

# Deck Master® Decking Materials Advisory

This document has been prepared to assist deck builders to source suitable quality materials eg as background information or as a reference when talking to a Decking Materials Supplier. More complete information in relation to construction and finishing can be found in the *Deck Master® Construction Standard* and *Deck Master® Construction Standard Explanatory Notes* and the Information Pages of the *Deck Master®* website. Numbers in brackets refer to the *Explanatory Notes*.

## Notes and comments

➤ **Design** - For design purposes, structural timber should be minimum F14 hardwood [1] or F7 seasoned softwood (depending on preference and suitability for conditions). Long and large sections are becoming increasingly difficult to obtain so we would suggest that you consult with your local timber supplier for ready availability of timber size and length before commencing design and set your post spacings (and resultant bearer and joist spans) consistent with availability and economy.

➤ **Structural timbers** for the subframe of weather exposed decks should be:

- **highly durable** - durability Class 1 hardwoods to AS 5604 – 2003, for each of the in-service conditions - above ground and in-ground [2] with sapwood treated to the appropriate hazard level
- **of low shrinkage (if unseasoned) or seasoned** - if unseasoned, less than 8% tangential shrinkage and
- **treated to the appropriate hazard level** if section contains sapwood

**Suitable structural timbers in hardwood include** (please refer to the essential notes below):

- **For above ground<sup>1</sup> (in conditions which are not extreme):** Spotted Gum and Blackbutt<sup>2</sup>
- **For above & in-ground<sup>3</sup>:** Iron Bark, Forest Red Gum<sup>4</sup>, Grey Gum<sup>5</sup>, Grey Box (Gum-topped Box), White Mahogany, Tallowwood and Gympie Messmate.

These are “standard trade names<sup>6</sup>”. Species with similar or local names shall not be substituted for those listed above without reference to the designer and written confirmation by the builder of suitability for the application, particularly in relation to durability rating and shrinkage.

The list of suitable structural timbers in hardwood, is not exhaustive. Contact your local timber supplier for information on suitable timbers (high durability, low shrinkage and appropriate treatment) available in your area.

In some areas, hardwood structural timber may only be readily available in lower stress grades and lower durability. Durability class 2 (*outside above ground classification*) timber *may* be suitable for use in above ground conditions provided that it is: of low shrinkage or seasoned; well ventilated; not used in conditions of regular rainfall, high humidity or termite activity and used in combination with other good building practices, particularly the sealing of cut ends and sealing of the tops of joists with a waterproof membrane to shed water away from the joist. For structural timber of durability class 2, these requirements would be necessary to satisfy the performance requirements of the BCA.

1 These species are classified in AS 5604 - 2003 as durability 1 outside above ground and durability 2 in ground contact.

2 **Blackbutt** (*Eucalyptus Pilularis*) is not to be confused, or substituted, with New England Blackbutt (*Eucalyptus Andrewsii*) which is a lower durability and higher shrinkage timber. Blackbutt is best used under cover.

3 These species are classified in AS 5604 - 2003 as durability 1 outside above ground and durability 1 in ground contact.

4 **Forest Red Gum** (*Eucalyptus tereticornis*) is a high durability & low shrinkage timber suitable for external use & is not to be confused, or substituted, with “Sydney Blue Gum” (*Eucalyptus saligna*), a low durability & high shrinkage timber **unsuitable** for weather exposed use

5 **Grey Gum** (*Eucalyptus Propinqua*) is a high durability & low shrinkage timber suitable for external use & is not to be confused, or substituted, with “Mountain Grey Gum” (*Eucalyptus Cypellocarpa*), a low durability & high shrinkage timber **unsuitable** for external use.

6 Standard Trade Names from Technical Pamphlet 1 – Building Timbers – Properties and Recommendation for their use in Queensland – published by Queensland Forest Service

**Structural timber in softwood, shall be seasoned, minimum F7 stress grade, preservative treated to H3 for above ground use or H4/H5 for close to or in-ground contact [2].**

Softwood structural timber also should be well ventilated; and used in combination with other good building practices, particularly the sealing of cut ends and sealing of the tops of joists with a waterproof membrane to shed water away from the joist. Check with your supplier whether any limitations on use, or particular construction techniques, are appropriate for conditions of regular high rainfall and humidity. Softwoods treated with a water repellent incorporated in the treatment chemical, or with an oil-based treatment, will provide superior performance however are not readily available as yet.

**High shrinkage unseasoned timbers and/or timbers of low durability and/or timbers with untreated or untreatable sapwood are not suitable for structural timbers in weather exposed conditions.**

- **Joist width shall be 50mm unseasoned hardwood, 42mm seasoned hardwood or 45mm seasoned softwood [4].**
- **Decking timber should be:**
  - **seasoned** (less than 15% moisture content to avoid excessive shrinking on the job)
  - **highly durable**
    - **for above ground applications** use minimum durability 1 (*outside above ground classification*) treated to H3
    - **for close to ground applications**, or in conditions of regular rainfall and high humidity use durability 1 (*in ground contact classification*) treated to H5, and
  - **stable** (not swelling and shrinking excessively or distorting from the effects of moisture changes or heat).

Good decking timber for exposed conditions combines both high durability and stability ie it will last a long time and will be relatively stable, performing well over its life.

Examples of species suitable for above ground applications include:

• **Spotted Gum**, • **Ironbark (red and grey)**, • **Grey Gum (not Mountain Grey Gum)**, • **Gympie Messmate**, • **White Mahogany**, • **Tallowwood** and • **Kwila (Merbau)**. Ironbark, Gympie Messmate and Tallowwood are durability 1 (in ground contact classification) species and would be suitable for close to ground applications.

Other decking timbers available in your area may be suitable, however shall be seasoned, highly durable, stable and treated to the appropriate hazard level – refer to your local timber supplier for recommendations to suit your application ensuring you advise whether the deck will be exposed to or protected from the weather.

- **All bolts, screws, nails, brackets, framing anchors and other hardware shall be hot-dipped galvanized or stainless steel (depending on severity of conditions). In corrosive environments such as in coastal areas or around pools, all fixings, including connector nails, shall be stainless steel.**
- **Where timber posts are to extend into the footings for a bracing effect, the posts shall be sealed below ground with CN Emulsion and set in “no-fines” concrete, to allow water to drain, in accordance with the engineering design but a minimum of 100mm [6].**
- **Seal all cut ends, checked joints and timber-to-timber interfaces in structural timber or detailed timberwork to reduce the absorption of trapped moisture, which may lead to accelerated deterioration [7].**
- **Our suggestion for the bearer post connection is a checked/housed joint suitably sealed to prevent moisture absorption or face fixing with a stainless steel bolt (which has high corrosion resistance). Modern**

detailing tends to avoid the use of checked/housed joints at the point where the bearer is attached to the post to avoid premature deterioration of the timber from trapped moisture, with a preference for the bearer to be bolted to the face of the post. However, the poor performance of imported hot-dipped galvanised bolts in weather exposed conditions may lead to failure, over time, of the bolt supporting the bearer.

➤ **Before fixing the decking, seal the top edge of each joist with either CN emulsion (which may show on exposed surface over time), a primer plus finish coat or, for a more effective seal which will also reduce water entry around the fixing and shed water from the joist, *we strongly recommend using a waterproof membrane (such as Malthoid, a bituminous dampcourse, or Joistrip a flexible rubber joist sealer) between the joist and decking* – refer to the figure.**

➤ **Timber, rather than threaded rod, for bracing of columns will provide a more rigid bracing effect and will not “sing” in windy conditions.**

➤ **Penetrating oils or stain finishes are commonly used to protect decking from weathering.**

**Film building clear decking finishes can also be used to protect decking from weathering, however be careful to read, understand and adhere to the directions particularly in relation to any requirements for initial weathering, washing of decking surface and use of preparatory coats.**

**Decking which may be subject to foot traffic when wet should not be coated with any finish which leaves a slippery gloss coating on the surface.** If a gloss coating is preferred or has been applied, access should be restricted when the deck is wet to reduce the chance of slipping.

➤ **In weather exposed domestic applications subject to light foot traffic, decking shall be screwed or hand nailed with two fixings per board at each joist. Nails shall be domed head (DH), twist shank (TS) nails in stainless steel (SS) (preferred) or hot-dipped galvanised (HDG) (depending on severity of exposure conditions) [12]. Screws will provide improved hold down, corrosion resistance and resistance to working out than nails.**

**If Screwing**

**Use 50 x 10G SS Decking Screws**

**(refer Product and Services Directory for details)**

**If nailing**

**For hardwood joists, use 50x2.8mm DHTS nails (as above)**

**For softwood joists, use 65x3.15mm DHTS nails (as above)**

Note: Although hot-dipped galvanised nails may be suitable for fixing decking in the intended exposure conditions, stainless steel nails are recommended, as they allow light machine sanding of raised grain, in the future, without the danger of damaging the nail head and removing the protective coating.

**T-Nails (50x2.2 Finishing Nails or 50x2.5 Flooring Nails), plain steel or zinc plated nails shall *not* be used to fix decking or in any external application [14].**

**Please note** that the information contained herein has been prepared with due care for the purpose of assisting in the delivery of timber decking projects which perform well over a long life. Whilst every effort has been made to ensure the accuracy of this information and its consistency with current best practice, no responsibility, liability or claim is accepted, for errors in or omissions from, this information, or for work done or omitted to be done, in reliance on this information.