Timber Advisory Notes

Department of Conservation and Land Management

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

Species: *Eucalyptus globulus* Labill ssp. *globulus*

Standard Trade Name: Southern blue gum.

Common Names: Tasmanian blue gum, blue gum, Western blue gum (W.A. plantation grown).

1. **Size of tree / type of forest:** Tasmanian blue gum varies from a medium-sized woodland tree 15-20 m in height with branches retained to below one-third of total height, to an impressive forest tree of excellent form, to 70 m in height and 2 m diameter. On very harsh, exposed sites such as Flinders and King Islands it may be reduced to a mallee-like shrub. Occurs naturally in south-east Tasmania, the Bass Strait Islands and south-east Victoria. Its low level of frost tolerance restricts distribution to low altitudes and near coastal locations. Extensive plantations have been established in the south-west of Western Australia on ex-pastured land.

2. **Wood description:** Heartwood is a light yellowish brown, sometimes with a pinkish tinge. Sapwood is paler, not always distinguishable from heartwood, and up to 50 mm wide. Texture is medium and grain often interlocked. Growth rings distinct, particularly on end grain.

3. **Wood density:**

Green density (kg/m^3):	Between 1100 - 1200 kg/m^3 .
	About 1040 kg/m^3 (WA data for 13-year-old)
Air-dry density (kg/m^3):	About 900 kg/m^3 (mature).
	About 740 kg/m^3 (WA data for 13-year-old).
Basic density (kg/m^3):	About 680 kg/m^3 (mature).
	About 540 kg/m^3 (WA data for 13-year-old).

4. **Drying and shrinkage:**

		Tangential Shrinkage (%)	Radial Shrinkage (%)
(Mature)	Before reconditioning:	7.7	6.1
	After reconditioning:	7.2	5.3
(17-23-year-old)	Before reconditioning:	14.4	6.9
	After reconditioning:	9.4	4.6

5. **Workability:** Needs care in drying to minimise checking of the tangential surface. Quartersawing (at right angles to the growth rings) is recommended because of surface checking. Considerable collapse can occur, but this can be recovered by steam reconditioning.

6. **Durability Class:** 3 Decay 4 Decay + termites (CSIRO revised ratings 1996).

7. **Strength Groups:** S3 and SD2.

8. **Strength Properties:**

Property	Units	Green	Dry
Modulus of Rupture	**MPa**	78	146
Modulus of Elasticity	**MPa**	11000	20000
Max Crushing Strength	**MPa**	40	83
Hardness	**kN**	7.3	12

9. **Uses:** General construction, pulp and paper, rayon, flooring and furniture timber. If preservative-treated it can be used for posts, poles, sleepers and fence posts.

10. **Availability:** Slowly increasing availability from plantations 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.