

Armourpanel[®]

Specifications & Installation Instructions

Contents

Disclaimers and Caveats	2
Product Description	3
Product Specifications	5
Design Data	6
Grading Properties	9
Floor Design	11
Fixing & Installation	12
Finishing	13

IMPORTANT INFORMATION

COLOUR VARIATION

The outstanding visual characteristic of flooring manufactured from Australian hardwood timbers is the variation in colour and texture between individual floor boards. The unique aesthetic appeal of the flooring lies in the harmonious combination of these variations, rather than uniformity of colour and grain. Even within the same timber species, colour and natural markings vary, so each board is imbued with its own appeal. This natural variation ensures that every installation is unique.

Packs of panels should be opened prior to installation and the customer shown the colour variation that can be expected. Where practical, any boards that the customer is concerned about should be used in areas that are not main thoroughfares (in cupboards, etc.).

NATURAL FEATURES

Another characteristic of Australian hardwood flooring is the occurrence of natural features such as gum veins, knots and small holes caused by borer activity. All trees exhibit these features, although they may be more dominant in one species or in one particular tree than another. These natural markings are part of the tree's history and add to the character and uniqueness of the floor. It is essential that the customer is aware that such features are to be expected.

TIMBER SAMPLES

Small sample boards provide only an approximate indication of typical boards in a particular species. When choosing a species, customers should always try to view larger installed showroom panels or, where possible, completed installations, to appreciate the variations that can be expected in the selected species. Photographs of completed installations can help but viewing an installed product is best.

BIG RIVER'S RESPONSIBILITY

Under the terms of our warranties, Big River will undertake to repair or replace any defective products during the warranty period. The choice of remedy is at the discretion of Big River. A representative of Big River or the supplier of the material will usually be available to inspect any product considered to be out of specification. Where the location makes this unreasonable, products must be shipped to a Big River location for evaluation at the purchaser's expense. All material should be thoroughly inspected before installation. Any material considered to be faulty or of poor quality must not be laid. No claims will be allowed for visible defects in material that has been laid.

NOTE: Material will not be replaced because of natural colour variations. Big River will not accept responsibility for colour variations in material that has been installed. Refer to the relevant Big River Warranty for detailed conditions and limitations of liability.



ARMOURPANEL™

PRODUCT DESCRIPTION

Armourpanel is a precision engineered structural or decorative total hardwood plywood panel manufactured under the Plywood Association of Australia's third party audited quality control program. The PAA Tested Structural stamp on each Armourpanel panel is a guarantee of safety and reliability when the panels are used in accordance with this publication.

Armourpanel is bonded with a durable Type B bond using plantation and regrowth hardwood veneers. The product is therefore extremely environmentally friendly.

SAFETY & RELIABILITY

This publication details the use of Armourpanel as an engineered flooring panel for industrial and commercial applications. Loading requirements are in accordance with Australian Standard AS1170.1 SAA Loading Code Part 1 Dead and Live Loads and Load Combinations. The design thickness/span tables under point and uniformly distributed live loads have been generated in accordance with the requirements of Australian Standard AS1720.1 1988 SAA Timber Structures Code Part 1 – Design Methods. These two codes satisfy the structural provision of the Building Code of Australia – 1990.

WORKABILITY

Armourpanel can be worked with conventional woodworking tools and can be easily cut, sanded, bored, planed, drilled, etc. Because of Armourpanel's cross-lamination of veneers, it can be nailed or drilled within 10mm of the edge without fear of splitting or damage.

USES

Armourpanel can be used in many interior applications that require strength, durability, resilience, stability, impact resistance, and the ability to withstand moisture change. Armourpanel is currently used in applications such as domestic floors, sports floors, bar floors, container floors, mezzanine floors, soundstage floors, stage floors, school floors, loading docks, office floors, bus floors, etc. Armourpanel can also be used on ceilings, walls and furniture, and can be moulded to curved shapes.

FINISHING

Armourpanel will require further onsite finishing to achieve proper finish. This will include fine sanding.



ARMOURPANEL™

PRODUCT DESCRIPTION

BENEFITS OF USING ARMOURPANEL

- ◆ Big River is a wholly Australian owned and operated company.
- ◆ Australian quality standards certified.
- ◆ Armourpanel has a lifetime guarantee on the structural integrity of the product.
- ◆ Big River warrants its products in accordance with the statutory requirements of the relevant authorities.
- ◆ Manufactured using hardwearing Australian and exotic hardwoods.
- ◆ Manufactured from hardwood timber sourced from sustainably managed regrowth and plantation forests.
- ◆ Floor can be laid directly on to concrete slab. Does not need battens, etc.
- ◆ Can be used directly over floor joists.
- ◆ Available in a range of species
- ◆ It has thick face veneer (approximately 3.0mm) that can be re-sanded.
- ◆ No acclimatisation period needed.
- ◆ Superior strength and impact resistance.
- ◆ Excellent soundproofing qualities.
- ◆ Can be installed in all conditions – direct sun-light (which can cause colour change to timber floors), air-conditioning, around fireplaces, etc.
- ◆ Available in a range of panel sizes.
- ◆ Timber product ideal for allergy or asthma sufferers.

AVAILABILITY

Armourpanel is usually manufactured to order. Please order as early as possible to ensure material is supplied when required.

Plywood panels will not stay perfectly flat; it can be affected by many parameters including the ambient conditions, moisture uptake and moisture loss, air-conditioning or by stresses in the panel etc.

When plywood is used un-supported there is a big risk that it will warp, twist or bow. We therefore recommend that there should be some sort of frame or support to restrict this type of movement. This certainly applies to doors where it is important that the plywood remain flat.



ARMOURPANEL™

PRODUCT SPECIFICATIONS

MANUFACTURING PROCESS

Armourpanel is manufactured using a total hardwood balanced construction producing plywood boards manufactured to AS/NZS2271: 2004 “Plywood and Blockboard for exterior use” and stress graded in accordance with AS/NZS2269:2012 “Plywood – Structural”.

All sheets have a solid cross-band veneer directly under the face veneer.

Face material is as per AS/NZS2269:2012.

- ◆ Armourpanel is available with the following species/colours as the face veneer: Blackbutt, Flooded Gum, Spotted Gum and Sydney Blue Gum.
- ◆ All core material is manufactured from hardwood veneers.
- ◆ Panels will require extra sanding after installation (see page 13).

For flooring applications, panels can be grooved on either two or four sides and a polypropylene tongue inserted to create Tongue and Groove flooring.

Sheet Sizes	2400 x 1200, 1800 x 1200 and 1200 x 1200mm
Sheet Thicknesses	15,18,21; please contact Big River for the availability of other thicknesses
Sheet Grades	C-D and D-D (see Grading info. sheet)
Glue Lines	Durable Type “B” bond
Face Veneer	3.0mm before sanding

NOTE: Please inspect all panels before installation for visible faults. Once the product has been laid no claims will be allowed for material with visible faults or staining.

Being a natural product, timber is subject to colour variation.

ARMOURPANEL IS NOT SUITABLE FOR EXTERNAL APPLICATIONS

Big River does not recommend Armourpanel for external applications, for the following reasons:

- ◆ This product is now milled from smaller plantation and re-growth forests. This timber is quicker growing and therefore the stresses in the timber itself are much greater and tend to delaminate the panel after two or three years when used in external applications.
- ◆ These types of timbers are prone to face checking in external applications. It is very difficult to find a durable finish to protect the timber from the weather.
- ◆ This product now has a type B bond which is unsuitable for exterior use.



Armourpanel is for Interior Use Only

ARMOURPANEL™

DESIGN DATA

ALLOWABLE POINT LIVE LOADS (kN)

Deflection Limit - Span/200 (recommended minimum requirement to meet AS1170.1)

Identification Code	Thickness (mm)	Stress Grade	Span (mm)						
			400	450	480	600	800	900	1200
15-30-5	15	F11	2.2	1.8	1.5	1.0	0.6		
		F14	2.5	2.0	1.8	1.1	0.6	0.5	
		F17	3.0	2.3	2.1	1.3	0.7	0.6	
		F22	3.4	2.7	2.3	1.5	0.8	0.7	
		F27	3.9	3.1	2.7	1.7	1.0	0.8	
		F34	4.5	3.6	3.2	2.0	1.1	0.9	0.5
18-30-6	18	F11	3.6	2.8	2.5	1.6			
		F14	4.1	3.2	2.9	1.8	1.0		
		F17	4.8	3.8	3.3	2.1	1.2		
		F22	5.5	4.3	3.8	2.4	1.4		
		F27	6.3	5.0	4.4	2.8	1.6		
		F34	7.4	5.8	5.1	3.3	1.8		
21-30-7	21	F11	6.1	5.0	4.4	2.8	1.6	1.3	0.7
		F14	7.2	5.7	5.0	3.2	1.8	1.4	0.8
		F17	8.4	6.7	5.9	3.7	2.1	1.7	0.9
		F22	9.6	7.6	6.7	4.3	2.4	1.9	1.1
		F27	11.1	8.8	7.7	4.9	2.8	2.2	1.2
		F34	12.9	10.2	9.0	5.8	3.2	2.6	1.4
27-30-9	27	F11	10.9	9.7	9.1	6.5	3.6	2.9	1.6
		F14	13.8	12.3	11.5	7.4	4.2	3.3	1.9
		F17	16.8	14.9	13.5	8.6	4.9	3.8	2.2
		F22	21.7	17.5	15.4	9.9	5.6	4.4	2.5
		F27	23.9	20.3	20.3	11.4	6.4	5.1	2.9
		F34	23.9	23.6	23.6	13.3	7.5	5.9	3.3
33-30-11	33	F11	15.4	13.7	12.8	10.3	6.4	5.0	2.8
		F14	19.6	17.4	16.4	12.9	7.3	5.8	3.2
		F17	23.8	21.2	19.9	15.1	8.5	6.7	3.8
		F22	29.2	27.4	25.7	17.2	9.7	7.7	4.3
		F27	29.2	29.2	29.2	19.9	11.2	8.9	5.0
		F34	29.2	29.2	29.2	23.2	13.0	10.3	5.8

For single spans, reduce the allowable point loads in the Table by 40%.
Unshaded spans are moment or beam shear limited.



Armourpanel is for Interior Use Only

ARMOURPANEL™

DESIGN DATA

UNIFORMLY DISTRIBUTED LIVE LOADS (kPA)

Deflection Limit - Span/200 (recommended minimum requirement to meet AS1170.1)

Identification Code	Thickness (mm)	Stress Grade	Span (mm)						
			400	450	480	600	800	900	1200
15-30-5	15	F11	22.7	18.0	15.8	10.1	4.3	3.0	1.3
		F14	28.9	22.8	20.1	11.6	4.9	3.4	1.5
		F17	35.1	27.7	24.4	13.5	5.7	4.0	1.7
		F22	45.4	35.9	30.1	15.4	6.5	4.6	1.9
		F27	51.5	42.3	34.8	17.8	7.5	5.3	2.2
		F34	51.5	45.8	40.5	20.7	8.7	6.1	2.6
18-30-6	18	F11	30.8	24.3	21.4	13.7	6.9	4.9	2.1
		F14	39.2	31.0	27.2	17.4	7.9	5.6	2.3
		F17	47.6	37.6	33.1	21.2	9.2	6.5	2.7
		F22	61.6	48.7	42.8	25.0	10.6	7.4	3.1
		F27	61.8	55.0	55.1	28.9	12.2	8.6	3.6
		F34	61.8	55.0	51.5	33.6	14.2	10.0	4.2
21-30-7	21	F11	40.4	31.9	28.1	18.0	10.1	7.4	3.1
		F14	51.5	40.7	35.7	22.9	12.0	8.5	3.6
		F17	62.5	49.4	43.4	27.8	14.0	9.9	4.2
		F22	72.1	63.9	56.2	35.9	16.0	11.3	4.8
		F27	72.1	64.1	60.1	44.0	18.5	13.0	5.5
		F34	72.1	64.1	60.1	48.1	21.6	15.14	6.4
27-30-9	27	F11	62.4	49.3	43.3	27.7	15.6	12.3	6.2
		F14	79.4	62.7	55.1	35.3	19.8	15.7	7.1
		F17	92.7	76.2	66.9	42.8	24.1	19.0	8.3
		F22	92.7	82.4	77.3	55.4	31.2	22.5	9.5
		F27	92.7	84.4	77.3	61.8	37.1	26.1	11.0
		F34	92.7	82.4	77.3	61.8	43.1	30.3	12.8
33-30-11	33	F11	88.6	70.0	61.5	39.4	22.1	17.5	9.8
		F14	101.0	89.1	78.3	50.1	28.2	22.3	12.5
		F17	113.3	100.8	94.5	60.8	34.2	27.0	14.5
		F22	113.3	100.8	94.5	75.6	44.3	35.0	16.6
		F27	113.3	100.8	94.5	75.6	55.3	43.7	19.2
		F34	113.3	100.8	94.5	75.6	56.7	50.4	22.3

Unshaded spans are moment or beam shear limited.



Armourpanel is for Interior Use Only

ARMOURPANEL™

DESIGN DATA

PROPERTIES OF TIMBER SPECIES

Species	Average Density (kg/m ³)	Colour	Hardness (JANKA kN)
Blackbutt	900	Pale brown	9.1
Flooded Gum	750	Pink to pale red-brown Dark pink to red-brown	7.5
Spotted Gum	950	Light brown to light reddish-brown	11.0
Sydney Blue Gum	800	Reddish pink to dark pink	9

ALLOWABLE STRESS AND ELASTIC MODULI

Permissible stresses are obtained from factors appropriate to the service conditions. The basic working stresses for structural plywood given in the following table are applicable to plywood with a minimum of D quality veneer as defined in AS/NZS2269 “Structural Plywood”.

The table also gives the basic working stresses and stiffness for the full range of plywood stress grades.

BASIC WORKING STRESS AND STIFFNESS FOR STRUCTURAL PLYWOOD

(Moisture content 15% or less)

Stress Grade	Basic Working Stress (MPa)				Compression normal to the plane of the sheet (Fp)	Short duration modulus of elasticity (MPa-E)	Short duration modulus of rigidity (MPa-G)
	Bending (Fb)	Tension (Ft)	Shear (Fs)	Compression in the plane of the sheet (Fc)			
F34	34.5	20.7	2.30	25.9	10.4	21,500	1,075
F27	27.5	16.5	2.30	20.6	9.0	18,000	925
F22	22.0	13.2	2.30	16.5	7.8	16,000	800
F17	17.0	10.2	2.30	12.8	6.6	14,000	700
F14	14.0	8.4	2.05	10.5	5.2	12,000	625
F11	11.0	6.6	1.80	8.3	4.1	10,500	525

NOTE: To establish design values the basic working stresses and elastic moduli must be modified in accordance with the factors in AS1700.1 “Timber Structures Code”



ARMOURPANEL™

GRADING PROPERTIES

FACE GRADING SPECIFICATIONS

Below are the grading specifications for the face veneer on a SD panel (Big River Grading Specification) as per AS/NZS2269:2012.

- ◆ Splits – permitted in a length of 30% of the sheet and a width not exceeding 5mm
Up to 6 splits per face. Splits are to be filled with wood filler.
- ◆ Gum veins & Pockets – Will not exceed a depth of 2mm, 50% of the board's aggregate length and 35% of the board surface area.
- ◆ Rough Grain – Permitted to a depth of 1mm and up to 20% of the board surface area.
- ◆ Colour Variation – Natural variation within a species permitted. Sapwood is considered to be part of the colour variation. Sapwood must be treated for Lyctid Borers.
- ◆ Sound Inter-grown Knots – Permitted.
- ◆ Loose knots (knot holes) – Up to 12mm diameter permitted. Maximum 5 per sheet must be filled.
- ◆ Stain (Iron Tanate) – Permitted if low contrast.
- ◆ Cross-grain Knife Marks – Up to 6 per board and maximum width of 3mm. Must be low contrast.
- ◆ Pinholes / Ambrosia (Parallel) – Maximum depth 2.5mm, affecting no more than 30% of the surface area of the board. (Vertical) – Permitted to a diameter of 1.5mm with no more than 1 per 8cm².
- ◆ Scribbly Borer marks – Allowed, Individual dark Scribbly Borer traces not to exceed 125mm in length. No more than 3 per square metre of panel. Unlimited small dark borer traces and faint Scribbly Borer traces permitted.
- ◆ Edge Splinter – Slight amount allowed.

Please Note: When using this product in flooring applications all of the care and maintenance conditions for our Armourfloor product apply to Armourpanel.

Please Note: This product is not recommended in the following applications: Horse floats, truck bodies or external cladding, even under covered eaves. If you are not sure if it is suitable for your proposed application please contact the Big River Group.



ARMOURPANEL™

GRADING PROPERTIES

ARMOURPANEL STRESS GRADING PROPERTIES

Identification Code	Thickness (mm)	Blackbutt	Flooded Gum	Spotted Gum	Sydney Blue Gum
15-30-5	15	F27	F17	F27	TBA
18-30-6	18	F27	F17	F27	TBA
21-30-7	21	F27	F17	F27	TBA
27-30-9	27	F27	F17	F27	TBA
33-30-11	33	F27	F17	F27	TBA

For flooring applications panels can be grooved on either two or four sides and a plastic tongue inserted to create Tongue and Groove flooring.



Armourpanel is for Interior Use Only

ARMOURPANEL™

FLOOR DESIGN

The table below provides a summary of the floor live loading requirements of AS1170.1 for a range of occupancies. Designers should be aware that these loads are considered to be minimum requirements and make no allowance for changes in building use during the life expectancy of the building. To meet the general requirements of the Building Code of Australia in terms of structural provision, other live loads may be used only if the building designer is prepared to deem such loading as safe for the life expectancy of the structure, including changes of occupancy.

SUMMARY OF AS1170.1 FLOOR LIVE LOADS

Flooring Application	Uniformly Distributed Load (kPa)	Point Load (kN)
Residential	1.5	1.8
Assembly Areas	3.0-5.0*	2.7-3.6
Public Corridors & Spaces	4.0-5.0	4.5*
Stages	7.5	4.5
Offices	3.0	6.7
Retail Sales Area	5.0*	7.0*
General Storage	2.4*/m ht.	7.0*
Drill Rooms and Halls	5.0*	9.0*

*To be determined but not less than the given value.

DIMENSIONAL STABILITY

Armourpanel's dimensional stability under temperature and moisture changes is exceptional. To allow for the slight movement caused by changes in moisture content, do not clamp the floor prior to fixing. Simply push the joint up lightly by hand. A gap of 1mm around panel edges is considered a reasonable tolerance.

For flooring, walling and ceiling applications, panels can be grooved on either two or four sides and a polypropylene tongue inserted to create Tongue and Groove flooring.

EDGE JOINTS

Armourpanel is manufactured either with a grooved or square edge. The grooved tongue joint has a design point live load capacity of 7.5kN. Where point live load requirements above 7.5kN are required from AS1170, a structural noggings must be provided under panel edges. In these circumstances square edged panels can be used or the T&G joint can act purely as a location joint. Armourpanel must be butt joined at panel ends over joists.



ARMOURPANEL™

FIXING & INSTALLATION

Armourpanel can be fixed to the sub-floor with either hand or power driven fasteners. For a more rigid, squeak-free floor system, a combination of mechanical fasteners and a structural elastomeric adhesive should be used. When mechanical fasteners are used without an elastomeric adhesive, fastener spacing should be 150mm centres at panel ends and 300mm at intermediate joists. The face grain of the plywood must run parallel to the span, i.e. at right angles to the joists, and the plywood must be designed to carry the design load specified in AS1170.1. Armourpanel used in flooring applications must have both long edges Tongue and Grooved. This will minimise lipping.

MINIMUM FASTENER SPECIFICATIONS

Hand driven nails	2.8mm minimum diameter flathead or bullet-head nails of length at least 2.5 times the plywood thickness
Gun driven nails	2.5mm minimum diameter gun nails of length at least 2.5 times the plywood thickness
Screws to timber joists	No. 8 x 30mm self-drilling countersunk wood screws - up to 20mm plywood No. 10 x 40mm self-drilling countersunk wood screws - 21 - 30mm plywood No. 10 x 50mm self-drilling countersunk wood screws - 31 - 40mm plywood
Screws to steel joists	No. 10 x 40mm self-drilling countersunk metal screws - up to 20mm plywood No. 10 x 50mm self-drilling countersunk metal screws - 21 - 30mm plywood No. 10 x 70mm self-drilling countersunk metal screws - 31 - 40mm plywood
Adhesives	Structural elastomeric that meets the American Plywood Association Standard AFG-01 eg. H.B.Fuller's 'Max Bond' or 'Sturdi Bond' or Norton's 'Floormate'

NOTES

1. Fastener coatings should be selected to suit the application, e.g., hot dip galvanised for chemical storage areas.
2. Armourpanel can be nailed to within 10-12mm of its edges.
3. Structural elastomeric adhesive should be used where plywood is fixed to unseasoned timber joists.

NOTE: Please check all panels before installation for visible faults. If the product is not of the quality you expect, contact your supplier for further information and advice before installation. Once the product has been laid, no claims will be allowed for material with visible faults.

Being a natural product, timber is subject to colour variation. Please ensure that before installation the sheets are in the correct position before fixing.

Armourpanel requires sanding prior to finishing. Please ensure that all putty and peeling marks are sanded out prior to applying any finishing coats (see below).



ARMOURPANEL™

FINISHING

Before applying the selected finishing product, the timber surface needs to be sanded using an 80 grit sandpaper or screenback. This is to ensure that the surface is flat and that any knife marks and putty are removed prior to finishing. The floor can then be sanded with a “poly-vac” type machine using a fine grit sander belt 120 to 150.

Big River recommends the use of water-borne, oil-borne or solvent-based polyurethane finishing products.

NOTE: Please follow the sealant manufacturer’s recommendations for application and drying times.

1. Apply the sealer to the Armourpanel flooring in accordance with the manufacturer’s recommendations.
2. When this is dry, use appropriately coloured non-shrinking wood filler such as Timber Mate to fill any remaining gaps that may occur. (Between the first and second coats, a trowel fill can be used). This filler needs to be a couple of shades darker than the actual timber colour as the timber will darken in time.
3. Using a sander, buff the flooring in accordance with the manufacturer’s recommendations.
4. Apply final coats of the selected finish in accordance with manufacturer’s recommendations.

Finishing must be carried out under dust-free conditions. Minimise airborne dust during application of finishing products by sealing off room where practicable and vacuum clean work area before each application.

NOTE: All preparation, installation and finishing processes are to be undertaken in consideration of the appropriate:

- ◆ Manufacturer’s recommendations.
- ◆ Australian Standards.
- ◆ Accepted industry practices.
- ◆ DPI recommendations.

