

# INSTALLING TIMBER STRIP FLOORS

Timber strip flooring that is correctly specified, handled, installed and finished provides a durable floor of lasting beauty. This guide will assist in ensuring that the floor's full potential is realised.

## Timber is a natural product that responds to its surroundings

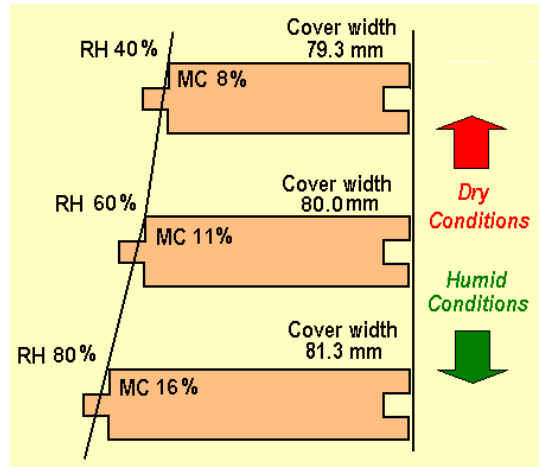
Timber flooring responds to seasonal weather changes causing boards to shrink and swell. Natural movement or movement influenced by heat from fireplaces, air-conditioning and sunlight through unprotected doors or windows often cause gaps to appear at board edges after installation.

### Colour Variation

Within a single species considerable colour variation can occur – tree to tree, sapwood to truewood. Hardwood flooring treated to prevent lyctus borer attack may also contain a brown or green-grey colour in the sapwood.

### Grading Rules

- AS 2796 – Timber Hardwood - Sawn and milled products (Select grade, Medium feature - Standard grade, High feature grade)
- AS 1810 – Timber - Seasoned cypress pine - Milled products (Grade 1, Grade 2)
- AS 4785 – Timber Softwood – Sawn and milled products (Select & Standard grades)



## Preparation prior to installation

**Site Storage and Handling Procedures – FLOORING MUST REMAIN DRY!** Flooring should be supplied with plastic wrapping (to top, sides and ends) in good condition. Flooring products require protection from weather exposure and other sources of dampness. Flooring should be delivered to site when it can be immediately stored under permanent cover and at the time it is required.

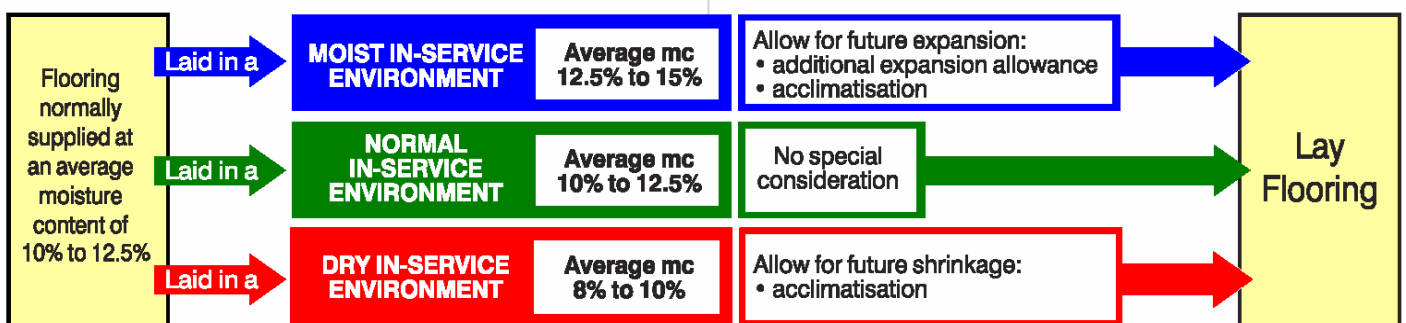
**Check the product supplied** - Before installation proceeds the following should be verified and recorded.

- Board moisture contents in the range 9% to 14% (Note: Moisture meter readings must be corrected for species and temperature, and are affected by other factors. Corrected readings are approximate only. If in doubt confirm results by oven-dry tests.)
- Cover widths within  $\pm 0.5$ mm of the nominal cover width. Variation between individual boards less than 1mm.
- Tongue and groove tolerance between 0.3 mm to 0.6 mm.
- Flooring supplied to the specified grade. Manufacturer's grades differ to AS grades.

If there are any concerns with the product, immediately contact your supplier. **DO NOT BEGIN LAYING THE FLOOR.**

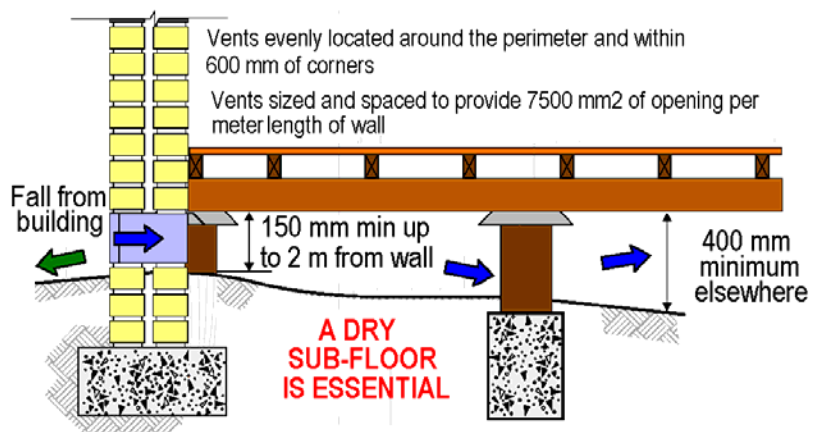
## Allowing for future expansion or shrinkage at the time of installation

Climatic conditions and the local environment can result in the average moisture content of the installed floor being significantly higher or lower than the average moisture content of the flooring that has been supplied. To minimise in-service board movement (swelling on moisture uptake, shrinkage on moisture loss) due to changes in moisture content it is important to lay and fix timber floors as close as possible to the average in-service moisture content. Expansion allowance above normal provisions may be necessary or the floor may need a period of acclimatisation (packs opened and boards stacked in a way that allows airflow between boards) prior to laying, to accommodate this future movement.



## Provide the necessary sub-floor ventilation

When the lower surfaces of timber floors are exposed to the ground and the space beneath is enclosed, ventilation with permanent vents is required. Timber floors are not to be laid over moist sub-floor spaces. Structural sub-floors (e.g. particleboard or plywood) do not prevent moisture uptake in a T & G flooring. Prolonged high humidity in the sub-floor space can cause boards to cup and structural damage can occur through expansion. Recommended minimum ventilation for timber floors is 7500 mm<sup>2</sup> per meter length of wall, with vents evenly spaced to ensure that cross ventilation is provided to all sub-floor areas. This exceeds the minimum requirements of the BCA.



## Installing strip flooring over joists, battens and plywood

**Use fitted floor construction** For exposed T & G floors (i.e. feature floors) 'fitted floor' construction is necessary. That is the timber flooring is installed after the house is weather tight so as to prevent degrade due to water and sunlight exposure. Wet trades should also be complete.

**Floors on joists and bearers** The size of floor framing members is determined from AS 1684 - Residential timber-framed construction. End-matched flooring profiles require a minimum joist thickness of 35 mm. Plain end flooring is butt joined at floor joists and requires 45 mm or 50 mm thick joists to reduce splitting problems at butt ends. Seasoned joists or cypress joists are required with secretly fixed floors to prevent possible board on nail squeaking. Top nailed floors may be fixed into either seasoned or unseasoned joists. Unseasoned joists not exhibiting high rates of shrinkage should be used and be in single or similar species. Due allowance for future shrinkage and possible nail popping needs to be considered if using unseasoned joists. End matched flooring will span joists at 450 mm centers in hardwood and Araucaria (hoop pine).

**Floors on plywood to joists and plywood and battens to concrete** Sub-floor moisture contents (battens, plywood and concrete) need to be assessed to ensure they are sufficiently dry to accept strip floors. The age of the slab is not necessarily a good indicator of slab moisture content and timber moisture meters are not accurate in plywood. Specialist help may be necessary. As an added precaution a moisture barrier or polyethylene membrane may be used over slabs. Plywood may be fixed to slabs with mechanical fixings or adhesives. Sub-floors must be level. Structural plywood with a minimum thickness of 15 mm and seasoned hardwood battens with a minimum thickness of 19 mm may be used. For more details refer to data sheets available from TQL.

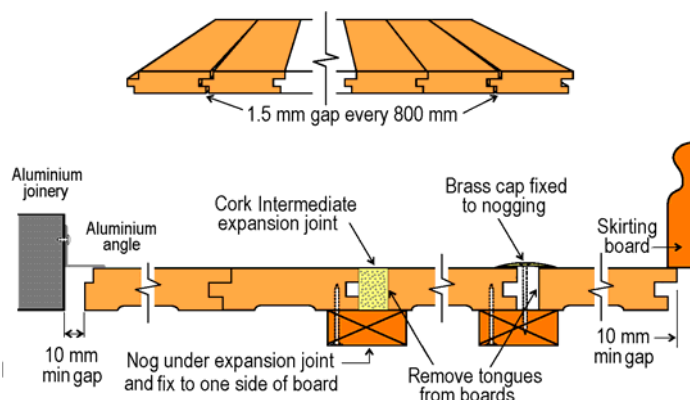
**Expansion allowance required for all floors** Expansion gaps of at least 10 mm are required at all walls and other fixed obstructions that are parallel to the run of floorboards. Floors up to 6 m wide (measured at right angles to the run of boards) should not require intermediate expansion joints provided the flooring moisture content is close to the expected in-service moisture content. For floor widths over 6 m or where extra allowance for expansion is required (e.g. moist locations) an intermediate expansion joint, or a series of smaller expansion gaps every 800 mm should be provided.

**Fix floors with the correct fixings** Lay floors in straight and parallel lines. End-matched flooring may be joined between floor joists or battens but joints in adjacent boards should not occur within the same joist span. Top nailing of end matched boards with 80 or 85 mm cover widths fixed to joists requires nailing with two nails at each joist. With top nailed floors all nails including machine nails should be punched a minimum of 2 to 3 mm below the top surface. Secret fixing with a single staple to joists and a polyurethane flooring adhesive to the joist, is also suitable with secret nail profile boards of this size. Boards need to be tight on joists prior to sanding. When fixing to battens or plywood, secret fixing at reduced centers is recommended due to the reduced fixing penetration. A polyurethane flooring adhesive should also be used on battens and plywood. For plywood, as a minimum, a continuous bead (90° to board length) midway between fixings may be used. The fixing process and cramping method over each sub-floor type should bring board edges together so that there is generally no gapping at board edges.

## Use a professional floor sander and finisher

Timber floor finishes may be oil-based, composite finishes (mixes of an oil and solvent borne polyurethane), solvent borne polyurethane and water borne polyurethane. When choosing a floor finish it is necessary to consider - wear and ongoing maintenance, board movement after installation and the risk of edge bonding due to 'gluing' by the floor finish, the desired gloss level and odour during application.

A finish similar to that of fine furniture should not be expected, as timber strip floors are not finished in a factory environment and different pieces of flooring will sand differently. The home environment is also not dust free. However, the finished floor can be expected to have an even appearance free from heavy sanding marks, blooming or frequent air bubbles in the surface. A minimal level of contaminants, minor sanding marks and small depressions of the finish at board edges and in nail holes etc. may be visible. Some finishes will also yellow with time and if rugs are moved, a contrast in the depth of colour can be expected.



TYPE OF FIXING	SUB-FLOOR TYPE	
	SOFTWOOD & LVL JOIST	HARDWOOD & CYPRESS JOIST
<b>Top Nailed</b>		
Hand Driven	65 x 2.8 mm bullet head	50 x 2.8 mm bullet head
Machine Driven	65 x 2.5 mm T nail	50 x 2.5 mm T nail
<b>Secret Fixing</b>		
Machine Driven	50 x 15 gauge staple	45 x 15 gauge staple
<b>Secret Fixing</b>	<b>19 mm HARDWOOD BATTENS</b>	<b>15 mm STRUCTURAL PLYWOOD</b>
Machine Driven	38 X 15 gauge staple (300 crs)	38 X 15 gauge staple (300 crs)



**TIMBER  
QUEENSLAND**

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The following data sheets are also available from TQL:-

- 11 Tongue and Groove Timber Flooring
- 17 Timber Floors Over Timber Sub-Floors
- 18 Timber Floors Over Concrete Slabs
- 21 Timber Floor Finishes
- 14 Sub-floor Ventilation