*Aningeria spp.*) of Africa. This attribute makes white teak attractive for shop and office fit-outs.
- The timber works well with both machine and hand tools. A reduction in the cutter angle to 25° so as to overcome any finishing problems associated with interlocked grain will ensure a clean, smooth surface when planing and moulding quarter-sawn material.
- The timber dries very slowly but well. Recommended that all material be quarter-sawn for drying as well as for aesthetic reasons. Back-sawn material is subject to warp including cupping.
- A high quality, decorative wood especially for interior work, panelling, sliced veneer, light duty flooring and window joinery. The wood is greasy to the touch.

### Other names:

Trade Name: **silver beech**

Local Name: **white beech**

White Teak • *Gmelina arborea*

## PROPERTIES

Density	500-550kg/m <sup>3</sup> @12% m.c
Colour	Off white to pale straw-brown.
Texture	Medium and even; lustrous.
Grain	Interlocked.
Figure	Decorative; fine banded or ribbon figure on quarter-sawn faces.
Durability	Moderately durable.
Permeability	Heartwood, non-permeable to pressure impregnation.
Lyctid susceptibility	Sapwood is susceptible.

## WORKABILITY

General	Good working properties; care required to get high class finish.
Sawing	Readily sawn.
Planing	Attention to cutter angles to get smooth finish due to interlocked grain. Reduction of 20°-25° recommended.
Blunting	Low to moderate.
Boring	Good characteristics.
Turning	Satisfactory; slightly furry.
Nailing	Nails easily and well.
Gluing	Care required due to natural greasiness of wood.
Finishing	With care, works and sands to a smooth finish. Takes an excellent polish finishing with a silvery sheen.

## MECHANICAL PROPERTIES

Strength	SD6 (seasoned).
Structural Grade	F14 (select grade).
Toughness (Izod)	6J (seasoned), 7.5J (unseasoned).
Hardness (Janka)	2.5kN (seasoned), 2.5kN (unseasoned).
Max. Crushing Strength	36 MPa (seasoned), 25 MPa (unseasoned).
Modulus of Elasticity	10 GPa (seasoned), 8 GPa (unseasoned).
Modulus of Rupture	62 MPa (seasoned), 48 MPa (unseasoned).

## SEASONING

General	Seasons very slowly, but well, with little degrade.
Movement	Low.
Shrinkage	Low.

## KILN DRYING SCHEDULE

T (MM)	'S.P'	M.C CHANGE POINTS	DBT (°C)	WBD (°C)	K.D TIME TO 12%	
					FROM GREEN (days)	FROM 25% (days)
25	Q	Green	55	5		
		60	55	8		
		40	60	10		
		35	60	15		
		30	65	20		
		25	65	20		
		20-final	70	20	12 - 14	6 - 8

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