Timber Advisory Notes

Department of Conservation and Land Management

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Species: *Eucalyptus muelleriana* Howitt

Standard Trade Name: Yellow stringybark.

1. Size of tree / type of forest: Yellow stringybark is commonly a tall tree 25-40 m in height and up to 1 m diameter (dbh). On favourable sites, it may attain 50 m in height and exceed 3 m dbh. This species occurs on coastal plains and adjacent ranges in southeastern Australia from near Wollongong, New South Wales, in the north to Wilson's Promontory in Victoria. Yellow stringybark typically occurs in tall open-forest formation. Trial plantings have been established in south-west Western Australia for power poles.

2. Wood description: Heartwood is a light yellowish brown with a pinkest tinge. Sapwood is very pale brown, to 2.5 cm thick. Texture is medium and even and the grain interlocked.

3. Wood density:

Green density (kg/m^3):	About 1100 kg/m^3 .
Air-dry density (kg/m^3):	About 870 kg/m^3.
Basic density (kg/m^3):	About 695 kg/m^3.

4. Drying and shrinkage:

	Tangential Shrinkage (%)	Radial Shrinkage (%)
Before reconditioning:	7.5	4.3
After reconditioning:	5.5	3.2

5. Workability: Needs care in drying to minimise checking and splitting. Hard and heavy timber to work.

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

7. Strength Groups: S3 and SD3.

8. Strength Properties:

Property	Units	Green	Dry
Modulus of Rupture	**MPa**	90	132
Modulus of Elasticity	**MPa**	14000	17000
Max Crushing Strength	**MPa**	44	72
Hardness	**kN**	6.3	8.5

9. Uses: General construction, wharves, flooring, posts, poles, bridge timber, sleepers and cross arms.

10. Availability: Common on the south coast of New South Wales. Not readily available 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.