



**BORAL**



what you  
should know  
about  
Boral kiln dried  
flooring

Spotted Gum

- Ordering
- Moisture Content
- Storage
- Ventilation
- Installation
- Finishing
- Maintenance

**A**ustralian hardwoods are renowned for their strength, durability and versatility. When a timber product such as strip flooring or parquetry is supplied in seasoned form, considerable care and expense has been incurred in drying the material to a predetermined optimum moisture content and machining it accurately to a particular profile. It is a valuable material that demands care and protection on site.

When properly used, Australian hardwoods are amongst the more robust, durable and easily handled of all building materials, and if you treat Australian hardwoods with respect they will reward you handsomely for many, many years.



Brushbox, Rimni

## 1 Timber is a natural "living" product

Timber is a hygroscopic material. It takes up and loses moisture depending upon the temperatures and humidity to which it is exposed. It expands with increases in moisture content, and contracts with decreases in moisture content.

Installation methods for Boral's kiln dried flooring products should allow for the expansion and contraction of the timber that will occur as seasons and environments change. Where highly finished timber products are being installed, the installer and owner should control the variation in dimension of the timber arising from fluctuation in its moisture content by:

- Installing the timber at the moisture content which will be the average moisture content of the timber over time in the environment and climate conditions in which it is installed.
- Minimising the variation in the temperature and humidity in that area of installation by taking the basic precautions set out in this document.

## 2 Timber is prepared at our mills to do specific tasks

After milling and kiln drying, our seasoned hardwood products will have a moisture content within the range of 9% - 14%. This range may prohibit successful installation of the timber without further acclimatisation and in specific extreme environmental conditions such as in dry inland areas it may be necessary to install the timber at a moisture content less than 9%.

## 3 Ordering timber

Before ordering your timber you should:

- Become acquainted with the variations in colour which normally occur in the timber species you have selected.
- Ask the forestry department or a skilled installer to determine the moisture content at which the timber should be installed. This will generally be the average moisture content of the timber over time in the environment and climatic conditions in which it is installed.
- Decide whether this moisture content will be reached by acclimatisation.
- Check that other building operations will be sufficiently advanced to allow acclimatisation and installation.
- Ensure that site temperature and

humidity will not be subject to large fluctuations or that such fluctuations will be controlled.

- Have a form of window protection available to screen the floor from heat and light.
- Have the air conditioning and heating installed and ready to operate.
- Ensure that concrete slabs and subfloors are sufficiently dry. The use of a concrete moisture meter is essential.

## 4 Handle timber flooring with care

Boral kiln dried hardwood products are carefully packed to protect them from damage during transportation. This protection will not be adequate to protect the timbers from prolonged exposure to weather or from damage due to incorrect handling.

During transportation no other material should be placed on top of timber products. Suitable protective packaging should be used for all edges and faces to protect the material from normal handling, holding down straps and weather during transport. Care should be exercised to ensure that face and edge protection is used when lifting with any form of crane and that slings are properly positioned.

## 5 Check your timber upon delivery

It is important that you examine timber delivered to you as it is received and that you advise your suppliers immediately of any inconsistencies with your order or concerns about the quality of the material.

Once delivery has been made it is the purchaser's responsibility to ensure that the material remains in the condition in which it was delivered.

## 6 Correct site storage is vital

Avoid storage in builder's sheds or plastic covers exposed to direct sun as these limit air circulation and expose the timber to extremely high temperatures.

Any protective cover should not have the effect of trapping rising moisture (condensation) and thus defeating the purpose of the covering. During any storage, check the material regularly to avoid the build-up of condensation.

## 7 Special conditions require special care

Where extreme fluctuations in temperature or humidity will occur after installation, greater allowance has to be made for expansion and contraction of the timber and you may have to accept greater movement between floorboards

and/or parquetry. In such circumstances you may have to exercise particular care in installation of the timber and the control of the environment conditions. Some situations may make the use of timber inadvisable.

Circumstances which require particular care in installation include:

- air conditioned or heated rooms;
- heated floors;
- rooms with large glass areas in windows and doors – particularly if unprotected;
- rooms affected by poorly ventilated and drained subfloors, damp concrete slabs and the leakage of water from wet areas;
- building sites prior to lock up stage, or where wet trades have not finished and their work has not dried;
- where doors and windows are locked or left open in a manner which results in a different temperature or humidity than during occupation;
- where installation is scheduled for periods of protracted rain or unrepresentative high or low humidity.

Where any of the above circumstances arise you should seek advice as it may be necessary to delay installation or to take additional precautions.

Evaporative cooling systems should not be used where wooden flooring is installed. Such cooling systems, through intermittent use will result in large fluctuations in humidity. This may result in deterioration of the wooden floor through exposure to repeated wet/dry cycles, and an increased potential for splintering.

## 8 Acclimatisation

This section (8) applies to Uni-Nail and George Hudson Parquetry only. For Slimwood acclimatisation refer to the Slimwood installation guide.

There is no one moisture content that is appropriate for all installations. The usual method of bringing kiln dried flooring timber to the appropriate moisture content for installation at a particular site is by acclimatising it to the conditions of that site.

Successful acclimatisation relies on the temperature, humidity and site conditions in the period of acclimatisation being sufficiently similar to those that will prevail during occupation to allow the timber to adapt to those conditions. Periods of wet weather or extremely high or low humidity may prevent effective acclimatisation.

Where timber is to be installed in air conditioned or heated rooms the air conditioning or heating must be in operation during the period of acclimatisation.

If this is not done, subsequent operation of the heating or air conditioning may lead to shrinkage and cupping of timbers.

Timber should be taken from its pack and sorted in the room in which it is to be installed, at least 200mm above the ground, to allow a free flow of air to all faces of the timber.

Acclimatisation should continue until the installer verifies by use of a suitable moisture meter that the timber has come to an "equilibrium moisture content" appropriate for installation.

Installation should follow when this has been verified.

For further references on acclimatisation consult the relevant Australian Standard and ask for a copy of Boral Timber's information sheet **Procedures for Acclimatisation**.

## 9 Adequate ventilation is critical

Subfloor ventilation is probably the most significant design factor contributing to the unsatisfactory performance of a timber floor. Excessive humidity in the under – floor area may be caused by either a lack of sufficient cross-ventilation or from damp soil conditions arising from inadequate drainage. These conditions lead to swelling (bulging and cupping) of the flooring and possibly an unhealthy mustiness within the house.

The Building Code of Australia (BCA) requires that suitable provisions be made for subfloor ventilation and lists various alternative methods to achieve adequate subfloor ventilation. Also check with your local building authority for advice in regard to local site conditions and any subfloor ventilation requirements additional to the BCA provisions.

There is little benefit in providing excellent cross-ventilation if the subfloor area remains wet due to poor drainage or seepage. Drainage must be improved if there is any indication of persistent dampness.

## 10 Tips on flooring installation

- The best protection against poor installation is to use competent tradesmen. You should make enquiries to satisfy yourself regarding their competence and the appropriateness of any arrangement you make with them.
- Check to see if the tradesman has, and regularly applies, quality assurance procedures.
- Avoid installation of timber floors prior to the building being at lock-

up stage with all wet trades complete.

- If floor finishing occurs after completion of other building operations and the building has been cleaned, a more satisfactory finish is likely to be obtained.
- Avoid floor finishes and fixing methods which may bond the edges of boards together and prevent the usual expansion and contraction of the floor boards. If polyurethane floor finishes are proposed, be careful to check their suitability with the supplier and the installer.
- Refer to the relevant Australian Standards and installation specifications. This brochure is not intended to replace such documents and does not give comprehensive advice.
- Do not fix any board which has a defect or is of an inappropriate moisture content. Consult the timber merchant.
- Do not use the platform method of construction as exposure of a fixed floor to weather will damage it. Such damage will not be covered by manufacturers' warranties.
- Australian Standard 1684 – 1992 requires that a 12mm clearance be allowed between the flooring and the walls. 12mm clearances are appropriate for rooms of 3 to 4 metres in width. Proportional increases are required where larger widths of flooring are planned, including sections that are continuous through doorways or other openings. These clearances ensure that normal movement of appropriately fixed flooring due to average seasonal weather and moisture variations will not disturb the walls.
- For floors greater than 6m wide, additional expansion gaps are required. A 1.5mm gap every metre or a 6mm cork joint every 6m should be included.
- To ensure that top nailed boards are bedded firmly on floor joists, do not cramp more than 0.9 meters of flooring width at one time. Secret nailed boards must be fixed individually.
- Do not over cramp the floor.
- Boards over 85mm cover width must be fixed with 2 nails at each joist. Wider boards are not suitable for secret nailing.
- To avoid splitting when working close to edges and ends, pre-drill nail holes.
- For best results when installing hardwood flooring to hardwood battens or joists, the minimum length of the nails should be 2.5 times the thickness of the floor boards.

When installing over particleboard or plywood sheeting:

- Ensure that the surface is dry, clean and free from coatings or contaminants that may inhibit the glue bond. Particleboard, for example, will generally require sanding.
- Fixing methods must compensate for a reduced nail holding capacity. Uni-Nail boards should be glued and nailed or glued and stapled. The use of staples only is not recommended. The use of nails only as a fixing method should only be used where the nails are driven into the joists and a nail length is increased to allow for the additional thickness of the particleboard or ply.

For more comprehensive installation instructions refer to Boral's installation guides; **Uni-Nail, Slimwood, Block Parquetry, Mosaic Parquetry**.

## 11 Joists and spacing

Boral timber flooring profiles of a thickness less than 19mm are designed to be fully supported by a substrate such as a concrete slab or sheet flooring. Do not use these timbers directly over joists or battens as a structural floor; they must be fully supported.

- AS1684 sets out maximum joist spacing for normal residential loading. Boral recommends a joist spacing of 450mm for 19mm tongue and groove Australian hardwood flooring. This is within the limits set by AS 1684.
  - Some deflection of a timber floor is to be expected.
  - Abnormal residential loading can occur where especially heavy items such as a piano are to be placed on the floor. Under such abnormal loads joist spacing may need to be reduced and we advise you to seek guidance from a structural engineer.
  - For commercial applications the floor should be designed by a qualified structural engineer. In some commercial applications 19mm tongue and groove hardwood flooring will not be sufficient and thicker profiles or combinations of materials will need to be considered.
- Boral recommends the use of kiln dried (KD) hardwood joists for fixing Uni-Nail flooring due to their superior nail holding capacity.
- Where softwood joists are used, additional holding capacity is required. This can be achieved by a

## Checklist

It is vital that you read this leaflet before you actually start working with Boral kiln dried flooring products.

You should check off each of the key points on this list. That way you'll be sure of getting the most benefit from this strong, durable and beautiful flooring.

- Become acquainted with the variations in colour which normally occur in the timber species you have selected.
- Have you considered the moisture content requirements?
- Upon delivery provide protection for your material on site.
- Acclimatise your timber to local conditions.
- Don't fix in extreme weather conditions.
- Are moisture barriers required?
- Sort if necessary before fixing for aesthetic appeal.
- Allow a 12mm minimum clearance to walls.
- Assess whether additional expansion joints are needed.
- Good subfloor ventilation is essential.
- Provide protection against direct sunlight.

Questions on specific applications and unusual construction techniques should be directed to your distributor.



combination of longer nails and/or the application of an elastomeric glue such as Bostik Ultraset to the top of the joist. For fastening requirements refer to Boral's Uni-Nail or Slimwood Installation Guides.

Uni-Nail tongue and groove strip flooring should not be fixed directly to steel joists. A suitable thickness hardwood batten should be fixed to each steel joist in accordance with the steel manufacturer's recommendations. Where screws are used to fix the battens they must be counter-sunk below the top of the batten to permit floor boards to sit flat.

## 12 Sanding and finishing

- The finishing of feature timber floors should be carried out by a professional floor sander and finishing contractor.
- After sanding is complete the floor must be vacuumed or swept clean and carefully inspected for scratches and undulations, as these will be highlighted by the finishing coats. Faults are easily found by looking across the surface towards the light from a window. Ask for a copy of the Boral Timber leaflet: **Your Guide to Floor Care**.
- The finish manufacturer should be consulted regarding the suitability of the finish for timber floors. Only products which do not glue boards together should be used.

for fixing to concrete subfloors.

When fixing timber floors to concrete it is important that the slab conforms to the standard moisture requirements of no more than 5.5%. The concrete subfloor must also have a planeness equal to or better than 3mm in a 3 metre radius.

The concrete must be sound, clean, dry and free of dust, wax, coatings, curing compounds, oil, grease or other substances that could prevent an adequate glue bond from forming. The glue manufacturer's guidelines, directions or other instructions for use and storage must be complied with.

The subfloor should be topped with an approved cementitious topping to bring it within the tolerance.

The provision of a secondary moisture barrier by means of plastic sheeting is advised before fixing battens or Boral Hancock Underply prior to laying the timber floor. When joined, the plastic sheeting must overlap by 200mm and be taped the full length of the joint with duct tape. For more information, refer to the Boral Hancock Underply fixing instructions sheet. Also refer to: **Slimwood Installation Guide, Block Parquetry Installation Guide, Mosaic Installation Guide, Uni-Nail Installation Guide and 10 Installation Tips.**

## 14 Safeguard your investment

Because timber is a living material, you must take care after installation has been completed. Flooring should be sheltered from direct sunlight by curtains, blinds or

similar window protection. Timber can be affected by heat from sources such as free-standing heaters and stove and high voltage down lights.

In areas where extremes of temperature or moisture variation are common, cracks may appear in the floor. Adding moisture to the air with a humidifier may be the answer. Air conditioners are rarely humidity corrected and particularly in winter can create an extremely dry atmosphere which can cause shrinkage and cracking of the floor.

Fit protective pads to the legs of chairs and tables so that they can be easily moved without the risk of scuffing the floor. If you have furniture with castors it is preferable that they are the barrel type as ball castors may cause damage.

Vacuum or sweep regularly. If you prefer use a damp mop. Do not wet mop a timber floor. Washing your floor with water may cause your floor to ridge or buckle so it should be used sparingly and remain on the floor for the shortest time possible.

For further information on how to maintain your floor, please refer to our Floorcare brochure.

In all installations the humidity cannot be varied greatly with out risk to the floor.

## 15 Buyer Protection

Boral kiln dried flooring products are manufactured to exacting standards, but like all seasoned timber they are natural products and subject to changes in atmospheric conditions. Australia's weather conditions can be harsh,

and Boral Timber will guarantee the performance of its kiln dried flooring products only if the conditions relating to their use, delivery, storage, handling/transport and sealing are fully adhered to.

Because Boral Timber has no control over installation, its guarantee does not cover any part of the installation/erection process.

## 16 Safe working

Wood dust may cause irritation and repeated inhalation may damage health and increase the risk of nasal cancer.

The following work practices should be employed:

- Work areas must be clean. Sawing, sanding and routing equipment to be fitted with dust extractors. Dust levels should be below standards set by Work Safety Australia for wood dust.
- When machining timber, respiratory protection, gloves, clothing and eye protection conforming with Australian Safety Standards should be worn.
- After handling timber wash hands thoroughly with mild soap.
- Regularly launder clothing.

## 13 Fixing to concrete

This information applies only to products approved by Boral Timber



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