Timber Advisory Notes

Department of Conservation and Land Management

CALM Timber Technology Weir Road Harvey WA 6220 (097) 29 1913 50 Hayman Road Como 6152 (09) 334 0333

IMPORTED TIMBER

30

Species: *Tieghemella heckelii* Pierre

Standard Trade Name: Makore

Common Names: Makore

1. Size of tree / type of forest: A large hardwood of West Africa.

2. Wood description: Heartwood is pink to blood red or reddish brown, sometimes even with a slight purplish tinge. Sapwood usually distinctively paler. Texture is fine to medium and even and similar to Nyotah. Grain variable, sometimes giving a mottled figure to the radial surface. The pattern is similar to Nyotah, quite often straight with some wavy grain. Many logs are heavily figured.

3. Wood density:

Green density (kg/m^3):	N/A
Air-dry density (kg/m^3):	About 610 kg/m^3
Basic density (kg/m^3):	N/A

4. Drying and shrinkage:

	Tangential Shrinkage (%)	Radial Shrinkage (%)
Before reconditioning:	3.0	2.5
After reconditioning:	N/A	N/A

5. Workability: Machining can be hard because of the presence of silica, with cutters and saws needing frequent resharpening. Pre-drilling may be needed when nailing near the ends. Sanding dust likely to be irritating to nose and throat. Glues satisfactorily. Not very suitable for steam bending. Wet timber in contact with iron will develop a blackish stain.

6. Durability Class: 2. Sapwood is susceptible to *Lyctus* borer attack.

7. Strength Groups: S5 and SD6.

8. Strength Properties:

Property	Units	Green	Dry
Modulus of Rupture	**MPa**	75	101
Modulus of Elasticity	**MPa**	8200	10000
Max Crushing Strength	**MPa**	37	53
Hardness	**kN**	4.1	4.9

9. Uses: Furniture, cabinets, turning, joinery, decorative veneer, and boatbuilding.

10. Availability: Limited availability 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.