



secret fixing  
wide boards

**Boral Timber Flooring**  
THE NATURAL SELECTION



## Outline

The following procedure is for secret fixing 108mm and 130mm Boral Timber Flooring Uni-nail 19mm hardwood flooring by using a combination of flooring cleats and full trowel adhesive to attach the hardwood flooring to a solid sheet subfloor.

Secret fixing wide board flooring requires skilled tradespeople who understand the potential hazards of incorrect installation and should not be undertaken by novice flooring installers.

## Acclimatisation

Correct acclimatisation is critical for a successful installation. Knowledge of site conditions, both currently and in the future, are important for secret fixing wide flooring satisfactorily.

For the best results secret fixing of wide boards should be undertaken where the seasonal moisture content change is limited to a 4% point swing, for example 9% - 13%. Onsite testing and research into the anticipated moisture swings should be undertaken to confirm that the site is suitable.

Refer to the Boral Timber Flooring acclimatisation fact sheet for further details on how to acclimatise timber flooring correctly.

## Subfloor

The following subfloors are suitable for secret fixing wide board flooring.

- 15mm (or greater) plywood - Boral F14DD
- 19mm (or greater) particleboard flooring

The plywood or particleboard subfloor must have a moisture content that is within 2% of the acclimatised timber flooring being installed.

Note that secret fixing wide board flooring directly to floor joists is not recommended.

## Subfloor requirements

### Plywood/particleboard on bearers and joist system

As per normal installation it is important to ensure adequate cross-flow ventilation in the area below the flooring. Observe the following recommendations.

1. Air vents should always remain unobstructed.
2. The number of air vents and size should exceed BCA requirements.
3. The ground level below the flooring should be flat, well drained and clear of any debris.
4. The subfloor ground must be dry at the time of installation and should remain dry.

It is also recommended that the ground in the subfloor be sealed with an impervious membrane, such as 200 micron plastic. The plastic should be taped with a 200mm overlap. As subfloor conditions can change, this alone can greatly improve the performance of a timber floor in the future.

### Plywood fixed to concrete

Ensure the concrete slab is flat with no more than +/- 3mm deviation in 3 metres. A self-levelling compound can be used to level any variations. The moisture content of the slab must be 5.5% or below. If the moisture content of a new slab is too high, installation of the floor will need to wait until moisture content decreases to 5.5% or less.

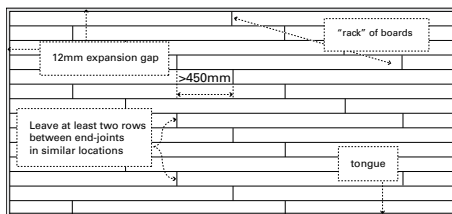
Lay a 200 micron plastic membrane over the whole area and continue up the walls 75mm (to be trimmed later). Overlap joins by 200mm and seal the entire join with duct tape.

Plywood is then fixed on top of the plastic membrane as outlined in the Boral Underply Brochure.

## Installation procedure

### Laying the boards

Sort the timber into two stacks: one of similar-length boards and one of varying lengths. Start by laying the varying lengths, longest first, in a triangle or "rack" from one corner. Lay the first board with its groove towards the wall and leave a 12mm expansion gap all round the room between the floor and the wall (not the skirting, if any). This gap will be covered by the skirting. Retain existing skirting if the new board can slide under it. If not, remove the skirting. Continue each row by laying the similar-length boards in each row, adding and cutting short lengths to finish the row (still leaving a 12mm gap). There must be at least 450mm distance between butt joints in adjacent rows.



### Fixing the boards

When the boards have acclimatised correctly, use the following procedure.

1. Using a 3mm V notched trowel, fully trowel out a workable area (approximately 3-5m<sup>2</sup>) of Bostik Ultraset adhesive onto the subfloor.\*
2. Place boards onto the adhesive trying to disturb the glue as little as possible.
3. Secret nail floor boards permanently to the subfloor with a Pownail secret-nailing gun (Pownail 445, 45R).
4. Use 38mm Powercleats when fixing to 15mm plywood and 44mm Powercleats for 19mm particleboard or plywood.

\*A workable area is governed by the conditions that you are working in. The adhesive should not dry or "skin over" before adhesion takes place.

- The secret-nailing gun will “kick” the boards together at the same time as it drives the nail in at 45 degrees.
- Secret nail at 250mm to 300mm centres into the subfloor and no further away than 50mm from an end joint.

### Limitations

Excessive swings in humidity and subsequently higher movement in moisture content will result in larger gaps or cupping in the floor – see the table below for what can be expected as the variation becomes larger.

Expected moisture content uptake or loss following installation						
	0.0%	1.0%	2.0%	3.0%	4.0%	5.0%
<b>Visual Appearance</b>	<b>No movement</b>	<b>Very small amounts of movement</b>	<b>Small amounts of movement</b>	<b>Noticeable gapping / Slight cupping</b>	<b>Medium gaps and/or cupping</b>	<b>Large (approximately 2mm) gapping and/or cupping</b>
<b>Install Method - Structural integrity</b>	Suitability					
<b>Top Nail 450mm Centres into joists</b>	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
<b>Secret Nail at 300mm centres on 15mm ply - full trowel adhesive</b>	Suitable	Suitable	Suitable	Suitable	<b>Not Suitable</b>	<b>Not Suitable</b>
<b>Secret Nail at 300mm centres on 19mm Plywood/Particle board - full trowel adhesive</b>	Suitable	Suitable	Suitable	Suitable	Suitable	<b>Not Suitable</b>

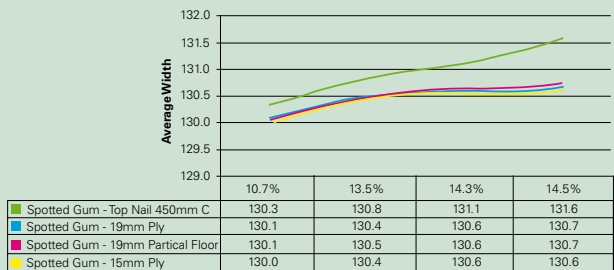
### Independent testing

Boral Timber has undertaken independent testing on various different installation methods and has found the recommended method to be the most stable.

Testing has shown that the recommended fixing method offers equal to / or greater restraint than the current recommendation of two top nails every 450mm.

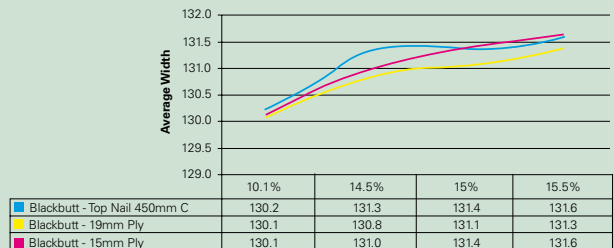
As for all fixing methods, secret nailing wide board will not suit all installation situations, particularly sites where large moisture fluctuations are expected.

**Spotted Gum**  
Average Board Width - Increasing Moisture Content  
Various Fixing Methods



Source - Boral Timber Independent test report March 2007

**Blackbutt**  
Average Board Width - Increasing Moisture Content  
Various Fixing Methods



Source - Boral Timber Independent test report March 2007

## Key points for successful installation

- Secret fixing of wide board flooring should only be undertaken by a competent **timber flooring installer** with an understanding of the relationship between timber and its surrounding environment.
- **Understand, test and record the moisture content** of the subfloor, timber flooring and the area to be installed and assess the suitability of the site.
- All moisture readings and test results pertaining to the site **must be recorded and permanently retained** for future reference.
- **Do not** install a wide board floor using secret fixing if the **moisture swing is expected to exceed four percentage points** from the moisture content of the timber at the time of installation.
- **Fully trowel** Bostik Ultraset using a 3mm V notched trowel.
- Ensure that **nail centres are 250 – 300mm** apart and no more than **50mm from an end**.
- It is normal to expect that timber floor **gapping** may occur though seasonal change.



## Sanding and finishing

Boral recommends the use of a professional sander and finisher to complete this stage of the job. Allow a minimum of 72 hours after completing the fixing before sanding, to give the adhesive adequate time to completely set.

There are many different types of finishes ranging from oils through to water-based urethanes. Choose the best finish to suit the functional and aesthetic requirements of the job. At all times it is important that the manufacturer's instructions are followed carefully. It is especially important when secret fixing wide board flooring that a product that will bond several boards together is not used. This can create unsightly gaps as the boards expand and contract in groups, creating extremely large gaps every four to six boards. Always check with the finishing product manufacturer to ensure that this is not a problem.

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