Timber Advisory Notes

Department of Conservation and Land Management

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IMPORTED TIMBER

Species: *Dipterocarpus* spp.

Standard Trade Name: Keruing (combined group).

Common Names: Apitong, eng, gurjun, yang and bagac.

1. Size of tree / type of forest: Keruing species are large hardwoods of south-east Asia, the Philippines and the Indian sub-continent.

2. Wood description: Heartwood colour varies considerably because of the large number of species included in this combined group, but it is generally pale to dark reddish brown. The sapwood is 30 mm to 100 mm wide and is usually grey, yellowish or pale brown and not always clearly distinguishable from the heartwood. Texture is moderately coarse but even and the grain is usually straight but may be slightly interlocked, resulting in some striped figure on the radial surface. The resin content can be high and the wood has a strong resinous odour.

3. Wood density:

Green density (kg/m^3): About 950 kg/m^3
Air-dry density (kg/m^3): About 750 kg/m^3 .
Basic density (kg/m^3): Unavailable
(Because of diversity of species the density values can vary considerably).

4. Drying and shrinkage:

	Tangential Shrinkage (%)	Radial Shrinkage (%)
Before reconditioning:	7.0	3.5
After reconditioning:	Unavailable	Unavailable

5. Workability: Careful drying is needed to avoid checks and end splits. The timber can be difficult to work when dry because of the presence of both silica and resin. Nails satisfactorily but glues variably. Its high resin content makes it a poor base for coatings. Sanding dust can irritate the skin.

6. Durability Class: 3

7. Strength Groups: S3 and SD3.

8. Strength Properties:

(Sabah timber)

Property	Units	Green	Dry
Modulus of Rupture	**MPa**	82	137
Modulus of Elasticity	**MPa**	12000	14000
Max Crushing Strength	**MPa**	39	72
Hardness	**kN**	4.7	5.7

9. Uses: General construction, flooring (especially industrial flooring), preservative-treated poles, piles, sleepers and crossarms.

10. Availability: Limited availability, not normally stocked in Western Australia.

BACKGROUND INFORMATION

1. **Size of tree and type of forest**

   Small trees have average heights up to 15 m, medium 15 to 30 m, and large over 30 m. Types of forest are sclerophyll (with closed canopy), woodland (with scattered trees), or rain forest. Diameter breast height is stem diameter at 1.3 m above ground.

2. **Wood description**

   For example, sapwood and heartwood colour, grain, figure

3. **Wood density (kg/m^3)**

   Green density is the density of wood in the living tree, defined as green mass divided by green volume, and useful for estimating transport costs. It varies with season and growing conditions.
   Air-dry density is the average mass divided by volume at 12 per cent moisture content (this is the average environmental condition in the coastal capital cities around Australia).
   Basic density is oven-dry mass divided by green volume. This measure has the advantage that moisture content variations are avoided.

4. **Drying and shrinkage**

   As wood dries, it shrinks more in the tangential direction (i.e. parallel to the growth rings) than it does in the radial direction (i.e. at right angles to the growth rings). The figures given are shrinkage from green to 12 per cent moisture content, before and after steam reconditioning treatment. Reconditioning recovers any cells that may have collapsed during drying, and is essential for species such as the ash-type eucalypts.

5. **Workability**

   Comments are made on the comparative ease or difficulty of turning, nailing and bending, on susceptibility to splitting and other working properties.

6. **Durability**

   The CSIRO Durability Classes are based on the performance in ground of outer heartwood when exposed to fungal and termite attack. Class 1 gives more than 25 years life, Class 2 gives 15 to 25 years, Class 3 gives 8 to 15 years, and Class 4 less than eight years. The ratings are not relevant to above-ground use. In late 1996, CSIRO published revised ratings, which include termite susceptibility.

7. **Strength grouping**

   In grading of structural timber, each species is allocated a ranking for green timber of S1 (strongest) to S7, and for seasoned timber SD1 (strongest) to SD8.

Minimum values for strength groups for green timber (units are MPa)

Strength 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

Minimum values for strength groups for seasoned timber (units are MPa)

Strength 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

8. **Strength Properties**

   Values are from Bootle, K.R. (1983). 'Wood in Australia. Types, properties and uses'. (McGraw-Hill)

9. **Uses**

   Various past and potential uses are given, but the list is obviously not conclusive.

10. **Availability**

    Timber from many species is available only near the areas that the trees grow naturally or in plantations. Imported timbers and their current availability are identified.