



Pine as a Building Material

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Pine is fast becoming a widely used timber in Western Australia. With large areas of pine plantations rapidly approaching maturity, the use of this versatile local softwood will expand at an increasing rate. The most common species is radiata pine (*Pinus radiata*), although some maritime pine (*P. pinaster*) is available.

Builders are using pine in a wider range of building applications - from framing, partitioning, floor and ceiling decking and structural use in the form of laminated beams, to purely decorative interior use.

This information sheet provides answers to questions which are commonly asked about pine timber and its use.

QUESTIONS AND ANSWERS

Q1 What is pine timber mainly used for?

- A.1 Sawn pine is widely used for:
- wall and roof framing (planer gauged)
 - exterior cladding (see under preservative treatment)
 - flooring
 - interior linings and mouldings
 - internal framing, doors, fittings, etc
 - exposed rafters and laminated beams
 - furniture
 - fencing (see under preservative treatment)
 - industrial building
 - packaging, crates, pallets, etc
- A.2 Reconstituted pine is widely used for:
- particleboard and medium density fibre board
 - plywood
 - paper and paper board

A.3 Round and sawn pine impregnated with suitable preservative chemicals is highly resistant to fungal and termite attack. It may safely be used in the ground and for all external applications e.g. fencing, playground equipment, log cabins, pergolas, decking, weatherboards, fascias, and balustrades. Untreated pine must not be used in positions exposed to the weather (wetting and drying) or in ground contact.

Q2 What are the benefits in using pine?

A.1 It is light in weight and easily worked.

It is supplied seasoned, graded, accurately dimensioned with eased arrises on the edges.

It is eminently suitable for prefabrication of building frames and roof trusses.

Seasoned pine is a stable product and can be used for a wide range of structural or appearance applications.

A.2 Seasoned pine meets the requirements of Standards Australia's Timber Framing Code AS1684 - 1979 and therefore the Uniform Building By-Laws of Western Australia.

Q3 Is sawn pine readily available?

A Yes - from timber merchants and hardware outlets in the Perth metropolitan area and all major country centres.

Q4 Is it available in a full range of sizes?

A. It is produced to a schedule of 'preferred sizes' which covers all of the dimensions in common use. Major suppliers hold such dimensions in stock or can produce to order.

Standard framing sizes are:

* studs and wall plates:

- 70 x 35 mm
- 70 x 45 mm
- 90 x 35 mm
- 90 x 45 mm

Joists, rafters and beams:

90 x 35 mm
90 x 45 mm
90 x 70 mm
120 x 35 mm
120 x 45 mm
120 x 70 mm
140 x 35 mm
140 x 45 mm
140 x 70 mm
190 x 35 mm
190 x 45 mm
190 x 70 mm
240 x 35 mm
240 x 45 mm
240 x 70 mm
290 x 35 mm
290 x 45 mm
290 x 70 mm

Q5 What sizes are recommended as suitable pine framing dimensions?

A. Wall framing sized at 90 x 35 mm is more suitable than 70 x 45 mm, being capable of supporting the same load at wider spacing. Details are shown in the Western Australian Timber Framing Manual issued by the Forest Products Association (WA).

The greater part of this Manual is based on information extracted from the Timber Framing Code. This Code is applicable to all timbers in Australia for construction of timber frames. It was issued by Standards Australia following exhaustive testing over many years by CSIRO Division of Building Research, which is now the Division of Building, Construction and Engineering. Information on the Manual and copies are available from the Forest Products Association at 103 Colin St, West Perth 6005 (telephone (09) 322 2088).

Q6 Is pine framing acceptable for construction under the Uniform Building By-Laws?

A. The Uniform Building By-Laws requirements are satisfied if design and construction is in accordance with the Timber Framing Code.

Timber used in the construction of buildings must be correctly branded to indicate the stress grade and location of the producer. Most producers are members of the Radiata Pine Association of Australia (RPAA), which has an excellent quality control scheme.

Evidence of stress grading is provided by grade marking on each piece - a pressure-sensitive, stamp imprint. Label colours, conforming to Australian Standard AS 1613, are red for F4, black with white print for F5, blue for F7, green for F8 and purple for F11.

In addition to the RPAA quality control Grade Mark tree logo and letters 'QC', both stamps and labels incorporate:

The producer's name or registered trademark
authorised producing mill number
the stress grade, eg: 'F5'
the word 'seasoned'
the number of the relevant Australian Standard:
(The relevant Standards for solid timber are AS 2858, AS1748 and RPRI Industry Standard 103; for finger-jointed timber AS1491).

Q7. Are there adequate spacing and span tables for pine?

A. Yes. Tables detailing spacing and span for pine can be found in the Timber Framing Code AS1684-1979 Supplements No 9, 10, or 11, or in the Western Australian Timber Framing Manual issued by the Forest Products Association.

Q8. Is pine normally green or seasoned?

A. Pine is not supplied green because seasoned timber is stronger and more stable. The relevant Australian and industry standards apply only to seasoned pine. (Some imported softwoods of other species, such as Douglas fir (oregon), are sold green). Pine should always be ordered in the finished sizes, and is normally supplied seasoned and dressed.

Kiln - seasoning to 15 per cent or less moisture content stabilises pine framing, minimising dimensional changes and distortion in service. This eliminates builder call-backs to repair damaged interior linings. Drying also greatly improves strength and nailholding.

Lightness, smooth gauged surfaces and eased arrises make pine framing easy to handle, saw and nail. Planer-gauging to the specified size also helps accurate construction, eliminating the need for trenching of wall plates, and helping to achieve high quality results.

Q9 What grades are available?

A. Specifiers and users should determine the grade of timber required for structural purposes in accordance with the Timber Framing Code AS1684-1979. For non-structural purposes or for preservative-treated products a wide range of grades is available.

Q10. Are there any recommended fastenings for pine?

A. It is desirable to use a twisted shank nail. Galvanised nails make a better connection than plain nails. Staples are suitable and easily used for some light assembly operations.

Q11. Is there useful information on installation?

A. The Forest Products Association, in the Western Australian Timber Framing Manual, gives details on installation. Other literature is issued by the Radiata Pine Association of Australia and the Radiata Pine Research Institute Inc.

Q12. Is there useful information on finishes and maintenance?

A. Details on surface finishing and maintenance, in data sheets dealing with construction using pine, are produced by the Radiata Pine Association of Australia. These are available from the Forest Products Association.

Exterior finishes include paints, exterior wood stains and water repellent preservatives.

Acrylic paints tend to be more durable than oil based, according to the RPAA, and have the advantage that a second coat can be applied in a few hours. An oil based primer is needed for Vacsol preservative treated pine. With oil based paints, primer and two top coats are needed.

Heavy bodied stains have flat opaque finishes which allow surface texture to show although wood grain is obscured. Oil based have better penetration generally than water based. The high pigment content minimizes the damage done by ultra violet rays. Two coats are recommended.

Light bodied stains have less pigment and provide less protection than heavy bodied. They are either 'transparent' or 'semi-transparent', and oil-based penetrate better than water-based. Two coats are recommended.

Water repellents are effective on some surfaces. They contain waxes and resins and small quantities of preservatives, which deter fungal attack. Regular applications are needed after an initial two coats.

Clear finishes such as varnishes are not recommended for external use, as they provide little protection and require frequent maintenance.

Q13 Does bluestain affect the strength of pine?

A. Bluestain is one form of sapstaining fungi, which feed on cell contents in the pine before it is dried, but do not feed on cell walls. Consequently bluestain attack does not affect the strength of the pine.



Q14 Is it necessary to treat pine timber house framing against termite attack?

The recommendation of CSIRO (and endorsed by CALM and the FPA) is to protect the building as a whole, not the building components. Recommended treatment practices are in accordance with the following Australian Standards:

(a) AS1694-1974 'Code of practice for physical barriers used in the protection of buildings against subterranean termites';

(b) AS2057-1986 'Protection of buildings from subterranean termites - chemical treatment of soil for buildings under construction';

(c) AS2178-1986 'Protection of buildings from subterranean termites - detection and treatment of infestation in existing buildings'.

The incidence of termites and termite attack is similar across southern Australia i.e. south of the Tropic of Capricorn. For the whole of this broad region the CSIRO experience and recommendation is that dwellings can be effectively protected against termites by chemical treatment of the soil beneath the structure, making chemical treatment of timber components or building contents such as furniture and books unnecessary.

This recommendation has been adopted and a precondition under the Uniform Building By-Laws ensures that all new dwellings have soil treatment against termites prior to building.

The chemicals prescribed by the Standards are organochlorines, available only to registered pest controllers. The operator is responsible for carrying out treatments in strict accordance with accepted safety procedures. The success of this policy depends on three main factors:

- (a) good building practice;
- (b) assurance that soil chemical treatment fully meets the requirements laid down in the Australian Standard (AS2057 - 1986);
- (c) awareness by the owner/occupier that the soil chemical barrier gives the home complete protection against termites provided that owners sensibly avoid any accumulation of timber, soil, chips, etc. against the walls.

Any further questions will be welcomed by the Technical Officer of the Forest Products Association at telephone (09) 322 2088.

Q15. Are there any special points to watch in the use of treated pine?

A.1 The type and degree of treatment required will vary depending on service conditions and preservatives used. For example, for protection against sun and rain, products like copper or zinc naphthenate are effective. Discuss your proposed usage with the supplier. It may be necessary to refer to Australian Standard AS1604-1980.

A.2 Large round timber may contain wood near the core which is resistant to penetration by preservatives. An effective protective sheath in these cases is assured, provided the rounds are not cut after treatment.

A.3 Gluing of treated pine requires a resorcinol adhesive.

A.4 Fastening of treated pine should be confined to copper nails and/or hot dipped galvanised bolts, nails, strapping etc.

A.5 DO NOT DISPOSE OF CCA TREATED PINE OFFCUTS OR WASTE BY BURNING.

The copper, chrome and arsenic (CCA) salts are fixed in the wood and can only be released by burning. Burning releases toxic chemicals in smoke and ash.

A.6 Further comments about handling are given in the Timber Preservers Association of Australia's leaflet 'Safe Handling'.

Q16. Where can information on using pine be obtained?

A. Further information on using pine as a building material and literature referred to in the previous questions, are available from the following organisations:

Forest Products Association (WA)
103 Colin St (PO Box 254)
WEST PERTH WA 6005
(09) 322 2088

Radiata Pine Association of Australia
PO Box 3917
PARRAMATTA NSW 2150
(02) 891 2139

Department of Conservation and Land
Management
50 Hayman Rd (or P.O. Box 104)
COMO WA 6152
(09) 367 0333

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