

# **Plyfloor**

## **Advantages**

### **Superior strength**

- Stiffness of Plyfloor is nearly three times that of particle type boards of the same thickness. This means thinner Plyfloor panels are cost effective floor panels. A single layer of Plyfloor can do the same job as two layers of other wood based boards.
- High load performance for commercial use. Strength properties are published in engineering standards. Backed by a third party quality assurance programme, Plyfloor can be designed to high industrial load criteria in building codes.

### **Superior durability**

- Wet area and garage floors, can be treated H3 for resistance to water splash and decay. Plyfloor can be used in conditions where other panel materials would deteriorate. The durability and strength of Plyfloor can be used for wet areas, garage floors and commercial flooring.

### **Soil**

Plywood (untreated or H3 treated) must not be allowed to come in contact with soil.

### **Rain wetting and construction time**

Some materials used in floors will not withstand exposure to weather.

Untreated plywood will withstand rain and exposure during construction.

Some discolouration and minor checking of the surface can be expected if plywood is exposed for extended periods.

For floors uncovered for long periods use H3 treated plywood to reduce the risk of decay. Return the plywood to less than 18% moisture content before installing moisture sensitive materials.

Where a high quality visual finish is required, protect the plywood with a cover or sealer.

### **Insect resistance**

For termite resistance in Australia, follow guidelines in AS 3660 to design the insect out of the building. H3 treated plywood provides extra protection where necessary.

### **Wet area flooring**

Floors in bathrooms, laundry spaces, kitchens and garages are exposed to water occasionally. Use H3 treated plywood where the exposure is likely to be regular or uncontrolled. For rental accommodation, motels and commercial residential floors, H3 treated Plyfloor is recommended.

### **Decking**

Plywood for decking must be preservative treated to at least H3 level, however structural plywood is not normally recommended for decks or floors that are permanently exposed to the weather. A properly detailed barrier material such as Butynol or Nuralite can be used to protect plywood decks from moisture exposure. Refer to the Roofing and Decking brochure.

### **High humidity and condensation**

In uses where the moisture content of wood may exceed 18% for prolonged periods, plywood must be H3 treated to resist decay hazard. This includes excessive ground dampness and

plywood that may be subject to condensation. Appropriate building detailing and ventilation is recommended.

### Heated floors

The adhesive and solid wood veneer in Plyfloor will withstand floor heating systems. Tight moisture content control during construction is recommended to avoid shrinkage problems in both framing and plywood. Refer to Technical Note "Floor Heating: Plyfloor." 96/5/33 - refer to website.

For more information, refer to the Carter Holt Harvey "Durability statement" - refer to website.

### Moisture Content

At the time of dispatch of the plywood, the moisture content anywhere within a sheet, when determined in accordance with AS 2098.1 shall be as follows:

(a) Sheets not exceeding 7.5mm thick - not less than 10 percent or more than 15 percent.

(b) Sheets exceeding 7.5mm thick - not less than 8 percent or more than 15 percent.

**Table 1 - Plyfloor**

Product & grade	Thickness (mm)	Sheet size (mm)	kg/m <sup>2</sup>	kg/sheet
Plyfloor CD	15	2400 x 1200	8.3	24
		2700 x 1200		27
Plyfloor CD	17	2400 x 1200	9.2	26
		2700 x 1200		30
Plyfloor CD	19	2400 x 1200	10.5	30
		2700 x 1200		34
Plyfloor CD	21	2400 x 1200	11.6	33
		2700 x 1200		38
Plyfloor CD	25	2400 x 1200	13.5	39
		2700 x 1200		44

### Technical Details



**Table 2 - Floor joist spacings for Plyfloor**

Australia loading code descriptions <b>AS 1170.1</b>	Houses and Residential Bedrooms	Dining, Communal Assembly, Classrooms	Institutional Assembly	Public Assembly, Corridors, Stages, Kitchens, Laundries, File rooms	Offices Retail sales, General Storage, Libraries	Drill rooms, Cold storage
Plyfloor	Maximum joist centres (mm) plywood continuous over two spans face grain across joists. Thick					

	(mm). Adjust to suit 2400 or 2700 sheet length.					
15	480	300				
17	540	400	300	300		
19	600	480	450	400		
21	600	600	480	480	300	
25	800	800	675	600	480	400
Design basis	Working stress design to AS 1720.1. Loads distributed on effective panel width in accordance with PAA design methods*. Sag limit of span/200 to within 2% on idealised point loads in accordance with AS 1170.1 as follows:					
Max. basic distributed live load (kPa)	2.0	4.0	5.0	7.5	5.0	5.0
Max. concentrated live load (kN)	1.8	2.7	3.6	4.5	7.0	9.0

\* Refer PAA Design Manual "Structural plywood for commercial and industrial flooring" Plywood Association of Australia References section for details

**Note:** If the plywood is to be overlaid with large ceramic tiles, to minimise the likelihood of cracking the brittle tiles, use 17mm F11 or equivalent at 450mm joist centres or use the bonded mortar bed system detailed for wet area flooring. Refer to PAA T&G Structural Plywood for Residential Flooring - Design Manual. PAA Details in Reference section.

## Treatment

LOSP Treatment refer technical Note "CCA Ecoply Plywood - Surface Quality" 01/06/62, "Preservative Treated Ecoply Plywood" 96/12/38 - refer to technical notes on website.

## Compliance with Building Codes

For houses, Plyfloor is acceptable under clause 1.3 of AS 1684. Maximum frame spacings for floor joists for different plywood thicknesses in a dry environment are in Table 2 (above). The tables include spacings for a range of different uses. Spacings may be decreased if required, but not increased. The plastic tongue has been tested for basic point live loads up to 2.7 kN in thinner panels and 7.5kN for panels 25 mm and thicker.

## Identification

Plyfloor is manufactured and branded to comply with AS/NZS 2269: 2004, by Carter Holt Harvey Limited,

Plyfloor carries the following branding:

- The PAA "Tested Structural Stamp".
- Manufacturers Name - Carter Holt Harvey.
- The word structural.
- A-Bond - durable phenolic bond.
- Stress grade F11.
- FL - Flooring, CD is face and back visual grade.
- Panel Construction Code ie 15-30-5.
- Australian Standard AS/NZS 2269.
- Mill No.

## Standards

AS 1170 AS 1684 AS 1720



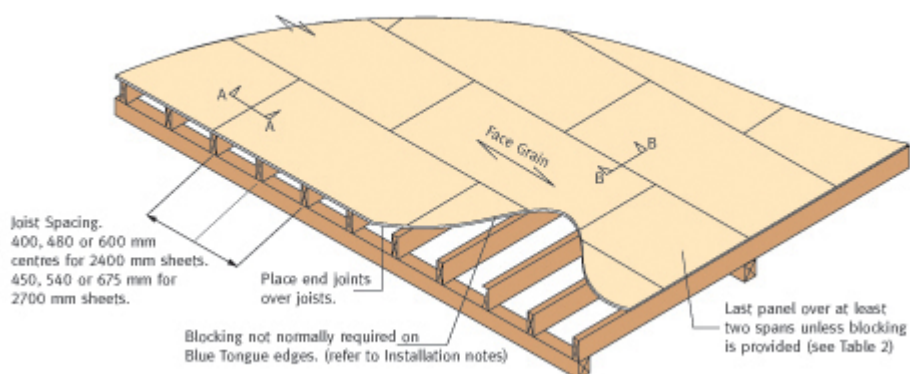
## Installation



## Framing

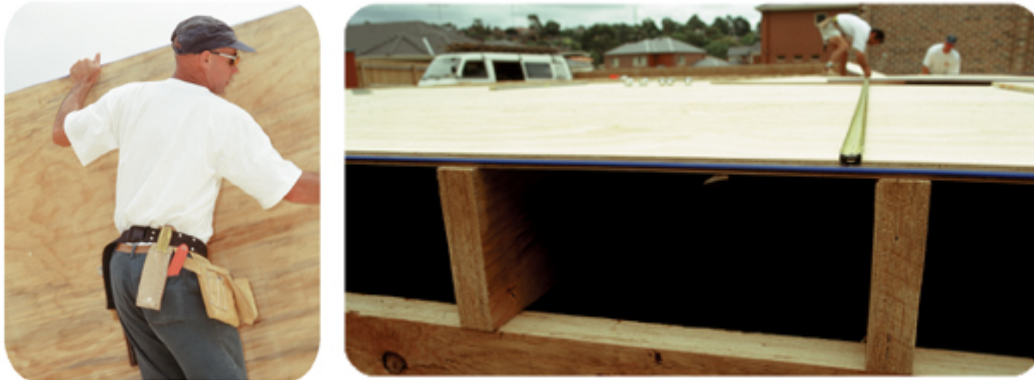
- Use timber or steel frame spacings in Table 2 to suit Plyfloor thickness.
- Ensure top edges of joists are properly aligned.
- Use kiln dry Laserframe or Framesure framing or Hybeam Engineered "I" joists
  - To lower moisture level in inter-storey floor spaces.
  - Reduce differential joist deflections.
  - Minimise shrinkage in the depth of the floor (avoids cracking in exterior finishes and fittings).
  - Avoid nail popping.
- Blocking (nogs) - refer to Detail 1
  - Block all edges of standard "square edge" Ecoply structural plywood.
  - Block if the floor is being used as a diaphragm for lateral wind and earthquake resistance with fixing transfer shear across the joints. In this case, details should be specified on drawings.
  - Use blocking "on the flat" to provide gaps where air flow is needed for ventilation.
- Blocking within the body of the floor is not required for tongue and grooved edges.

Detail 1: Plyfloor flooring layout



Sheet layout - refer to Detail 1.

- Place face grain at right angles to the supports
- Sheets must be continuous over at least two spans (three framing members).
- Lay the sheets in a staggered pattern.
- Allow a 2 to 3 mm expansion gap between sheets for square edges and 1 mm for tongue and grooved edges.
- Butt tongue and groove panels at the tongues because the machined edges can accommodate the movement. Allow expansion gap at the ends.
- Panels should be pushed together lightly by hand, cramping is not recommended.
- Allow 5 mm clearance inside confining structure such as concrete or brick walls adjacent to the floor.
- Allow clearance for ventilation as required.



## Floor Insulation

For ground floors requiring insulation foil, draped foil prevents the use of adhesive, and increases the quantity of foil required to achieve insulation performance. In practice, gaps provided by the draped foil are often inadequate. The performing solution is to nail-glue the floor to increase stiffness and minimise squeaking, and stretch the foil flat under joists. Use battens or sheets or strips of a low grade of non-structural plywood (7 mm pallet grade) to fix the foil to the underside of the floor. Alternatively, use foil backed panels under the floor or a different type of insulation such as fibreglass (see Detail 2).

Detail 2: Plyfloor and insulation options

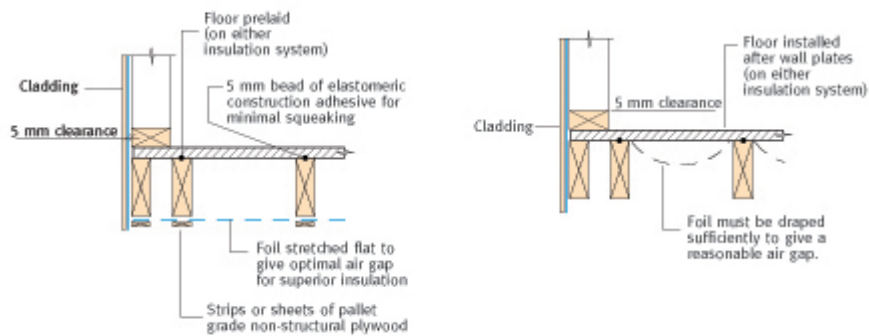
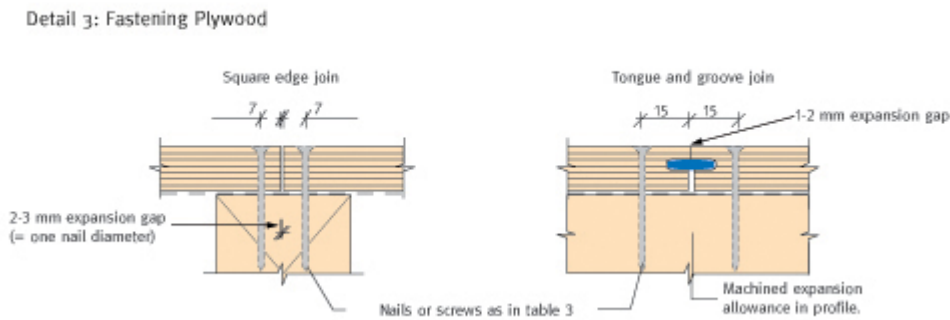


Table 3 - Minimum fastener specification

	Timber framing			Screws in steel framing (size and load)				
Plywood thickness	Nails (length, diameter, load)		Screws (gauge, root diameter, length, load)	Steel thickness approx 1.15 mm	Steel thickness 2.8 mm and over			
Up to 9 mm	40 x 2.5mm	570	No 8 (3.05 mm) x 30	1230	10-16 45*	1300	10-16 45	1200
12 and 15 mm	50 x 2.8 mm	710	No 8 x 40	1230	10-16 45	2000	10-16 45	1200

17	60 x 2.8 mm	710	No 10 (3.3 mm) x 40	1650	10-16 45	2100	14-20 45	3000
19 to 21 mm	60 x 2.8 mm	710	No 10 x 45	1650	10-16 45	2100	14-20 45	4000
25 mm	75 x 3.15 mm	883	No 10 x 50	1650	10-16 45	2100	14-20 45	5000

\* Screw gauge-thread pitch-length in mm. The load in Table 3 is the characteristic load (N) for one fastener in single shear.



#### \* Technical Considerations

As Plywood is made from wood and is hygroscopic in nature, i.e. it absorbs and desorbs moisture from the atmosphere to reach equilibrium moisture content in balance with the atmosphere.

#### Fixing of sheets

Plyfloor may be fixed to different types of framing with nails or screws or a combination of fasteners and elastomeric adhesive.

- Do not over-drive gun-nails or screws.
- Fix at least 7 mm or 3 fastener diameters from the sheet edges or behind tongues.
- Fix no more than 15 mm from sheet edges.
- Space fasteners at 150 mm centres on all edges, and 300 mm centres in the body of the sheet.
- Fasteners should be corrosion resistant to a level appropriate to the end use, life expectancy and expected exposure to moisture during construction and service.

Galvanised fasteners are the minimum recommendation and are normally satisfactory in dry wood.

Where plywood or framing may become damp or is H3 treated, use stainless steel (316) or silicon bronze flathead nail countersunk screws to avoid corrosion in unpainted sheets for maximum durability. Follow the recommendations of the fastener manufacturer.

#### Fixing to Timber

- Galvanised nails or annular grooved nails have better holding power than smooth nails.
- Ring shank nails or annular grooved nails or screws are recommended for additional holding power.
- Stainless steel nails must be annular grooved.
- Punch nails and apply floor sealant before filling holes with suitable putty.

#### Fixing to Steel

- Fix directly to roll formed steel (up to 2 mm thick) with self drilling, self tapping screws. If plywood gets damp and expands, screws in thicker steel may break. Keep plywood dry or use larger screws or:
- Bolt or screw battens to the steel and apply plywood as above for timber.



### Adhesives

Elastomeric (Construction) adhesives should be used with nails to minimise floor squeaking.

- Use a bead of structural elastomeric adhesive in accordance with the manufacturer's instructions.
- Apply pressure using the standard nail pattern above.

### Finishing

Paints and coatings should be applied following the manufacturer's instructions. Avoid heavy sanding that may remove the critically important structural face veneer. For floor coverings and roofing, adhesives must be compatible with CLOSP treatment salts in H3 treated panels. Compatibility can often be improved by lightly washing, scrubbing and drying the plywood surface prior to fixing.

### Storage and Handling

- Keep dry
- Store under cover (avoid tight cover and potential condensation).
- Handle and stack with care to avoid damage.
- Stack flat clear of ground on at least three evenly spaced bearers.

### Ventilation

Ground floors must be ventilated in accordance with Clause F4.10 of the Building Code of Australia. Use H3 treated Plyfloor where moisture levels in sub-floor regions are high. See Technical note "CCA Ecoply plywood - surface quality