In the building business, your reputation’s only as good as the materials you use. That’s why when it comes to structural particleboard flooring, you need a product you can trust and a partner you can rely on to keep pace with ever-changing lifestyle and construction requirements.

Our Leading Brands

STRUCTAflor Particulate Board Flooring, TERMIFlor Termite Protected Particulate Board Flooring and R-flor Radiant Barrier Flooring offer a practical, flexible and cost-effective choice when building your new home or extension. With over 40 years of reliable performance, STRUCTAflor is still the leading product in its class.

The following information provides a guide to the applications, properties and features of the full product range. It also details the appropriate installation systems for STRUCTAflor and TERMIFlor.

Note:
Particleboard flooring is not to be used in weather exposed applications or with under-carpet heating.

Key Points

Storage

STRUCTAflor is designed to withstand full weather exposure for up to five months. Because of this there is a tendency to leave packs unprotected on site before installation.

Packs of STRUCTAflor must be protected from the weather until it is installed as moisture penetration of the product before installation may lead to gaps occurring at the flooring joints when the product dries out.

When storing outside, ensure packs are kept clear of the ground. Cover with waterproof sheeting laid on timber battens so that air circulates freely between the waterproof cover and the product.

Exposure

The product may be exposed to the weather for up to five months. However, it is always advisable to enclose the building as soon as possible after laying the floor. During the exposure, prevailing weather conditions can influence the surface condition of the board and may cause minor swelling following the enclosure of the building. This can be removed by sanding. The depth of material removed shall not exceed the following:

1. 1mm – Over the general panel area
2. 2mm – Within 50mm of any supported edge

Remove any water that ponds on the platform by sweeping or by drilling holes (no larger than 8mm in diameter and no closer than 1 meter apart).

Installation

Adhesives - The Australian Standard allows for either flexible or rigid construction adhesives to be used.

Fasteners - Screw fixing is the preferred method, however the Australian Standard allows for either screw or nail fixing into timber joists.
PRODUCT DESCRIPTION

Designed to provide a total flooring concept, STRUCTAflor, TERMIflor and R-flor are particularly suited to platform construction where the floor is laid prior to the erection of walls. They are made from precision milled wood flakes and bonded with moisture resistant synthetic resin. For additional protection during construction and exposure to weather, the upper surface is resin enriched and all edges of the tongue and grooved sheets are coated.

STRUCTAflor

General Purpose particleboard sheet flooring, manufactured in Australia to comply with the requirements for Particleboard Flooring, Class 1, in AS/NZS 1860.1, Particleboard Flooring. With its unique hard wearing resin-enriched surface, yellow edge coating on the PP tongue variants – it is the ‘best’ quality floor for every Australian Home.

STRUCTAflor is available in YELLOWtongue, REDtongue, BLUEtongue and Square Edge variants.

R-flor

R-flor radiant barrier flooring is a particleboard flooring with a foil laminated on the underside of the flooring board. It has a new elimination (high reflectance) metallised foil surface which significantly reduces the radiative heat transfer across a suspended timber floor. The subfloor air space delivers an improvement in the “Total R-Value” of the flooring system.

R-flor incorporates a termite for added protection against termites and is easily identifiable by its blue edge coat.

TERMIflor

A termite protected sheet flooring that provides added protection against termite attack. It should be used in conjunction with the normal precautions against termite attack which include adequate sub-floor ventilation and the provision of physical or chemical barriers to AS 3682.1 Termite Management – New Building Work.

TERMIflor is also safe to use and environmentally friendly and is easily identifiable by its light blue edge coat.

Product Details

Thickness: 19mm, 22mm and 25mm nominal.

Surface Qualities: Upper surface is unsealed to retain a room feel, retain moisture and provide a working surface during installation.

Edge Coating: Factory-applied to all edges of tongue and grooved sheets to reduce moisture ingress.

• YELLOW coating for STRUCTAflor General Purpose YELLOWtongue, REDtongue and BLUEtongue Heavy Duty.

• BLUE coating for R-flor YELLOWtongue, REDtongue and BLUEtongue Heavy Duty.

The Facts That Matter

• Resin Enriched Surface – Added weather protection during construction for up to 5 months – Hardwearing working surface during installation

• Edge Coat – Minimises moisture ingress – Easy product identification

• Synthetic Resin System – Grown from managed and renewable

• Max Impregnation throughout – In-built moisture protection for cut sheets

Thickness

<table>
<thead>
<tr>
<th>STRUCTAflor GP</th>
<th>TERMIflor</th>
<th>R-flor</th>
</tr>
</thead>
<tbody>
<tr>
<td>19mm</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>22mm</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>25mm</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Joist Spacing

3600 x 900mm

3600 x 600mm

3600 x 300mm

PRODUCT RANGE

• Australian Plantation Pine

• 600mm wide sheet

• STRUCTAflor & TERMIflor Range

• YELLOWtongue – 19mm Domestic Flooring – 450mm joist spacing

• REDtongue – 22mm Domestic Flooring – 400mm joist spacing

• BLUEtongue – 25mm Heavy Duty Commercial Flooring

• 800mm wide sheet

• 2.84m2 coverage (per sheet)

• 800mm wide sheet

• YELLOWtongue sheet weights < 30kg (Approved)

• Australian Plantation Pine

• Grown from managed and renewable

• Built on 40 years of Trust
Termite Hazard Map

Dotted line represents the tropic of capricorn.

Figure 7. AS 1860.2 Sanding Provision
TERMIFlor is resistant to termites both north and south of the Tropic of Capricorn.

Resistance to Termites

Termites (also known as white ants), feed on any cellulose based material, such as timber. In areas defined as termite prone (check with your local authority, physical barriers such as anti caps or chemical treatments need to be applied in accordance with AS 3660.1.

TERMIFlor and R-flor are resistant to both the subterranean termite (including Mastotermes darwiniensis) and the timber beetle.

TERMIFlor and R-flor termite resistant particleboard flooring conforms to H2 level treatment requirements as defined in AS 1604.2. Timber and wood based products treated to H2 level or higher are deemed to be termite resistant building materials under the Building Code of Australia and AS 3660.1.

Depending on individual state or local legislation, termite resistant structural timber and wood building components may be used in full or part to satisfy the Building Code requirements for protection of building against termites. However the householder is recommended to have this building regularly inspected against termites. However the householder is recommended to have this building regularly inspected in accordance with AS 3660.1.

The BCA (and AS 3660.1: Termite Management) requires a minimum ground clearance of 150mm to underside of bearer where termite inspection is not required.

Where termite inspection is required, 400mm minimum height from ground surface is required. On sloping sites, 400mm clearance may be reduced to 150mm within 2m of external walls.

Where termite barriers are not installed or don’t require inspection, a minimum 400mm ground clearance is advised as good practice.

Depending on individual state or local legislation, termite resistant structural timber and wood building components may be used in full or part to satisfy the Building Code requirements for protection of building against termites. However the householder is recommended to have this building regularly inspected in accordance with AS 3660.1.
Installation Methods

These instructions are taken from AS 1860.2 – Particulateboard Flooring Installation, Engineered Wood Products Association of Australia (EWPA) Particulateboard Structural Flooring Design Manual, Building Code of Australia (BCA) and relevant timber framing and building standards.

Bush Fire Areas

The method of determining the Bushfire Attack Level (BAL) for a site has been revised and now comprises six categories, namely BAL—LOW, BAL—12.5, BAL—19, BAL—29, BAL—40 and BAL—47. These categories are based on heat flux exposure thresholds.

The methods for determining the Bushfire Attack Level now include both a step-by-step procedure, including tables that list climate, slope of ground and vegetation variations in States and Territories and a detailed calculated procedure.

Please refer to AS 3959 “Construction of buildings in bushfire affected areas”.

Particleboard flooring will expand and contract as sheets respond to changes in atmospheric moisture. Allowance for this movement must be made throughout the area by providing gaps and special joints as appropriate to accommodate sheet expansion.

Expansion Joints

For small areas, the gaps left between panels when laid by hand should accommodate normal hygroscopic movement. For large floor areas the hygroscopic movement of the particulateboard flooring should be taken into account in the design. Refer to AS 1864.

The Building code of Australia references AS 1864 standard as the Acceptable Construction Manual for timber framed construction. AS 1864 stipulates the following provisions for expansion joints for all flooring material to be:

"For continuous floor widths over 6m, measured at right angles to flooring, intermediate expansion joints shall be provided in addition to the perimeter gaps. This joint shall be either a single 10mm wide gap (under a wall or across a hallway), or smaller gaps with closer spacing to give an equivalent space."

Platform Construction

The product is particularly suited to platform construction. The method provides a working platform for wall and roof frame erection and contributes to time and cost savings.

In platform construction, sheet edges at the building perimeter are aligned with the outside edges of external wall frames. Wall plates are laid over product and fixed through the sheets to the joists.

Installation Methods depend on the edge profile and the construction method – either “fitted” or “platform”.

Fitted Construction

This applies to STRUCTAfl or and TERMIfl or installation after the walls have been erected. Floor joists and trimmers must be installed so that all sheet edges at the room perimeter are supported.

Platform Exposure

General damage to the flooring surface can occur through various means. Avoid the build up of plaster, concrete, paint etc on the floor and do not use the floor:

• For stacking heavy materials like bricks, tiles, sand, cement or mortar, etc.
• As a mixing table for the mixing of cement, sand, cement or mortar, etc.
• As a mixing table for the mixing of cement, sand, cement etc on the floor and do not

Figure 1. Fastener Spacing - 3000x6000 sheets
250mm maximum centres – body of sheet
150mm maximum centres – sheet edges
25mm from T&G edges
10mm (minimum) from square edges (Butt joint)

Figure 2. AS 1860.2 Sanding Provision

For continuous floor widths over 6m, measured at right angles to flooring, intermediate expansion joints shall be provided in addition to the perimeter gaps. This joint shall be either a single 10mm wide gap (under a wall or across a hallway), or smaller gaps with closer spacing to give an equivalent space.

The method of determining the Bushfire Attack Level now include both a step-by-step procedure, including tables that list climate, slope of ground and vegetation variations in States and Territories and a detailed calculated procedure.

Please refer to AS 3959 “Construction of buildings in bushfire affected areas”.

Figure 3. Particleboard Flooring Installation, Engineered Wood Products Association of Australia (EWPA) Particulateboard Structural Flooring Design Manual, Building Code of Australia (BCA) and relevant timber framing and building standards.
Double Layers

Adhesives

Requirement & Application
Adhesive flooring provides a stiffer floor. The use of construction adhesive in conjunction with nails or screws is mandatory.

For cartridge system, cut nozzle to allow a 5mm head diameter and for foam system regulate flow to achieve the required adhesive bead diameter.

Clean any dirt, grease or water from surfaces to achieve the required adhesive bead diameter.

Adhesive should be cleaned off.

Position sheets within approximately ten minutes of applying the adhesive. Do not allow the adhesive to skin over before applying sheets.

Nail or screw flooring sheets within 15 minutes of positioning sheet.

Remove excess adhesive from sheet surface before it dries. Use a scraper and rag dampened with mineral turps (or appropriate solvent).

To seal cut edges of the sheets, apply a bead of adhesive around the adjoining sheet and remove excess adhesive.

Alternatively, the adhesive may be spread over the cut edge with a spatula.

Notes:
- AS 1860.2 Particulatewood Flooring – Installation
  1. Advises that adhesive applied along the tongue helps to keep tongue tight in their grooves and minimises squeaking in installed floors.
  2. Requires that perials be factory sealed against water penetration. Where panels are not factory sealed, and where perials are cut to site on site, the edgues should be sealed with adhesive used to bond the perials to the joists.

The installation of a shaped foil type insulation that provide a disconnect between the joints and flooring is not recommended as it may impede the proper gluing of the flooring to the perials as set out in AS 1860.2 – seek advice and assurance from insulation supplier prior to installation of sub-floor insulation products as neither suitability.

Table 1. Sheet Quantity Estimator*

<table>
<thead>
<tr>
<th>How many sheets do you need?</th>
<th>Size of Floor m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width x Thickness x Length</td>
<td>Area</td>
</tr>
<tr>
<td>80mm x 19mm x 3600mm</td>
<td>2.88m²</td>
</tr>
<tr>
<td>80mm x 19mm x 3600mm</td>
<td>2.16m²</td>
</tr>
<tr>
<td>3600 x 600</td>
<td>31</td>
</tr>
<tr>
<td>3600 x 800</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 2. Fastener Quantities per Sheet – Standard Fixing

<table>
<thead>
<tr>
<th>Sheet Size (mm)</th>
<th>Joint Spacing</th>
<th>Joint Material</th>
<th>Fastener Type</th>
<th>Minimum Fastener</th>
</tr>
</thead>
<tbody>
<tr>
<td>3600 x 600</td>
<td>450mm centres</td>
<td>Hardwood or Cypress Pine</td>
<td>Countersunk, self-drilling wood screws</td>
<td>25mm, 22mm</td>
</tr>
<tr>
<td>3600 x 800</td>
<td>450mm centres</td>
<td>Hardwood or Cypress Pine</td>
<td>Countersunk, self-drilling wood screws</td>
<td>25mm, 22mm</td>
</tr>
<tr>
<td>3600 x 600</td>
<td>600mm centres</td>
<td>Softwood</td>
<td>Countersunk, self-drilling wood screws</td>
<td>19mm, 22mm</td>
</tr>
<tr>
<td>3600 x 800</td>
<td>600mm centres</td>
<td>Softwood</td>
<td>Countersunk, self-drilling wood screws</td>
<td>19mm, 22mm</td>
</tr>
<tr>
<td>3600 x 600</td>
<td>750mm centres</td>
<td>Machine Drive Nailing</td>
<td>Countersunk, self-drilling wood screws</td>
<td>19mm, 22mm</td>
</tr>
<tr>
<td>3600 x 800</td>
<td>750mm centres</td>
<td>Machine Drive Nailing</td>
<td>Countersunk, self-drilling wood screws</td>
<td>19mm, 22mm</td>
</tr>
<tr>
<td>3600 x 600</td>
<td>1000mm centres</td>
<td>Pneumatic Nailing</td>
<td>Countersunk, self-drilling wood screws</td>
<td>19mm, 22mm</td>
</tr>
<tr>
<td>3600 x 800</td>
<td>1000mm centres</td>
<td>Pneumatic Nailing</td>
<td>Countersunk, self-drilling wood screws</td>
<td>19mm, 22mm</td>
</tr>
</tbody>
</table>

Fasteners

Select an appropriate fastener from Table 2. The fastener type, length and gauge is based on the particulateboard thickness, joint material and available fastening equipment.

Notes:
1. Use galvanised nails designated for wet areas.
2. Screws or jolt head nails for improved holding.
3. Steel screws should be suitably coated to resist corrosion. To determine if there are alternative methods please contact your Sales Manager.
R-fl or Radiant Barrier Flooing

Energy Efficiency

Homes with suspended particleboard floors can be designed to meet home energy efficiency and thermal comfort regulations across Australia.

Energy Efficiency Regulations Overview

Across Australia, energy efficiency regulations vary between the different states and territories. Generally speaking there are two ways to meet the regulations, either with an elemental approach or with a modelling approach.

Noted that in both approaches the floors on mezzanine, first and higher floors do not have any energy efficiency requirements to meet. 

Elemental approach

The elemental approach sets out, among other things, specific minimum insulation levels for the various elements of a house – walls, ceilings and so on and includes minimum requirements for the ground floor. This approach is called acceptable construction in the Volume 2 of the Building Code of Australia (BCA), deemed-to-satisfy in Volume 1 of the BCA, and Rapid or DIY method under the NSW BASIX system.

For most states and territories all the energy efficiency requirements for the ground floor element are in the latest edition of the BCA. However some states may have exemptions or additional requirements to the BCA. Some states may also have requirements which refer to previous editions of the BCA.

Modelling approach

The modelling approach requires a home to meet minimum energy efficiency levels for the energy needed to heat and cool the whole house. These minimum levels are set by the state and territory governments and are minimum 5 star, 6 star rating and so on or, in the NSW BASIX system, minimum heating and cooling loads which vary depending on the homes location. The minimum energy efficiency of the whole house as designed to be modelled using computer software such as FirstRate, AccuRate or BERS Professional by a trained energy assessor. This modelling approach allows considerable flexibility in how a home achieves the minimum energy efficiency rating. It may mean, for example, that no additional insulation is required on the ground floor because of increased wall and ceiling insulation (it is also usually easier and cheaper to install more insulation in these areas) or changes to glazing type, coverage or frames. An average home using STRUCTAflo, TERMOfloor or R-fl or particleboard flooring on the ground floor can generally achieve the required energy efficiency star ratings (or equivalent) for the building fabric by one or more of the following:

- Increasing insulation in the wall, ceiling or internal walls
- Correct building orientation to take advantage of sunlight, shade or breezes
- Providing summer shading and ventilation
- Providing outdoor living areas in warm climates
- Correct glazing sizing, location frame type in cooler or temperate climate zones additional measures may be needed such as:
  - Draught proofing
  - Enclosing the subfloor perimeter with a wall
  - Blocking the wall cavity if building a block or brick veneer home
  - Installing additional insulation under the floor.

For both approaches the insulation properties of the particleboard floor or the insulation properties of particleboard flooring when used as part of a particular floor system will need to be known.

Particleboard Flooring R-Values

Insulation value is commonly called an “R-value” and is a measure of thermal transmittance. There are two ways in which R-values are listed:

- Product or material R-value is the R-value of the product or material on its own.
- System R-value includes the combined insulation value of flooring material, air spaces, any additional insulation and other variables working in conjunction.

STRUCTAflo, TERMOfloor and R-fl or all have a material R-value. The R-Value for suspended particleboard flooring varies and R-Values for a common selection of systems are included in Table 5.

Specific floor system R-values can vary depending on:

- Sub-floor perimeter and joists – the area under the ground floor (the subfloor) is enclosed the air movement is greatly reduced, substantially increasing the R-value of the floor system. Note that minimum sub-floor ventilation rates, which vary depending on the building location and its humidity zone, must be adhered to.
- Building location and sub-floor ventilation – a building located in a lower relative humidity zone requires less subfloor ventilation if the sub-floor perimeter is enclosed. Less ventilation (and air flow) increases the R-value of the floor system.
- Building exposure – a floor system of a building in a suburban area will have a higher R-value than a floor system installed in an exposed rural or susceptible location.

Sub-floor perimeter material – if a subfloor is attached with a higher material R-value then the ground system will have a higher R-value.

Height above ground level – floor systems close to the ground have a greater thermal connection with the earth so will have a higher R-value than one that is further off the ground.

Wall cavity barrier – if a sub-floor perimeter is installed and brick or block veneer is the method of construction, installing a barrier below floor level to prevent connection between the airspace under the floor and any wall cavities will substantially increase the R-value of a floor system. Note that in warm, humid climates a wall cavity barrier will reduce the ability of the house to cool off as in some climate zones this is not an elemental requirement.

Floor joist depth – a floor joist of greater depth will slightly increase the R-value of a ground floor system, which is trapped underneath.

Soil type – clay soils are less thermally conductive than sandy soils so a suspended ground floor built on clay soil will have a higher R-value.

Floors material – a flooring material which conducts less heat (such as particleboard or carpet) will increase the R-value of a floor system. 

Additional Insulation

If additional insulation is required for the ground floor it may be added on top of or underneath the floor or over the inside of the sub-floor perimeter walls. The following options are available:

On top of the floor

Carpet and underlay laid on top of the particleboard floor can add a significant insulation effect. An increase in R-value of approximately R0.5 (downwards) and upwards can be expected.

Carpet and underlay can increase R-value (down and up) by R0.5.

Laying tiles directly onto particleboard flooring will result in only a slight increase in system R-value. The effect on R-values of timber finishes such as floating timber floors or tongue and groove timber varies depending on the type of wood and the substrate materials. Consult with the manufacturer of these products on their specific material R-values. Be aware that if the insulation on top of a floor may not be recognised by some building authorities or energy rating software as additional insulation. Check with your local building authority or energy rating professional about the acceptability of this in your area.

Under the floor

The addition of insulation under the floor can either in small or large increases in R-value to a ground floor system.

Installing R-fl or significantly reduces the radiant heat transfer from the warm living spaces through the floor into the cool subfloor space to achieve an improvement in the R-Value (downwards) of the flooring system. R-fl or can add up to R0.8 downwards insulation value to a ground floor system.

STRUCTAflo, TERMOfloor and R-fl or can be used in conjunction with other insulation products below the floor. It is important that the R-fl or reflective coating requires an air gap underneath to work effectively.

Bulk fibre insulation installed on top of or near the subfloor perimeter will improve the insulation performance of the floor system. Again, take care that the minimum sub-floor ventilation requirements for the buildings humidity zones are adhered to ensure adequate air movement under the floor.

Inside the sub-floor perimeter wall

In cold climates installing additional insulation inside the sub-floor wall enclosing the perimeter will improve the insulation performance of the floor system. Again, take care that the minimum sub-floor ventilation requirements for the buildings humidity zones are adhered to ensure adequate air movement under the floor. 

The installation of a membrane or R-fl or draped over the floor joists is not recommended as it may impede the proper gluing of the flooring to the floor joists as set out in Australian Standard AS1562. This Standard states that the use of construction grade adhesives in conjunction with nails or screws is mandatory. The installation of a draped membrane or R-fl or may interfere with the function of the adhesive between the flooring and floor joist.
Further information

Research funded by the Forest Wood Products Australia (FWPA) has identified a number of options for insulating under floors in the report “Insulation Solutions to Enhance the Thermal Resistance of Suspended Timber Floor Systems in Australia”. This report can be found at www.timber.org.au in the Design and Construction section under Thermal Performance.

Due to the magnitude of solutions and products available only a few systems are noted alone. Advice on the most suitable product for your climate and conditions including information on correct installation of additional insulation under the floor is to be sought from the insulation supplier/manufacturer.

Hints

Apply a quality duct tape to joins as soon as practical

Notes:

• Precautions need to be taken so the insulation does not get wet during construction which may cause mould or fungal growth to develop under the flooring.
• If underfloor insulation does get wet, ensure adequate sub-floor air ventilation and circulation is present to dry it out.
• Care must also be taken not to over insulate the floor. In hot climates or in other climates at warmer times of the year too much under floor insulation may prevent the building cooling off, resulting in increased use of air conditioning to ventilate or cool the inside of the home.
• Placing additional insulation underneath floors where the sub-floor perimeter is not enclosed is essential to prevent water damage to the substructure and adjoining rooms or spaces.

WET AREA INSTALLATION

Borg recommend the use of a FIBRE CEMENT UNDERLAY in all ceramic tile applications.

Particulate Board Flooring provides an economical flooring option for the application of impervious waterproofing systems in wet areas such as bathrooms, laundries and toilets. The waterproofing of floors and floor/wall joints in these areas is essential to prevent water damage to the substructure and adjoining rooms or spaces.

Waterproofing systems for wet area floors must comply with regulatory requirements. Systems which comply with AS 3740, have a State or National Certificate of Accreditation are generally suitable for use over particulate board flooring.

Australian Standard AS 3740 defines “waterproof” and “water resistant” and specifies which treatment is required for wall and floor areas in bathrooms, toilets and laundries under various arrangements. When treated in accordance with AS 3740, with sealants and membranes meeting AS 4888, particulate board flooring Wet Area Membranes are suitable for use in all wet areas.

Notes:

• Movement of the sub-floor members due to shrinkage, attention to fixing detail or from subsequent floor loads can be detrimental to the performance of floor surfacings, e.g. waterproofing systems and ceramic tiles. Close attention should be given to the fixing detail in the design and construction of the floor.

Table 1. R-values for selected suspended ground floor systems using STRUCTaflor, TERMaflor and R-flor Yellow Tongue – unsealed perimeters

<table>
<thead>
<tr>
<th>Flooring product details</th>
<th>STRUCTaflor and TERMaflor Yellow Tongue (19mm)</th>
<th>R-flor Yellow Tongue (19mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height of floor above the ground (metres)</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Additional insulation type</td>
<td>Direction of heat flow</td>
<td>R-Value</td>
</tr>
<tr>
<td>No additional insulation</td>
<td>Downwards</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.52</td>
</tr>
<tr>
<td>With carpet and underlay</td>
<td>Upwards</td>
<td>0.93</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.91</td>
</tr>
<tr>
<td>No carpet and non-effective membrane between or under joists</td>
<td>Downwards</td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.99</td>
</tr>
<tr>
<td></td>
<td>Upwards</td>
<td>1.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.39</td>
</tr>
<tr>
<td>No carpet and RFL under joists</td>
<td>Downwards</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.72</td>
</tr>
<tr>
<td></td>
<td>Upwards</td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.11</td>
</tr>
<tr>
<td>No carpet &amp; RFL insulation between joints</td>
<td>Downwards</td>
<td>2.95</td>
</tr>
<tr>
<td></td>
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<td>2.83</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>3.27</td>
</tr>
<tr>
<td></td>
<td>Upwards</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.46</td>
</tr>
<tr>
<td>No carpet RFL insulation between joints</td>
<td>Downwards</td>
<td>2.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.94</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.81</td>
</tr>
<tr>
<td></td>
<td>Upwards</td>
<td>2.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.65</td>
</tr>
</tbody>
</table>

Notes:

1. R-values for typical suburban location in humidity zone 3, standard brick veneer with a wall cavity barrier, sub-floor enclosed with single skin weatherboard (110mm), floor joist depth 90mm over a clay soil.
2. Bulk insulation is assumed to sit flush with the bottom of the floor joist, leaving an air gap between the top of the bulk insulation and the bottom of the parcurbled boarding.
3. R-values calculated in accordance with the relevant provisions of Australian Standard AS/NZ4859.1 – Method for the thermal insulation of buildings. General criteria and technical provisions and the International Standards Organisation standard ISO 13370 – Thermal performance of buildings – Heat transfer via the ground – Calculation methods is used as the methodology for determining the R-value of suspended timber floors.
4. Assumption of carpet: 10mm carpet, 10mm underlay both with conductivity of 0.05 W/m2K.
5. Additional R-value for adding a non-ceramic membrane between or under joists is considered to add an R-value of 0.2 to the total R-value of the floor construction as advised in BCA 2010 Volume Two.
Particleboard flooring is an ideal base for underlayments, floor coverings and finishes. Surface treatments include carpet, vinyl sheet or tile, cork, linoleum, quarry or ceramic tile and clear or tinted paint coatings.

Surface Finishing

Apply the covering or finish in accordance with the manufacturer’s instructions. The installation should also meet the requirements of the relevant Australian Standards:

AS/NZS 2311, Textile Floor Coverings – Installation practice general
AS/NZS 2455.1, Ceramic Tiles – Guide to the Installation of Ceramic Tiles.

Preparation

Preparation of particleboard flooring to receive floor surfacings will depend on the type of covering or finish and the effect of weather exposure on the floor.

Preparatory work should be undertaken only when the building is closed and weather tight. STRUCTA® should be fixed tightly to joists, as per “Installation Details” page 7.

Drive fasteners below the floor surface to facilitate sanding and minimise “tail popping” in the event of substructure shrinkage.

Sanding

Sand the surface of the product to level sheet joins and fixing points, even out irregularities and remove any loose weathered particles. For general purpose sanding use 40-60 grit closed coat paper. Refer to sanding provisions detailed under Platform Exposure above.

Heavy sanding, with maximum 40 grit paper, may be required on floors which have been exposed to severe wetting. Avoid excessive sanding and limit to a 1mm maximum cut over general floor areas, 2mm maximum cut over supported sheet joins, in accordance with AS 1860.2.

For clear and tinted paint finishing, the product should be fine sanded with 100 grit closed coat paper.

After sanding remove all dust, preferably by vacuum cleaning. The prepared surface should be dry, clean and free of any surface contamination, e.g. paint, oil, etc.

Concrete Surfacing

Concrete floors in domestic, commercial and industrial buildings can be upgraded with particleboard flooring to change the surface characteristics and adapt the floor for special purposes, e.g. work areas, goods storage, display, sport or recreation, children’s play areas, etc or as a base for decorative timber flooring. Particleboard flooring provides a uniform, comfortable “walk on” surface and the feeling of warmth associated with wood.

STRUCTA® provides the ideal base surface for base under decorative timber flooring or over a concrete slab.

Concrete Surfaces:
The concrete should be dry, reasonably flat and free of any surface contamination, e.g: paint, oil, etc. After sanding remove all dust, preferably by vacuum cleaning. The prepared surface should be dry, clean and free of any surface contamination, e.g. paint, oil, etc.

Prior to installation it is necessary to ensure that the concrete is sufficiently level to accept the system. Where the slab is greater than 3mm out of level over any 1500mm length, a concrete topping (leveling compound), grinding or packing should be used. Slabs on ground should be constructed with a continuous under slab vapour barrier (e.g. 0.2mm thick polyethylene). Timber floors should not be installed until the concrete slab has a moisture content less than 5% which has been wetted must be allowed to dry to a moisture content below 10%.

Check that the STRUCTA® is fixed tightly to joists, as per “Installation Details” page 7.

Vapour Barriers:

An impervious moisture barrier, e.g. 0.2mm polyethylene, should be laid over any concrete surfaces subject to dampness. Lap and tape all joins and fold the barrier up walls. Loose lay the STRUCTA® as outlined under “Fixing”.

Quarry & Ceramic Tiles

Bury recommend the use of a fibre cement underlay in all ceramic tile applications.

Resilient Sheet and Tile

Resilient sheet and tile floor coverings, including flexible and semi-rigid PVC, cork, rubber, linoleum and cushioned vinyl require a hard underlay, e.g. Hardboard Underlay, to meet Australian Standard and floor covering manufacturer’s installation requirements.

Clear or Tinted Finishes

Polyurethane gloss floor finishes can be applied to prepare surfaces to give an attractive cork-like appearance. Prepare the product as detailed under “Sanding”. Apply a minimum three coats of polyurethane in accordance with the manufacturer’s instruction.

Lightly sand between coats and vacuum clean.

Note: STRUCTA® sheets may vary in colour and appearance. The variation will show through clear and tinted finishes.

Alternative Applications

Particleboard flooring is suitable for alternative flooring applications to restore old floors, upgrade concrete floors, reduce sound transmission or accommodate sub-floor services for computers, telephones, plumbing, etc.

Raft and Floating Floors

To reduce sound transmission through existing floors, particleboard flooring may be used as a raft or floating floor over a layer of resilient material, e.g. Cane-tile insulating board, expanded polystyrene, rain bonded fiberglass, etc. The purpose of the assembly is to isolate the existing floor and walls from surface vibrations associated with airborne sound and impact e.g. footsteps. Raft or floating floors are not fixed to the sub-floor. They are held in position by their own weight and by skirting fixed to perimeter walls.

Best results are obtained where the floor systems are applied over concrete to reduce impact noise transmission to the room below. Another recognised control against impact noise is to cushion the impact with a soft floor surfacing e.g.:

Particleboard Flooring
**Product Material and Properties**

Table 1 describes typical dimensions and package size available in the STRUCTAflo range.

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Edge type</th>
<th>Length +/-2mm</th>
<th>Width +/-2mm</th>
<th>Sheets per pack</th>
<th>Contents m²</th>
<th>Approx Mass per pack (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19mm</td>
<td>YELLOWtongue</td>
<td>3600</td>
<td>800</td>
<td>30</td>
<td>97.2</td>
<td>1390</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3600</td>
<td>600</td>
<td>30</td>
<td>64.8</td>
<td>900</td>
</tr>
<tr>
<td>22mm</td>
<td>REDtongue</td>
<td>3600</td>
<td>800</td>
<td>30</td>
<td>97.2</td>
<td>1500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3600</td>
<td>600</td>
<td>30</td>
<td>64.8</td>
<td>1000</td>
</tr>
<tr>
<td>25mm</td>
<td>BLUEtongue</td>
<td>3600</td>
<td>800</td>
<td>15</td>
<td>54.0</td>
<td>1134</td>
</tr>
</tbody>
</table>

**Particleboard Flooring Properties**

Table 2 contains typical properties for Australian produced particleboard flooring in internal application where they are not subject to proling wetting or high level of relative humidity. The equilibrium moisture content of the board should be maintained below 13%.

<table>
<thead>
<tr>
<th>Property</th>
<th>Units</th>
<th>Thickness – mm</th>
<th>19</th>
<th>22</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>kg/m³</td>
<td></td>
<td>680</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>Blending Strength (MOR)</td>
<td>MPa</td>
<td></td>
<td>24</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Blending Stiffness (MOR)</td>
<td>MPa</td>
<td></td>
<td>3500</td>
<td>3290</td>
<td>3750</td>
</tr>
<tr>
<td>Internal Bond Strength</td>
<td>MPa</td>
<td></td>
<td>0.70</td>
<td>0.75</td>
<td>0.80</td>
</tr>
<tr>
<td>Surface Water Absorption</td>
<td>g/m²</td>
<td></td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Thickness Swell (24 hr)</td>
<td>%</td>
<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Glue Bond Durability</td>
<td>MPa</td>
<td></td>
<td>5.5</td>
<td>5.5</td>
<td>6</td>
</tr>
<tr>
<td>Glue Bond Quality</td>
<td>MPa</td>
<td></td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Thickness Stability</td>
<td>%</td>
<td></td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Formaldehyde Potential (Desiccator Method)</td>
<td>mg/L</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
<td></td>
</tr>
</tbody>
</table>

**Fire Hazard Properties**

For certain building types and locations within the building, the Building Code of Australia stipulates minimum fire properties of materials used in construction. These fire hazard properties are generally used for commercial buildings and are not required for single family houses (Class 1).

**Commercial Building**

Particleboard used as a flooring substrate – BCA Specification C1.10 – Early Fire Hazard Properties (AS/NZS 1520.3-1998)

This fire hazard property is used where particleboard is not the final floor covering such as under a carpet or tiled floor. In this case the Early Fire Hazard Properties are required for most single family homes.

<table>
<thead>
<tr>
<th>Property</th>
<th>Index</th>
<th>Range</th>
<th>Index</th>
<th>Range</th>
<th>Index</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignitability</td>
<td>13</td>
<td>0-20</td>
<td>13</td>
<td>0-20</td>
<td>13</td>
<td>0-20</td>
</tr>
<tr>
<td>Spread of Flame</td>
<td>4</td>
<td>0-10</td>
<td>4</td>
<td>0-10</td>
<td>4</td>
<td>0-10</td>
</tr>
<tr>
<td>Heat Involvethread</td>
<td>4</td>
<td>0-10</td>
<td>4</td>
<td>0-10</td>
<td>4</td>
<td>0-10</td>
</tr>
<tr>
<td>Smoke Developed</td>
<td>3</td>
<td>0-10</td>
<td>2</td>
<td>0-10</td>
<td>4</td>
<td>0-10</td>
</tr>
</tbody>
</table>


Where particleboard is used as the actual floor covering (exposed) in commercial buildings, Specification C1.10a of the BCA fire hazard properties places limits on the floor covering performance in various locations within a building or whether sprinklers are used.

**Thermal Insulation**

The thermal conductivity of STRUCTAflo and TERMIflo is 0.12 W/mK. Thermal resistance (R-values) calculated in accordance with the relevant provisions of Australian Standard AS/NZ2669.1 for the nominated thicknesses are:

<table>
<thead>
<tr>
<th>Product</th>
<th>R-value (Thermal resistance m²K/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YELLOWtongue 19mm</td>
<td>0.16</td>
</tr>
<tr>
<td>REDtongue 22mm</td>
<td>0.18</td>
</tr>
<tr>
<td>BLUEtongue 25mm</td>
<td>0.21</td>
</tr>
</tbody>
</table>

**Health and Safety**

The normal health and safety precautions should be taken when working with wood panel products. Machine tools should be fitted with dust extractors and work areas kept clean. If dust levels exceed Worksafe Australia standards the wearing of a dust mask (AS/NZS 1715 and AS/NZS 1711) and safety glasses (AS/NZS 1331) is recommended.

Storage and work areas should be adequately ventilated.