

Installation guide for

SOLID

TIMBER STRIP

FLOORING

manufactured by
Australian Sustainable Hardwoods Pty Ltd
(ASH)

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INTRODUCTION

What is ASH's solid timber flooring?

ASH tongue and groove solid timber strip flooring is precision-machined hardwood products designed for residential, commercial and public flooring applications. This product, with its natural beauty and durability, is produced from the same high-grade timber that valuable furniture is manufactured from, adding warmth and value to any space. Manufactured using sustainably grown hardwoods, they are kiln-dried and profiled for efficient installation.

Purpose of this guide?

This guide provides instructions for correct installation to maximise performance, appearance, and service life of your timber floor. It is intended for use by professional installers and experienced DIY'ers.

Why use an Australian manufacturer?

Being owned and manufactured in Australia provides certainty in compliance as timber is made in accordance with the below Australian Standards and procedures. This often overlooked benefit ensures products are fit for Australian construction:

- Machined to AS 2796 – *Timber – Hardwood – Sawn and milled products*.
- Visually graded to AS 2082 – *Timber – Hardwood – Visually stress-graded for structural purposes, unless stated otherwise*.
- Third party verified:
 - sustainable to AS 4707 – *Chain of Custody for forest-based products*.
 - compliant to ISO 14001 – *Environmental Management System*.
 - compliant to ISO 45001 – *Occupational Health & Management System*.
- Goods are governed by Australian Consumer Law.
- For an up-to-date list of our commitments and benefits, please visit ash.com.au/our-difference/

Other relevant documents

This document is designed to be read in conjunction with the following ASH guides and advice:

- AS 1684 – Residential Timber Framed Construction
- AS 1720 – Design Methods for Timber Structures
- Chosen coating providers recommendations

Installers note

As with all timber products, it is essential that installation is conducted to a professional standard. Long-term performance of the installed timber is greatly

influenced by, and is the responsibility of, the installer. Ongoing care, maintenance and longevity shall be the responsibility of occupants.

FLOORING PROFILES

For an up-to-date list of profiles, available species and grades, visit ash.com.au/application/solid-flooring/

PRODUCT SPECIFICATIONS

Solid timber 19mm strip flooring is primarily designed as a structural product for installation over a seasoned bearer and joist subfloor. It can also be laid over existing sheet, old timber floors, or used in conjunction with battens. All these methods are subject to using the prescribed fixing method.

Flooring sizes: the selection of board width (cover) is critical in determining the fixing process. ASH solid strip flooring is produced in 65, 85, 108, 133 and 180mm (Glacial Oak only) cover widths x 19mm thickness (refer Figure 1).

TERMINOLOGY

Profile

Whilst the profile for all sizes is identical, boards wider than 85mm cover are not suitable for “secret nailing” and must be “face/top nailed” (refer Figure 2). This is a requirement of AS 1684.

Secret nailing

Boards are fixed through the tongue to the joist (refer Figure 7) and are covered by the groove of the adjacent board.

Top nail

Boards over 85mm must be top/face nailed with two nails through the face surface to the joist (refer Figure 6).

End matched

Unless otherwise specified, boards are supplied as an end matched (E/M) product. This means boards will have a tongue on one end and groove on the other which run adjacent to the tongue and groove on the sides of the boards. End matched boards reduce the amount of cutting as they do not require docking and joining over joists as is required for plain end (P/E) boards (refer Figure 4).

Grades

Timber flooring is defined as either “select”, “standard” (medium feature) or “classic”

(high feature) grade. These are determined by the amount of natural characteristics in the board. **Profile and grade guidelines are as listed in Australian Standard AS2796. Classic Grade is a unique ASH recovery grade. Refer to ASH's published Classic Grade guidelines.*

STORAGE, HANDLING AND MOISTURE CONTROL

Delivery and protection

ASH, and our network of distributors, can deliver packs of flooring to location, wrapped in plastic or by other arrangement. Packs will require a forklift, crane, or hand unload on site. It is essential that flooring be protected from weathering - which can occur quickly. Carefully store flooring once delivered to prevent damage or surface marks.

Storage

Timber flooring must be protected from exposure to rain, dew and direct sunlight at all stages of cartage, storage and construction. Flooring should be stored inside where it is to be laid, or a similar environment. DO NOT store flooring on new or wet slabs. Only install in a fully waterproof building. Roof and other external cladding should be complete with windows and external doors installed and wet trades completed.

Moisture

ASH's solid timber flooring is produced to Australian Standards AS2796 which specifies a moisture content of 9-14%. Whilst this range is suitable for most ambient conditions throughout coastal Australia, it is a starting point only. As a natural product, timber will expand and contract in response to its environment. As the timber adjusts to its new location, its moisture content changes to equalise with the surrounding atmospheric conditions. Changes in temperature and humidity brought about by a range of artificial and natural factors (such as direct sunlight through large windows or heating and air conditioning systems) are likely to have an impact on the physical dimensions of the boards. As timber absorbs moisture it expands, and as it loses moisture it shrinks, resulting in gaps between the boards. The floor will continue to move throughout its working life as it adjusts to these artificial and natural seasonal changes.

To minimise this movement, it is recommended the timber be acclimatised where it is to be laid long in its normal, long-term working environment until the floor reaches equilibrium with the predetermined long term moisture content before the floor is laid. If in doubt, seek further advice from your specialist supplier.

The installer must determine the expected equilibrium moisture content (EMC) range within the dwelling, then determine the moisture content of the delivered flooring with the use of a resistance moisture meter. Acclimatising at a humid or wet time of the year, where the EMC is high, can result in boards contracting during months of low humidity.

REQUIRED HARDWARE AND MATERIALS

- ASH timber flooring profiles.
 - Typically allow >10%. Allow more for non-orthogonal rooms or diagonal installations.
- Bostik Ultraset adhesive or similar.
- Trims/skirting/aluminium edging as required.
- Measuring tape, chalk line, mitre saw.

For installation over bearers and joists:

- Nail gun.
- Correct nails for board thickness.
- Nail punch or nail set.
- Clamps or flooring jacks.
- Pull bar, tapping block and rubber mallet.
- Spirit or laser level.
- Straight edge tool.
- Temporary spacers or packers.
- Nails, screws and plugs for any trims, thresholds and skirtings.
- Finishing products such as wood filler and sealer – polyurethane or hard wax oil.

For installation over sheet or existing timber floors:

As above plus:

- Moisture meter.
- Levelling compound (where needed).
- Acoustic underlay (where needed).

PREPARATION

Timber strip flooring **MUST NOT** be installed using the platform floor method. ASH solid flooring that is exposed to extremes of weather before roofing will **NOT** be covered by warranty.

Adequate sub-flooring ventilation and drainage is critical to avoid dampness. If moisture builds up under the subfloor from poor drainage and ventilation, boards will expand, resulting in cupping and lifting of the boards. Where ground conditions are damp and the potential for additional sub-soil drainage limited, the installation of a continuous impervious plastic membrane over the ground is recommended. If the underside of the floor is opened to the elements, it needs to be sealed and insulated. **The building code of Australia outlines requirements for sub-floor ventilation and ground clearance.*

INSTALLATION PROCESS

Expansion gap

An expansion gap of 10-15mm must be left between the perimeter of the floor and walls (see Figure 3). This can be covered by the skirting or flooring mould. Floors over 6.0m require intermediate expansion gaps of 10mm. These can be located in door thresholds in line with elements such as stairs or occur evenly throughout the floor in a series of smaller gaps.

Laying boards and joints

Floorboards should be laid in straight parallel lines. Boards should be firmly end butted together with end matched joints not occurring in adjacent boards within the same span between joists (see Figure 4). Plain end boards should be joined over a joist with joints spaced a minimum of 450mm apart in adjacent rows and staggered throughout the floor (see Figure 5).

Cramp boards tight

Top/face nail boards should be cramped up in sections no greater than 900mm at a time. For secret nailing, cramp each board tight or use specialist nailing guns.

FIXING

Prior to fixing, ensure cramped boards lay flat and have made full contact with the joists or sub-floor. Joists and bearers should be fully seasoned timber (i.e. SUPALAM F17 by ASH). Green timber will shrink and distort as it dries, leading to loosening of nails and uneven floor surface.

Top/face nailing

Boards over 85mm must be top nailed and fixed with two nails (see Figure 6). Boards under 85mm in width only require one nail. Keeping the nail lines straight, fix at a minimum of 12mm from the edge of the board. Nails should be punched to a minimum of 3mm below the surface of the boards. Ensuring boards are firmly seated onto the joists/substrate. To avoid splitting near ends of boards or where joints are butted together, it is recommended that nail holes be pre-drilled to 80% of the nail diameter.

Secret nailing – not suitable for boards wider than 85mm

When secret nailing, boards 85mm and under are fastened to the joist/substrate through the tongue of ASH's solid flooring profile at a 45-degree angle (see Figure 6). Ensuring the boards are firmly seated, the groove side of the next board is inserted over the tongue of the nailed board covering the nail, hence secret nailed. Pneumatic secret nail guns are commonly used which cramp the board and inserts a nail in a

single motion.

Nail fixing requirements

Minimum nail fixing requirements to Australian Standard 1684 for the hardwood and softwood joists are set out below. *Note, longer length nails required for softwood.* Fixing for plywood (min 15mm) is also as defined.

Nail sizes for 19mm T&G flooring			
Nailing	Softwood joists, particle board	Hardwood	Plywood substrate (15mm min thickness)
Hand driven	65 ž 2.8mm bullet head	50 ž 2.8mm bullet head	a) 32 x 16 or 38 x 16 gauge chisel point staples b) 38 x 2.2mm nails at 300mm spacing c) 30 x 2.2mm nails at 200mm spacing
Machine driven	65 ž 2.5mm	50 ž 2.5mm	

Glue used in addition to correct nailing

Where vibration or dynamic loading is of concern, gluing floor joists may reduce later movement. Even if glued, the floor still needs to be fully nailed. Only use specialist elastomeric glues/adhesives such as Bostik Ultraset. **DO NOT USE HARD SETTING GLUES.**

Alternative substrates

Alternative timber substrates such as existing timber strip flooring, particle board and plywood, must be solid, securely fixed, level and dry (9-14% moisture content). In a nailing and glue fixing combination, substrates should be skim sanded level to remove any imperfections (especially at joins or edges) and existing finishes. New boards laid over existing timber strip flooring should be run at right angles. If nailing only application, nail to requirement of table 1. For particle board, use nail sizes similar to softwood and ensure nails penetrate into joists.

Floor finishes

A range of floor coatings/finishes are available to suit your requirements. These include oils, water-based polyurethanes and two pack polyurethanes.

CAUTION: Whilst polyurethanes are hard wearing and produce a glossy finish, they also have a tendency to edge bond floorboards together and restrict free movement of individual boards. This can cause several boards to stick together and any shrinkage will result in these boards forming a panel and moving together. As a result, larger, irregular gaps may appear across the floor between the panels. In extreme cases, boards may split along their length.

APPENDIX

Figure 1 – ASH solid flooring profile



Figure 2 & 6 – Face/top nailed

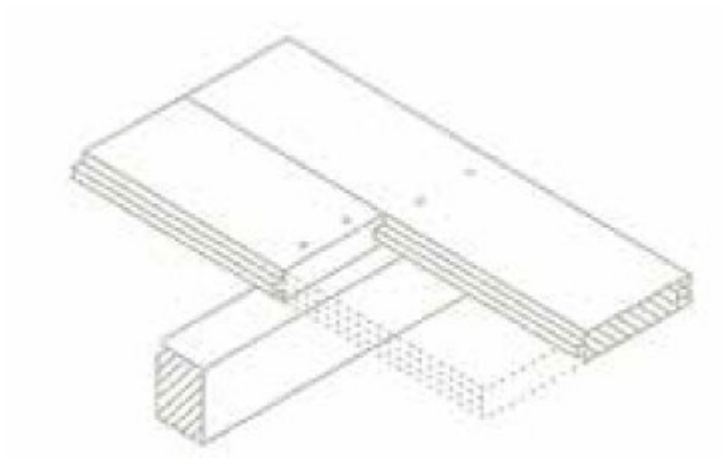
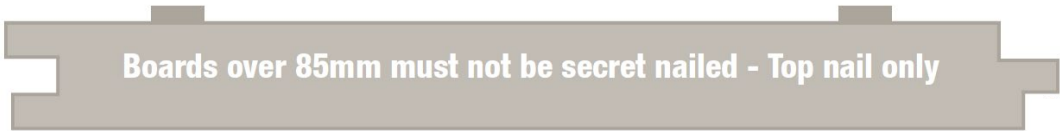


Figure 3 – Expansion gap

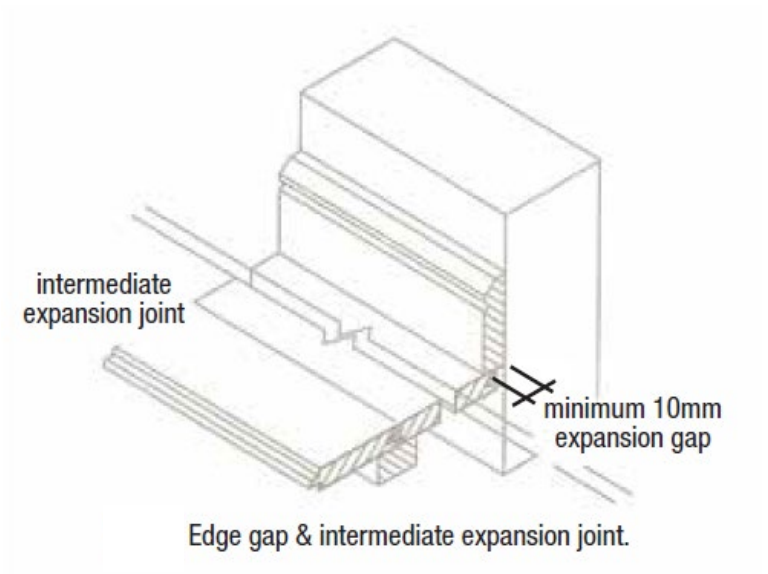


Figure 4 – Laying end matched boards

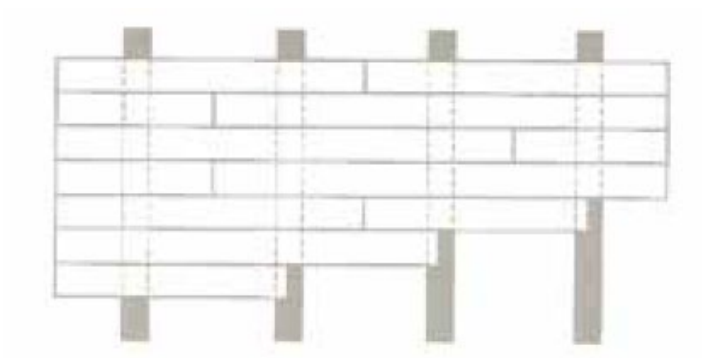


Figure 5 – Laying plain end boards

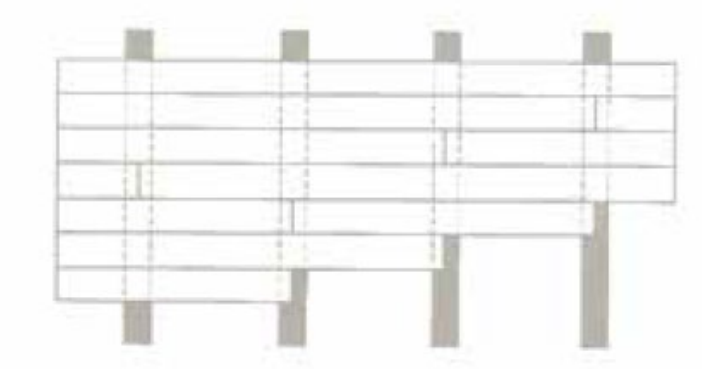


Figure 7 – Secret fixing



CONTACT INFORMATION



Australian Sustainable Hardwoods Pty Ltd
ACN 151 841 431

PO Box 268,
4 Weir Road, Heyfield
Victoria, Australia 3858
03 5139 7000 | enquiries@ash.com.au
ash.com.au