ARMOURFLOOR®

ARMOURPANEL®

BigRiver

DECORATIVE HARDWOOD PRODUCTS

ARMOURTILE™

ARMOURTREAD®

Big River

Species Guide

Information Sheet 1

This sample sheet introduces the rich variety of colours available in the Big River flooring range. Because Big River flooring is made from natural timber, it can exhibit variations in colour and texture. For example, Spotted Gum, with a prevalence of sapwood, often shows wide variation in brown and red tones between boards and even within individual boards. This natural variation ensures that every installation is unique. These printed images provide only an approximation of the appearance of the finished floor. Before choosing a species, visit your Big River agent to view actual samples.

Blackbutt
Medium straw to medium brown

Walnut
Pale to dark reddish-brown

Spotted Gum
Light to dark brown with some reddish tones.

Old World CustomCote

Flooded Gum
Pink to pale red-brown/ dark pink to red-brown

Alpine Ash
Yellowish brown to pale pink

Sydney Blue Gum
Dark pink to pinkish brown

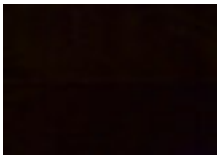
Rustic Ash UltraCote

Moda Pre-Stained Flooring

Ashen

Chimnea

Chicory



Chinotto

Bracken

Moleskin

Vamp

Blush

Grain

Salt

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Melbourne/Tasmania/South Australia (03) 9586 6901
Perth (08) 9456 0500 • Sydney/Illawarra (02) 8822 5555

Big River

Company History

Information Sheet 2

The Pidcock family has been involved in the Northern NSW timber industry since the early 1900s.

Big River Group Pty Ltd is a wholly owned subsidiary of Thos. Pidcock & Sons Pty Ltd, incorporated in 1938, who established the first all-electric sawmill in Australia at Nymboida near Grafton to mill Hoop Pine and Eucalypts.

In 1960 the family sold its considerable sawmilling operations and constructed a modern rotary veneer factory in Grafton to produce decorative and marine grade veneers.

By 1983, following the creation of large national parks and the loss of traditional resources, the company elected to commence plywood manufacture, specialising in formply (plywood formwork for concrete construction) using the largely untried regrowth Eucalypt resource.

Having overcome many production and marketing difficulties the company has established itself as Australia's leading formply producer manufacturing a wide range of softwood and hardwood formply products.

Big River now manufactures all Eucalypt plywood to AS-2271: 1999 "Plywood and Blockboard for exterior use" and stress graded in accordance with AS/NZS2269: 1994 "Plywood – Structural." This ultra-high density plywood is among the strongest, stiffest and most durable in the world.

Armourpanel has been used in sports stadiums, warehouses, domestic houses, truck bodies - in fact, anywhere that strength and stability are paramount. A range of other decorative products has been developed, combining the aesthetic value of hardwood timbers with the structural qualities of an engineered product. This includes wall panelling and ceiling applications, tiles, stairtreads and benchtops.

The Armourfloor range of products was introduced in 1998 and has continued to gain market share because of it superior strength, stability and aesthetic value compared to other products available on the market.

We are now launching the next generation of our Armourfloor® engineered flooring, which offers a wider choice of species, board widths and finishes.

Armourfloor® can now be supplied as pre-finished boards (UltraCote) or with a raw timber surface to be coated on site (CustomCote).

The new products also use a timber tongue instead of an extruded plastic tongue making installation quicker and easier.

The company is a model of adding value to a precious resource, with more value added per cubic metre of log throughput than any other operation in the NSW hardwood industry.

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Floor Load Design

Information Sheet 3

Floor Design

Table A 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 the minimum requirements and should make 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 floor live loads may only be used if the building designer is prepared to deem such loadings as safe for the life expectancy of the structure, including changes of occupancy.

Table A - Summary of AS1170.1 Floor Live Loads

Flooring Application	Uniformly Distributed Live Load (kPa)	Point Live Load (kN)
Housing	1.5	1.8
Institutional bedrooms and wards (hospitals and prisons)	2.0	1.8
Cafeterias, dining rooms and restaurants	2.0	2.7
Assembly areas with fixed seating (classrooms, lecture rooms, theatres, places of worship)	4.0	2.7
Light industrial workrooms (workshops, factories, warehouses)	3.0*	3.5*
Residential and apartment buildings (units, hotels, motels, boarding houses)	3.0-5.0	2.7-3.6
Assembly areas without fixed seating (public halls, museums, dance areas, bars, public lounges)	5.0*	3.6

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

Table B - Allowable point live load (working stress) kN

Timber Species	Thickness (mm)	Stress Grade	Span 450mm
Blackbutt	14.0	F27	3.7kN
Flooded Gum	14.0	F27	3.7kN
Walnut	14.0	F22	3.2kN

Testing was conducted by the Department of Primary Industries Queensland (DPI) in accordance with CSIRO Division of Forest Products Technological Paper No. 34 'Minimum strength and stiffness necessary for wooden floors in houses'.

The test results showed that, in addition to the tabulated point live load capabilities, the thickness versus stress grade data detailed in Table B also met the domestic flooring live load stiffness requirements of 0.17mm per 100N, to provide a comfortable feel for human traffic.

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Sound Transmission & Insulation

Floating Floors Over Concrete

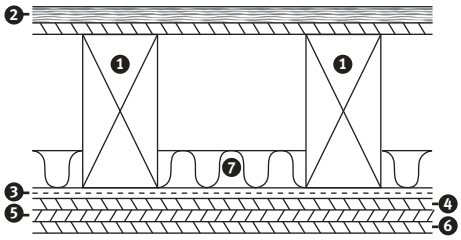
Field Impact Isolation Class (IIC) for 14mm plywood flooring over a single layer of Softlon-tuff 3mm underlay.

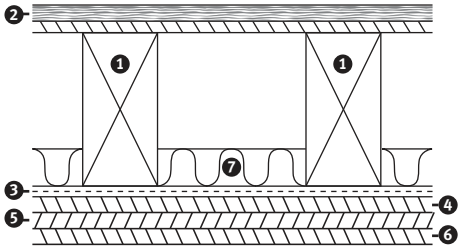
Floor 'floating' on top of 150mm pre-tensioned concrete slab.

IIC = 53

Floor Fixed On To Joists

Sound Transmission Class (STC) and Field Impact Isolation Class (IIC) ratings using certified floor/ceiling systems.

STC	IIC	Construction	Description
54	49		1. Seasoned joists 2. Big River Timber Floor 3. Resilient attaching 4. 13mm fire grade plasterboard 5. 13mm fire grade plasterboard 6. 13mm fire grade plasterboard 7. 50mm (min) cavity insulation

STC	IIC	Construction	Description
55	49		1. Seasoned joists 2. Big River Timber Floor 3. Resilient attaching 4. 16mm fire grade plasterboard 5. 16mm fire grade plasterboard 6. 16mm fire grade plasterboard 7. 50mm (min) cavity insulation

Building Code of Australia (BCA) minimum STC requirements for class 1, 2, & 3 buildings STC = 45

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Big River Flooring

Caring For Your Floor

Overall Appearance of Finished Floors

The inspection of your new floor should be done from a standing position with normal lighting. Glare, particularly from large windows, magnifies any irregularities in the floor. The floor will have imperfections that are typical of the type or species that is used.

Armourfloor Ultracote factory finished timber floors, like all floor coverings will show signs of wear over time, depending on the amount of use your floor receives. By putting in place a regular cleaning and maintenance program, you can ensure your floor is kept in its best possible condition.

The following information is meant as a guide.

Maintenance of Ultracote Armourfloor

- ✓ Sweep or vacuum your floor regularly. A build up of grit can damage the surface of your floor. The vacuum head must be a brush or felt type. Ensure the wheels of the vacuum are clean and free wheeling so it does not damage the coating. Do not use vacuum cleaners with "beater bar heads".
- ✓ Use a soft bristle broom or static mop to keep the floor clean.
- ✓ Wipe up spills immediately before they get sticky or dry. Liquid left standing can dull the finish on your floor. It may also damage the wood and can leave a discolouring residue.
- ✓ Periodically, as required you should coat your floor with Aquacare 4450 UV Revive. One coat of Aquacare 4450 UV Revive or similar product will conceal any minor scuffs and scratches. The sole purpose is to provide a sacrificial coat, ensuring the protection of the UV layer.
- ✓ Use rugs or mats in high traffic areas such as room entries, passages and work areas.
- ✓ To avoid an uneven appearance to your floor, occasionally rearrange furniture and rugs. Where possible drape or shade large windows.
- ✓ Keep pets' nails trimmed, paws clean and free from dirt grit, grease etc.
- ✓ Do not slide or roll heavy objects directly on your timber floor. If moving heavy furniture, consider laying a solid protective covering such as plywood or hardboard on your floor and gently walk the item across the floor. The use of carpet or cardboard is not considered adequate to prevent surface damage.
- ✓ Never wear stiletto or spike heeled shoes on your floor. Always check your shoes for debris imbedded in the soles. A woman weighing 57 kg (125 pounds) walking in stiletto heels has an impact of 140.6 kg per square centimetre (2,000 pounds per square inch). An exposed nail in the heel of the shoe can exert up to 562 kg per square centimetre (8,000 pounds per square inch). These types of impacts can dent any wood floor surface.

✓ Protect your new floor by using felt pads under the legs of all movable furniture and by the use of mats at entrances to minimise dirt and moisture from being tracked inside. These mats/rugs should be laid both externally and internally at the entrances. Do not use rugs and mats with solid rubber or vinyl backing. These items must be made of materials that "breathe". This is to prevent moisture entrapment under the rug/mat. These mats/rugs must be kept clean and free of dirt and grit.
✓ Where climate control equipment has been installed always maintain a relative humidity of between 50-70%.

✘ Never use industrial cleaning machines or steam mops.
✘ Never use mats or rugs on the floor when under-floor heating is being used.
✘ Never use cleaning products such as oil soaps, waxes or other household cleaners that contain silicon, tung oil or ammonia.
✘ Never use steel wool on your floor.
✘ Never drag furniture or heavy objects over your timber floor.
✘ Never pour water directly onto the floor.
✘ Never allow grit to build up on your floor - it can be very abrasive.

Maintenance of CustomCote and Raw Armourfloor

Timber floors properly finished are the easiest of all floor surfaces to keep clean and new looking. Unlike carpeted or resilient floors that show age regardless of care, timber floors can be kept looking like new, year after year, with minimum care. Below are some simple steps to keeping your floor in good condition.

✓ Always use a vacuum cleaner with rubber wheels or dust mop to clean the floor. Ensure that wheels rotate freely.
✓ Use mats at all external entries to reduce the wear on the floor and the amount of dirt and grit that can get on to your floor.
✓ Rugs and mats can be used in high traffic areas to reduce wear of the coatings. Do not use these items in the first 6 months.
✓ All spills should be cleaned up immediately.
✓ Use felt protective pads on furniture legs, etc., especially furniture that is moved regularly.
✘ Do not allow grit to build up on your floor – it can be very abrasive.
✘ Never use abrasive cleaners or wax on the floor. Use products purchased from a timber-flooring retailer.
✘ A steam mop should not be used to clean Big River Timber floors.
✘ Avoid walking on timber floors with high-heeled shoes or shoes with damaged heels. Shoes with objects imbedded in the sole can mark the floor.

- ✘ Keep pets' claws trimmed to avoid scratching the floor.
- ✘ Always avoid intentionally pouring water on to a timber floor. Excessive amounts of water may seep between the boards or into scratches, causing fibres to swell and affect the finish.
- ✘ Never use mats or rugs on the floor when under floor heating is being used.

Always refer to the coating manufacturer's recommendations on floor cleaning and maintenance

PLEASE NOTE: All timber products are affected by direct sunlight.

Big River Flooring

Installer / Owner Responsibility

Information Sheet 6

Timber is a product of nature and therefore not perfect. Big River timber flooring is manufactured in accordance with accepted industry standards, which permit a defect tolerance of no more than 5%. The defects may be of a manufacturing or natural type.

- The installer assumes all responsibility for final inspection of the product quality. This inspection of all flooring should be done before installation. Carefully examine material for colour, finish and quality before installing. If material is not acceptable, do not install it; contact the supplier immediately.
- Before installation the installer must determine that the job site environment and sub-surfaces meet or exceed all applicable recommendations of the construction and materials industries. The manufacturer declines any responsibility for job failure resulting from or associated with sub-surface or job-site environment deficiencies.
- Before installation the installer/owner has final inspection responsibility as to grade and finish. The installer must exercise reasonable judgment and hold back or cut off pieces with defects, whatever the cause.
- Use of stain, filler or putty for defect correction during installation should be accepted as normal procedure.
- When ordering, a 5% cutting and grading allowance should be added to the total square metres.
- Should an individual piece be doubtful as to grade, manufacture or finish, the installer should not use the piece.
- In flooring applications the use of appropriate products for correcting sub-floor voids should be accepted as normal industry practice.

Installers Please Note

As outlined above, please inspect all product before installation for visible faults, discolouration and extreme colour variation. If the product is not of the quality expected, contact your supplier for further information and advice before installation. Once the product has been installed, no claims will be allowed for material with visible faults, discolouration or extreme colour variation.

Armourfloor can be laid over any flat surface provided that the following criteria is followed:-

- The Armourfloor product is to be installed as a “floating floor”. It should not be glued directly to the old floor without written permission from Big River Pty. Limited.
- No material on the existing floor is loose or has the potential to delaminate from the sub-floor.

Should the material that is underneath the BRT floor delaminate from the sub-floor then the BRT warranty will be null and void.

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Big River Plywood Products

Material Safety Data
Issued April 19, 2010

Plywood/Laminated Flooring - Wood Veneer Product

IMPORTANT NOTICE: This Material Safety Data Sheet (MSDS) was compiled by Big River in accordance with Worksafe Australia guidelines. Information contained herein must not be altered, deleted or added to. Big River will issue a new MSDS when there is a change in product specifications and/or Worksafe Australia guidelines/regulations. Big River will not accept responsibility for any changes made to its MSDS in content by any other person.

Identification

Product Name	Big River Structural Plywood (AS/NZS2269) Big River Exterior Plywood (AS2271) Big River Overlaid Formwork Plywood (AS/6669) Big River Armourfloor
UN Number	None allocated
Registered Trade Name	Big River Group Pty Ltd
Dangerous Goods Class	None allocated
Hazchem Code	None allocated
Poisons Schedule	None allocated
Use	Residential, commercial, and industrial construction, flooring, furniture and fitments and/or general purpose building material.

Physical Description/Properties

Appearance	The products are manufactured as pressed boards ranging in standard thickness from 3mm to 45mm. They are made from wood veneers of a range of species which are bonded together with fortified melamine urea formaldehyde resin.
Odour	No distinctive odour. Newly manufactured plywood and freshly machined surfaces tend to have the odour of the wood species from which the plywood is manufactured.
Boiling Point	Not applicable
Vapour Pressure	Not applicable
Vapour Density	Not applicable
Melting Point	Not applicable
Solubility in Water	Highly insoluble
Flashpoint	Not applicable
Specific Gravity	0.50-1.00
Flammability in air	Fine airborne dust, generated when the product is machined, can ignite spontaneously.
Auto Ignition Temperature	>220°C

Ingredients

Substance	CAS No.	Properties by weight
Wood veneer	None	>92%
Phenol formaldehyde resin (or)	40798-65-0	<8%
Melamine urea formaldehyde resin	25036-13-9	<8%

Note

The above ingredients are bonded together under heat and pressure. The process cures the resin. However, small amounts of formaldehyde may be released from the finished product. In newly manufactured plywood, which is the worst case scenario, formaldehyde emission has been measured in the range 0.03-0.05ppm using large scale chamber test material.

Health Hazard Information

Health Effects:

This product, in its natural form, is not classified as hazardous according to the criteria of Worksafe Australia.

In well ventilated storage areas and workplaces utilising these products the concentration of formaldehyde in the air will not exceed the World Health Organisation standard of 0.1ppm for the general environment and it will be well below the Worksafe Australia Occupational Exposure Standard of 1.0ppm on a time weighted average (TWA).

Sealing plywood with paint, varnish or other surface finishes further reduces any emissions.

The known health effects of the constituents of the boards are as follows:

Cured Resin:

The cured resin is inert and not likely to contribute to health effects.

- Formaldehyde:

Formaldehyde gas is irritating to the nose and throat, eyes and skin. It is recommended that storage areas be well ventilated to avoid any irritating effects of a build-up of formaldehyde.

Worksafe Australia has classified formaldehyde as a Category 3 carcinogen (possibly carcinogenic to humans) on the basis of evidence that inhalation of gas caused nasal cancer in experiments with rats. In the experiments, groups of rats were exposed to formaldehyde for six hours a day, five days a week for up to two years at concentrations of 0, 2.0, 5.6 and 14.3ppm. Fifty percent of those exposed at 14.3ppm, one percent exposed to 5.6ppm, but none exposed to 2.0 or oppm developed nasal cancers.

There have been more than thirty epidemiological studies involving over 150,000 people occupationally exposed to formaldehyde. These, and studies of behaviour to toxicity, indicate that exposure to formaldehyde below the Worksafe Australia occupational Exposure Standard of 1ppm TWA (time weighted average) will not result in an increased risk of cavity cancers in humans.

As plywood products have emission levels of 0.03 to 0.05 ppm, well below the WHO recommended level of 0.1 ppm, under reasonably foreseeable circumstances it is unlikely that the presence of traces of formaldehyde in the product poses a health risk.

Wood Dust:

When the boards are machined (sawn, sanded, drilled, routed, planed, etc.) wood dust is produced. Wood dust and splinters may cause irritation of the nose and throat, eyes and skin. Some woods may also be sensitisers, and some people may develop allergic dermatitis or asthma. Inhalation of wood dust, both hardwood and softwood, may increase the risk of nasal and paranasal sinus cancers.

Exposures to the wood dust produced from machining the boards may result in the following: health effects.

Acute:

Swallowed:	Unlikely to occur, but swallowing the wood dust may result in abdominal discomfort.
Eye:	The wood dust may be irritating to the eyes, causing discomfort and redness.
Skin:	The wood dust may irritate the skin, resulting in itching and occasionally a red rash. Allergic contact dermatitis may occur.
Inhaled:	The wood dust may irritate the throat and lungs especially in people with upper respiratory tract or chest complaints. Asthma may occur.

Chronic:

Repeated exposures over many years to uncontrolled wood dust from these boards may increase the risk of allergies, dermatitis, asthma or chronic nose or throat irritation in some people. The risk of nasal or paranasal sinus cancers may also be increased. If the work practices noted in this MSDS are followed, no chronic health effects are anticipated.

First Aid:

Swallowed:	Drink a glass of water.
Eye:	Flush with flowing water for at least 15 minutes, and if symptoms persist seek immediate medical attention.
Skin:	Wash with mild soap and running water.
Inhaled:	Leave the dusty area.
Advice to Doctor:	Treat symptomatically.

Precautions For Use

Exposure Standards:

The Worksafe Australia Exposure Standards for softwood (e.g. pine) dust, published in October 1991, are:

– 5mg/m^3 time-weighted average (TWA)

– 10mg/m^3 short term exposure limit (STEL)

and for hardwood:

– 1 mg/m^3 time weighted average (TWA)

– 2 mg/m^3 short term exposure limit (STEL)

Wood dust is also listed as a sensitiser and the Exposure Standard is under review. In the interests of maintaining a safe working environment, it is recommended that workplace exposures to wood dust should not exceed 1.0 mg/m^3 TWA.

Engineering Controls:

All work with these boards should be carried out in such a way as to minimise the generation of wood dust.

Under factory conditions, machining should be done with equipment fitted with exhaust devices capable of removing wood dust at the source. Hand power tools should be fitted with dust bags.

Work areas should be well ventilated. They should be cleaned at least daily, and wood dust should be removed by vacuum cleaning or by wet sweeping.

Skin Protection:

Wear loose, comfortable clothing. Long-sleeved shirts, trousers and comfortable work gloves (AS2161) should be worn if skin irritation occurs.

Wash with mild soap and water after handling boards. Do not scratch or rub the skin if it becomes irritated.

Wash work clothes regularly and, if possible, separate from other clothes.

Respiratory Protection:

If wood dust exposure is not controlled when machining (sawing, routing, planing, drilling, sanding, etc.) a class P1 or P2 replaceable filter or disposable facepiece respirator should be worn. Respirators should comply with AS/NZS1716, and be selected, used and maintained in accordance with AS/NZS1715.

Eye Protection:

Safety glasses or non-fogging goggles (AS/NZS1337) should be worn when machining.

Flammability:

These boards are flammable but difficult to ignite.

Avoid a build-up of wood dust and keep all storage and work areas well ventilated.

Avoid sources of radiant heat and flame, and avoid sparks and sources of ignition in all electrical equipment, including dust extraction equipment.

People must not smoke in storage or work areas.

Safe Handling Information

Storage and Transport:

The boards should be stored in well ventilated areas away from source of heat, flames or sparks.

No special transport requirements are considered necessary.

Spills and Disposals:

Off-cuts and general waste material should be placed in containers and disposed of at approved landfill sites, or burnt in an approved furnace or incinerator, in accordance with disposal authority guidelines.

Wood dust should be cleaned up by vacuuming or wet sweeping.

Fire/Explosion Hazard:

Early fire hazard properties as determined in accordance with AS1530 Part 3.

Ignitability Index	14
Spread of Flame Index	8
Heat Evolved Index	8-10
Smoke Developed Index	2-3

Burning or smouldering boards or wood dust can generate carbon dioxide and other pyrolysis products typical of burning organic material. Dry wood dust in high concentrations can be explosive. Use water or dry chemical powder fire extinguishers:

Contact Point:	Big River, Grafton.
Company:	Big River Group Pty Ltd
Address:	Trenayr Road, Junction Hill, NSW 2460
Phone:	+61 2 6644 0900
Fax:	+61 2 6643 3328

About our plywood

Big River Group Pty Ltd. Plywood products are manufactured

- All veneers in the construction are rotary peeled.
- The sheets of veneer are cross-laminated [each sheet of veneer is at 90 degrees to the other].
- Panels are glued using melamine fortified urea formaldehyde resins. These sheets are bonded under high temperatures and pressure.
- Our panels are moisture resistant.

Plywood panels will not stay perfectly flat; it can be affected by many parameters including the ambient conditions, moisture uptake and or 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 to restrict this type of movement. This certainly applies to doors where it is important that the plywood remain flat.

Our plywood panels are manufactured to AS/NZS2269 – Structural Plywood and AS/NZS2271 – Exterior Plywood.

The plywood is manufactured using the following tolerances from the above relevant standards: -

Thickness

Sanded sheets over 7.5mm thick up to and including 17.5mm thick	+/- 4% of the panel thickness
Sanded sheets over 17.5mm thick	+/- 3% of the panel thickness
Unsanded sheets	an additional thickness tolerance of +0.3mm

Length

+/- 1.5mm

Width

+/- 1.5mm

The glue bond

The plywood is glued using melamine fortified urea formaldehyde resin (MUF). It is classified as being a B bond and is considered to be suitable for applications that receive intermittent exposure to moisture.

All plywood manufactured by Big River Grafton mill using the above resin, has a formaldehyde emission classification of E0; this is the lowest of the formaldehyde classifications.

For interior use only.

Exposure to the elements

Like all timber products exposure to the weather will cause the panels to change shape as well as surface checking to the face of plywood. In decorative applications this can be detrimental to the product and cause extra work to get the panel back to a suitable finish. In some cases it is not possible to achieve the required finish if the derogation is too bad.

Storage of plywood panels

It is extremely important that panels are stacked in a flat manner. Bearers (Gluts) should always be of an even height; the plywood should be supported on both ends and in the centre. If plywood is to be stacked on top of another pack the bearers under this pack must also be spaced out in line with the bearers on the previous pack.

Engineering properties

The engineering properties are set out in our product manual and are also available off our website.

Always check our website for the latest changes to our product lines. It is our aim to present new products regularly; changes to current products can also change for various reasons such as availability etc.


BigRiver
ARMOURFLOOR®

Armourfloor®

Product Description

Manufactured in Australia from 5 layers of veneered hardwood, Armourfloor is quite simply Australia and New Zealand's most stable timber floor. This versatile flooring system can be used as a floating floor, it can be glued directly to existing floors or laid directly on to floor joists.

Listed below are some of the benefits of the Big River strip-flooring system.

- Big River is a wholly Australian owned and operated company.
- Australian quality standards certified.
- Armourfloor has a lifetime guarantee on the structural integrity of the product in domestic applications.
- 25 Year Domestic Surface Coating Warranty on Ultracote.
- Available with factory finish applied (Ultracote) or grain filled and finished onsite to the customer's requirements (Customcote) or as raw board.
- 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.
- The product is a total hardwood construction.
- It can be used on heated concrete slabs.
- Floor can be laid directly on to concrete slab. Does not need battens, etc (see installation instructions).
- Can be used directly over floor joists.
- Available in a large range of species.
- Because it is cross laminated (5 ply) it is dimensionally stable.
- It can be re-sanded.
- No acclimatisation period needed.
- Good strength and impact resistance.
- Excellent soundproofing qualities.
- Can be installed in all conditions. Please Note: In extreme conditions minor movement can be expected.
- Available in plank widths of 138mm and 189mm (Moda 138mm and 226mm).
- Timber product ideal for allergy or asthma sufferers.

The Big River Group is an accredited timber flooring manufacturer under the guidelines of the Plywood Association of Australia (PAA). Big River products meet Australian and New Zealand standards, one of the very few companies in Australia and New Zealand to do so. This is your assurance of a premium quality timber floor.

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BigRiver

Armourfloor®

Product Specifications

Armourfloor is manufactured with 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/NZ2269: 2004. Faces graded to AS/NZS2271:2004 "Plywood – Structural".

Construction of Armourfloor

Big River Armourfloor is manufactured using a five-ply construction.

- The face veneer determines the species of the flooring. The entire construction is manufactured using hardwood veneers.
- The material is laminated using exterior B-bond to AS/NZS 2271.
- There are 6 types of Armourfloor: Customcote, Ultracote, Ultracote SuperMatt, Ultracote Commercial and Moda (pre-stained).
- Raw material is supplied with no coating at all and the ends are not end-matched.
- Customcote is supplied with a grain filler applied to the face of the boards; this product will need light sanding and at least 2 coats of the required coating to be applied. The joining system has a moulded solid timber T&G system.
- Ultracote requires no further coating to be applied, like Customcote it has a moulded solid timber T&G system.

PLEASE NOTE: All of these products need to have glue applied to the groove, as per the installation instructions, prior to joining the planks together.

Product Dimensions

Plank lengths	0.5m to 2.4m
Widths	138.6mm +/- 0.2mm (138mm) Moda 138mm & 226mm 188.98mm +/- 0.2mm (189mm)
Thickness	Australian species 14.0mm +/- 0.2mm Walnut 13.0mm +/- 0.2mm
End square	90° to plank, end matched
Construction	5-ply, 100% engineered hardwood

PLEASE NOTE:
188.98mm (189mm) wide material are not stock items. For availability of these sizes please contact your nearest BRT outlet.

Standard Lengths

Ultracote: Orders supplied with minimum 50% set lengths (1.8m or 2.4m). Remainder of order in random lengths.
Customcote: Orders supplied with minimum 65% set lengths (1.8m or 2.4m). Remainder of order in random lengths.
Note: Australian species set lengths usually 1.8m. Lengths between 1.8m and 2.4m are considered set lengths. Lengths less than 500mm are not counted and are packing material only.

Available Species

Armourfloor is available in the following species:
Alpine Ash, Blackbutt, Flooded Gum, Spotted Gum, Sydney Blue Gum and Walnut.

Brisbane/Sunshine Coast/Townsville/Darwin (07) 3451 8300
Melbourne/Tasmania/South Australia (03) 9586 6901
Perth (08) 9456 0500 • Sydney/Illawarra (02) 8822 5555

BigRiver

ULTRACOTE PRE-FINISHED FLOORING

DIMENSIONS	138MM	189MM
Board Lengths	500 – 2400mm	500 – 2400mm
Percentage of Random (Approx)	50% either 1800 or 2400mm	50% either 1800 or 2400mm
Width	138.6mm	188.98mm
Board Thickness	14mm +0.2/-0.2mm	14mm +0.2/-0.2mm
End Matched	Yes	Yes
Coating Type	UV Cured Coating	UV Cured Coating
Number of Coats	8	8
Gloss Level	45%	45%
Grain Filler Colour	Clear	Clear
Scratch Resistance	Yes	Yes
Manufacturing Standards	AS/NZS 2269-2004 AS/NZS 2271-2004	AS/NZS 2269-2004 AS/NZS 2271-2004
Manufacturing Standards – Coatings	AS/NZS 1580 BS 3962	AS/NZS 1580 BS 3962

CUSTOMCOTE UNCOATED FLOORING

DIMENSIONS	138MM	189MM
Board Lengths	500 – 2400mm	500 – 2400mm
Percentage of Random (Approx.)	65% either 1800 or 2400mm	65% either 1800 or 2400mm
Width	138.6mm	188.98mm
Board Thickness	14mm +0.2/-0.2mm	14mm +0.2/-0.2
End Matched	Yes	Yes
Grain Filler Colour	Clear	Clear
Manufacturing Standards	AS/NZS 2269-2004 AS/NZS 2271-2004	AS/NZS 2269-2004 AS/NZS 2271-2004
Pack Quantity (Approx.)	90m² packs for forklift unload	90m² packs for forklift unload
Pack Length	1800 & 2400mm	1800 & 2400mm
Pack Weight	950 to 1125kg (varies with species)	950 to 1125kg (varies with species)

RAW UNCOATED FLOORING

DIMENSIONS	138MM	189MM
Board Lengths	500 – 2400mm	500 – 2400mm
Percentage of Random (Approx.)	65% either 1800 or 2400mm	65% either 1800 or 2400mm
Width	138.6mm	188.98mm
Board Thickness	14mm +0.2/-0.2mm	14mm +0.2/-0.2
End Matched	No	No
Grain Filler Colour	No	No
Manufacturing Standards	AS/NZS 2269-2004 AS/NZS 2271-2004	AS/NZS 2269-2004 AS/NZS 2271-2004
Pack Quantity (Approx.)	90m² packs for forklift unload	90m² packs for forklift unload
Pack Length	1800 & 2400mm	1800 & 2400mm
Pack Weight	950 to 1125kg (varies with species)	950 to 1125kg (varies with species)

NOTE: Please inspect all planks for visible faults before installation. If the product is not of the quality you expect, contact your supplier for further information and advise before installation. 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. Please ensure that before installation, the boards are in the best correct position before fixing.

MODA PRE-STAINED FLOORING

DIMENSIONS	138MM	226MM
Board Lengths	500 – 2400mm	500 – 2400mm
Percentage of Random (Approx)	60% @ 2400mm	60% @ 2400mm
Width	138.6mm	226.1mm
Board Thickness	13mm +0.2/-0.2mm	13mm +0.2/-0.2mm
End Matched	Yes	Yes
Coating Type	UV Cured Coating	UV Cured Coating
Number of Coats	8	8
Gloss Level	20%	20%
Grain Filler Colour	Clear	Clear
Scratch Resistance	Yes	Yes
Manufacturing Standards	AS/NZS 2269-2004 AS/NZS 2271-2004	AS/NZS 2269-2004 AS/NZS 2271-2004
Manufacturing Standards – Coatings	AS/NZS 1580 BS 3962	AS/NZS 1580 BS 3962

COLOUR VARIATIONS IN MODA FLOORING

Timber is a natural product and therefore has natural variations within each species. When boards are stained, this natural variation causes the stain to differ slightly in tone between boards. This variation in colour shade or texture should not be considered to be defective.

PROPERTIES OF TIMBER SPECIES

Species	Average density (kg/m3)	Colour	Hardness (JANKA kN)
Alpine Ash	650	Yellowish Brown through to pale pink	4.9
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
Walnut	750	Pale to dark reddish brown	5.7

Place a straight edge (1500mm to 3000mm) along the surface of the sub-floor. Check that no depressions deeper than 3mm are evident below the straight edge.

If the sub-floor levels exceed the 3mm recommended by Big River, the sub-floor must be levelled either by grinding and filling (for a concrete sub-floor) or by sanding and/or laying hard underlay (for a timber sub-floor).

NOTE: Out-of-tolerance sub-floors are the major cause of movement during installation. Big River will not accept claims resulting from inadequate sub-floor preparation.

Grind the concrete sub-floor using a machine suitable for the size of the project.

Fill, using a suitable levelling agent from a reputable manufacturer in accordance with the manufacturer's recommendations.

Levelling compound should be durable, compatible with the substrate and flooring, resistant to cracking and delaminating, be self-levelling and include primers and bonding agents as required.

Sand timber sub-floors using a machine suitable for the size of the project.

SUB-FLOOR MOISTURE CONTENT

The moisture content of a concrete sub-floor should not exceed the maximum of 70% relative humidity (hygrometer) or 5.5% (electrical resistance meter).

The moisture content of a timber sub-floor should not exceed 70% relative humidity (hygrometer) or 15% (electrical resistance meter).

If the moisture content exceeds Big River's recommendations, a suitable physical or chemical moisture or vapour barrier system from a reputable manufacturer must be used. Follow the manufacturer's instructions at all times.

SUB-FLOOR VENTILATION

Where the sub-floor is fully enclosed by brickwork or concrete, it must be constructed so that it provides adequate cross-flow ventilation. If the sub-floor spaces are exposed to the ground (e.g., soil) ventilation shall be in accordance with building authority's requirements.Generally, a minimum ground clearance of 400mm at the base of the bearers should be provided, with sufficient drainage to prevent water build-up.

An impervious membrane may be required if the ground below the flooring is regularly subject to damp conditions.

BELOW GRADE APPLICATIONS

If the soil surrounding any part of the dwelling is 75mm or more above the level of the floor, the floor is considered to be below grade. The soil and drainage should always be sloped to ensure moisture is directed away from the building.

If the ArmourFloor® is to be laid below grade it is important to ensure that all precautions are taken to prevent moisture from penetrating to the timber floor. These precautions can include extra moisture protection to the floor and walls of the building.

HEATED SLABS

For full instructions, see Installing Over Heated Slabs in the Installation section.

PRE-INSTALLATION

If required, remove skirting boards, quarter-round or doorway thresholds. These items can be refitted after installation is complete. Doorway architrave should be undercut to allow the Armourfloor to fit neatly. This is best done using an electric under-cut saw. If using a hand saw, a piece of underlay and flooring placed against the architrave can be used as a height guide.

NOTE: Ideally, before installation begins, the building where the floor is being laid should be in the final stages of completion, with all trades having left the site. If this is not the case, installation is not recommended.

When installing Armourfloor as a floating floor, use an underlay recommended by Big River. Ensure all underlay meets the requirements set out in the Building Code of Australia with regard to sound transmission. Suitable products are available from Big River.

Unroll the underlay so that all ends butt neatly against the walls.

Seams between lengths should also butt together, with no overlaps.

To prevent overlaps, tape the ends, sides and seams of the underlay.

ARMOURFLOOR®

INSTALLATION

GENERAL INSTALLATION PROCEDURES

The following general information is an important part of the ArmourFloor® installation process.

NOTE: Installation must be carried out according to the ArmourFloor® installation instructions. Failure to do so can void the warranty.

The final grading process is to be carried out on-site. This final inspection is to made by the installer of the product, except in the case of checking for colour variations, which should be carried out in conjunction with the owner of the floor.

SITE CONDITIONS

It is the responsibility of the installer and the owner to ensure that the job site conditions and the sub-floor are environmentally and structurally acceptable before installation commences.

Big River does not accept responsibility for any issues arising from failures caused by the sub-floor or site conditions being outside the relevant Australian Standards.

It is the responsibility of the installer to ensure that the work site is safe. If there are any safety concerns, the installer should cease work immediately and not continue the installation until the work site is completely safe.

The timber flooring installation should always be the last service on to the site. If this is not possible, foot traffic on the finished product should be limited to a minimum.

Drainage should always be directed away from the building.

Timber flooring should only be delivered if the worksite is enclosed, dry and in a lockable condition.

The flooring should be installed under the "in-situ" conditions in which it is to be used. This should include heating and/or air-conditioning. Do not install and finish the floor if the ambient conditions are extreme; always wait for suitable conditions.

NOTE: Commencement of installation is considered to be acceptance by the installer of the jobsite conditions. If the site is not acceptable, installation should not commence.

GRADING AND COLOUR VARIATION

It is important that the customer is fully aware of the natural colour variations between floorboards of the same species. Packs of flooring should be opened prior to installation and the customer should be shown the colour variation that can be expected in the floor. Where practical, any boards that the customer is concerned about should be used in areas that are not main thoroughfares (in cupboards, etc.).

If the installer or customer is not happy with any boards that have been included in the packs, contact Big River to arrange for an inspection or for replacement of the material if it is considered to be out of specification.

NOTE: Material will not be replaced because of natural colour variations. Big River will not accept any responsibility for colour variations in material that has been installed.

SETTING OUT

Accurately setting out the floor prior to laying the material can prevent problems during installation. It is critical to establish a primary working line for the project; this is usually through the longest continuous area of the floor. This then becomes the reference for the project.

NOTE: Initial alignment of the floor is critical. A misaligned starting row can cause side and end gaps to appear in the proceeding rows of flooring.

To achieve the best "look" for the floor it is important to "rack out" the flooring to achieve a random appearance. Start the floor by using either the random planks supplied or by cutting the boards to a pre-determined length. Joints between boards should be located randomly. Allow at least 400mm between adjacent end joints. This will avoid "clustered" joints. To avoid repeated patterns, randomly cut starting boards to different lengths.

PRE-INSTALLATION INSPECTION

Inspect all material before installation. Any material considered not to be of the correct quality must not be laid. If there is any doubt that the quality is to the required standard, contact the supplier of the material for further information. No claims will be allowed for visible defects in material that has been laid.

NOTE: Care should be taken at this stage to ensure that colour and grain variations between Armourfloor boards are randomly mixed throughout the finished floor. This can be achieved by working from several different packs of flooring. Using boards of differing lengths results in a more natural appearance.

ALLOWING FOR FLOOR EXPANSION

To start the first row, place 10mm-thick spacers between the boards and the wall, approximately 600mm apart or near the board ends. A gap between the floorboards and the walls allows for slight movements caused by structural movement of the building or by seasonal changes in relative humidity. The gap between the floorboards and the wall should be covered by either the skirting boards or a suitable cover strip. A minimum gap of at least 10mm must be left around the perimeter of the floor and around any fixed furniture such as island benches etc.. Intermediate expansion should also be included in floors that are longer or wider than 15 metres.

GLUING THE TONGUE-AND-GROOVE JOINT

Always apply glue to the top of the groove. Wipe off all excess glue immediately using a damp cloth; it can be very difficult to remove cured glue from the finished floor. Always use a tapping block on the tongue of the board to lightly tap the boards together. Tapping too hard or using a hammer can damage the tongue and increase the chance of damage to the floorboard.

INSTALLING FIRST ROW OF BOARDS

Lay the first row of boards with the groove facing the wall and with glue applied to the grooves. Using a tapping block and hammer, tap the boards together firmly. At the end of the row, use an installation bar to tap the last board into place. Cut the last board in the row so there is a 10mm expansion gap on the end.

To ensure a random pattern of boards, start the second row with a board at least 500mm shorter than the first board in the first row. Again, using the tapping block and hammer, firmly tap the adjacent boards together until no gap is visible.

Continue installing the floor, repeating the process until the last row is ready for installation.

INSTALLING THE FINAL ROW

The final row of boards, in most installations, will need to be ripped lengthwise to fit. The cut must allow for the expansion clearance or gap between the wall and the flooring, as well as compensate for uneven walls.

Allow a minimum of 12 hours for the glue to cure before allowing foot traffic on the floor.

DIRECT GLUE APPLICATIONS

Where boards are glued directly to the sub-floor, the adhesive should be a durable, moisture-cured polyurethane, selected for the product and site conditions. It should be sufficient to hold the boards in place, ensure rigidity and be able to transmit the required load.

The adhesive should be compatible with the substrate and flooring, be non-staining and resistant to ageing, oxidation and ultraviolet light.

Use adhesive in accordance with the manufacturer's instructions, allowing for the appropriate field and perimeter expansion.

Follow sub-floor preparation instructions above. Spread a thin, even measure of polyurethane adhesive using a 3mm V-notch trowel. Adhesive should be applied without bubbles or lumps under finished surfaces or edges. Clean excess adhesive progressively. Remove all excess adhesive on completion.

Follow fixing and installation procedure above.

Installing on Battens or Joists

- Sub-floor timber framing should comply with the requirements of AS1684 - National Timber Framing Code.
- For top nailed applications CustomCote and Raw should be used.
- It is recommended that seasoned joists of at least 45mm to 50mm thickness be used to ensure adequate nailing of the flooring.
- Refer to design data sheet to determine appropriate floor joist spacing.
- For a sub-floor where the underside is exposed to an external environment, an oil-based sealer should be applied or, alternatively, a weatherproof lining fixed to the underside of the joists.
- Ensure floorboards are firmly in contact with the joists before nailing.
- Two nails must be used to fasten the board at each joist, with a recommended minimum edge distance for nailing of 10mm to 12mm.
- Check to ensure there are no gaps between the joists and the floorboards.
- All nails should be punched a minimum of 2mm to 3mm below the board surface
- Punched nail holes should be filled with appropriately coloured non-shrinking wood filler.
- Nails should be of the minimum size shown below.
- Board ends should be joined in the centre of the floor joists.
- The butt joints should be staggered to produce a random appearance across the floor.

Nail type for seasoned softwood or hardwood floor joist

Hand driven - 50 x 2.8mm bullet head
Machine driven - 50 x 2.5mm brad

Note: Big River does not recommend secret nailing when installing ArmourFloor®. This application can void the warranties.

When using secret nailing, minor noises within the flooring are inherent and can be affected by changing ambient conditions. This is not considered to be a manufacturing fault and is therefore not covered by the flooring warranty.

These noises can be reduced by ensuring that the sub-floor is structurally sound and clean prior to commencing the installation.

INSTALLING OVER HEATED SLABS

ArmourFloor® boards can be installed over heated slabs, either as a floating floor or glued directly to the concrete slab.

CONCRETE SLAB REQUIREMENTS

When installing ArmourFloor® over a heated slab it is extremely important to ensure that the slab is dry. If the slab is not dry, moisture left in the slab will be driven into the timber flooring when the heating is turned on. This will alter the dimensions of the floorboards and can adversely affect the performance of the floor.

The moisture content of a concrete slab should not exceed the minimum of 5.5% when measured using an electrical resistance metre, or 70% relative humidity when using a hygrometer.

NOTE: A slab with high humidity can register low moisture content.

If the moisture content exceeds the above recommendations, a chemical moisture vapour system from a reputable manufacturer must be used. Follow the manufacturer's instructions at all times.

PRE-INSTALLATION

If all of the above criteria have been met, the slab heating should be turned on for at least 72 hours, then switched off for 24 hours, before installation commences.

INSTALLATION

ArmourFloor® can be installed as either a floating floor or can be glued directly to the concrete or timber sub-floor as per Big River installation instructions.

NOTE: It is very important that expansion gaps are included (Big River recommends a minimum of 10mm). This will ensure that the floor has room to expand when the heating is turned on and will compensate for normal floor movement.

It is also important that heavy objects such as benches are not installed on top of "floating" floor applications. This will restrict the movement of the floor by pinning it to the sub-floor, which can cause gapping.

Where flooring runs through a doorway into another room, take advantage of the opportunity to install an expansion gap. The flooring should be finished up to the doorway, leaving a 10mm gap covered by an appropriate cover strip. Lengths of flooring in excess of 10 metres must have appropriate 10mm expansion gaps inserted in the floor.

POST INSTALLATION (PRE-FINISHED FLOORS)

Beginning 48 hours after the installation has been completed, the heating system should be switched on and the temperature gradually increased over a period of 5 days until the maximum operating temperature is achieved as per the under-floor heating manufacturer's instruction or to a maximum of 28 degrees Celsius. The floor should be maintained at this temperature for a minimum of 2 weeks.

FLOORS COATED IN SITU

After completing the Post Installation procedure the heating should be switched off for 3 days and the process should be continued as outlined below.

SANDING & COATING THE FLOOR

After the floor has cooled the floor can be sanded and coated as per standard industry practices.

TURNING ON THE HEATING SYSTEM

On completion of the sanding and coating the process as outlined under Post Installation (above) should be implemented.

SEASONAL OPERATION

The under-floor heating should be turned on and the temperature increased gradually over a 5 day period. For maximum stability, humidity must be maintained between 35% and 55% relative humidity. Seasonal gapping should be expected.

FINAL FLOOR INSPECTION

When installation is complete the floor should be cleaned thoroughly using the appropriate cleaning products. The floor should always be left in the best possible condition.

Any imperfections in the floor should be filled with the appropriate colour matched caulking product; this includes hot wax repairs. Any minor scuffing or scratches left by the installation process should be repaired using the appropriate materials. If the floor has been damaged and cannot be repaired to an acceptable condition, the individual board or area of flooring should be replaced.

On completion of the sanding and coating the process as outlined under Post Installation (above) should be implemented.

ACHIEVING THE BEST RESULTS

To achieve the best result, the following important points should be considered when laying a Big River floor:

- Always tap boards from the tongue side; never tap on the groove.
- Never "over tap" the boards; over hitting will cause damage to the floor by disrupting the groove and in some cases wedging the groove open.
- Always use a class D3 adhesive to glue the boards together.
- The glue should be run in a continuous bead on the top side of the groove on both the side and the end of the board.
- Remove excess glue that is squeezed out of the joint with a clean, damp rag before it dries. Change rags and water often to avoid leaving a residue on the boards.
- To achieve a uniform appearance for the whole floor, Big River recommends working from several packs at once, dry-laying the flooring and mixing the board lengths to avoid the end joints being too close together. Joints should be spaced a minimum 400mm apart.
- Always allow for a wastage factor when quoting on a floor. This could be as little as 5% on a simple floor and 10% or more on complicated areas.
- Fixtures should not be installed on floating floors, including kitchen benches and other heavy items. This will restrict the movement of the floor.
- It is important to ensure that the customer knows how to clean and maintain the floor. It is good practice to include a cleaning kit in the quote. These products are available from Big River, along with a full maintenance program. Maintenance is critical to ensure the floor is kept in the best possible condition and to maximise longevity of the floor.

ARMOURFLOOR® COATINGS

Coating requirements of the ArmourFloor® product range:

ArmourFloor® UltraCote – This is a fully coated UV-cured floorboard. Although it is ready for walking on as soon as it has been installed, in some applications it may require a further coating after installation for extra durability. Full coating instructions are included in this product manual.

ArmourFloor® CustomCote – This product has no coating on the board; however, the grain of the board is filled with UV-cured grain filler. Therefore, this product will require at least 2 coats after installation. Full coating instructions are included in this product manual.

ArmourFloor® Raw – This is a completely unfinished product that will require sanding and coating in the same manner as solid T&G flooring products. This is a peeled product and therefore is more "porous" and usually requires a sealer and 2 top coats. In extreme cases an extra coat may be required. When the timber has been coated it will have a slightly rougher texture than other Big River timber flooring products.

WATER BASED COATINGS

The following basic application instructions should be followed when coating Big River CustomCote flooring with the Loba Duo coating system.

CustomCote flooring does not require a cutback but must be cleaned with a methylated spirits wash and buffed with a maroon nylon pad or 320 grit wings if required.

Mix Lobadur WS Duo at a ratio of 9:1 by adding the complete 500ml Hardener container to the 4.5L Base container. Alternatively, mix the required volume at a 9:1 ratio. Shake mixture and allow to sit for 5-10 minutes.

NOTE: Loba WS Duo Extra Matte mixing ratio is 9:2.

Apply a coat of Loba WS Duo Matt/Satin, H/M Semi-Gloss, Extra Matte or Anti Slip, using the LobaTool Deluxe or Universal Roller at between 8-12 square metres per litre, depending on the timber species. This coating should be dry in 2-4 hours, depending on conditions and airflow, and ready to be re-sanded after 6 hours.

For the second coat, cut back the floor lightly with a 220 grit screen or a maroon pad with "wings" to remove any dust or foreign matter and to prepare for coating.

Apply the second coat of Loba WS Duo Matt/Satin, H/M Semi-gloss, Extra Matte or Anti Slip with a LobaTool Deluxe or Universal Roller at between 8-12 square metres per litre, depending on the timber species. This coating should be dry in 2-4 hours, depending on conditions and airflow, and ready to be re-sanded after 6 hours.

NOTE: In hot or humid weather, add Loba WS ARGO (Wet Edge Extender) to the Loba top coats for superior performance. Also, for extra UV protection against timber oxidisation, add Loba UV Protect to each top coat application.

SOLVENT BASED COATINGS

Wash floor thoroughly with methylated spirits or a similar product to remove any surface contamination. Use damp, clean lint-free rags. Replace rag continually when soiled. Allow ample time for thinners to dry.

FIRST COAT

The application tray must be clean and free of foreign objects that may affect the final finish. Fill the tray with sufficient material to complete the job.

NOTE: Do not pour unused material back into the container.

Cut in around the perimeter of the floor using a 50mm brush, applying a thin, even coat and ensuring that the material is not over worked.

Ensure that the entire area is dust-free. Apply a liberal coating using a roller with a 5 to 6mm nap. If necessary, application instructions should be sought from a trained technician.

Extender may be used to reduce bubbling and application marks caused by environmental conditions, e.g., poor airflow and extreme changes in heat or cold that can cause curing variations. Refer to data sheets for recommended volumes of extenders.

Allow the floor to cure for 24 hours before sanding and re-coating.

SECOND COAT - PREPARATION

If the floor requires any filling, this should be carried out at this point.

NOTE: To achieve a satin finish, a gloss coating should be used for the first coat and a subdued coating (semi-gloss or satin) for the second coat.

Ensure first coat is adequately dry. Cut/buff coating using a 180 grade screen back on a rotary type sanding/polishing machine, ensuring at all times that an even sanding has been carried out across the total surface and that it is uniformly dull and well powdered. Failure to do so may lead to poor inter-coat adhesion and/or swirl marks (cobwebbing). The surface should be free of all surface imperfections and scratches.

NOTE: Do not over-sand the floor. It is only necessary to de-nib the floor, to allow the subsequent coat to adhere. Over-sanding can remove the first coat.

Vacuum the entire floor surface thoroughly, ensuring all traces of dust have been totally removed. Allow time for the airborne fibres created by vacuuming to settle, then wash floor thoroughly with Big River thinners to remove any surface contamination. Use clean, damp, lint-free rags, continually changing the rags when soiled.

SECOND COAT

The application tray must be clean and free of any foreign objects that may affect the final finish. Fill the tray with sufficient material to complete the job. Do not pour unused material back into the container.

Cut in around the perimeter of the floor using a 50mm brush, ensuring at all times not to brush too far ahead of the roller.

In poor ambient conditions, extender products may be used to reduce bubbling and application marks. Note that exposure to direct sunlight can also cause curing variation.

Ensure the entire area is dust-free. Apply a liberal coating, using a roller with a 5 to 6mm nap. Apply along the boards; do not work across the timber grain. Rolling across the grain will dramatically increase the incidence of lap marks, especially on dark timbers. Work from skirting board to skirting board where possible but do not exceed a comfortable working distance.

Drying time will depend on atmospheric conditions, ventilation and airflow. Air out the site after 24 hours to assist even drying of the coating.

NOTE: Do not leave site sealed longer than 24 hours or curing may be affected (evenness of gloss level, settling, etc.).

Allow up to 4 days to evaluate the final finish. Minor imperfections may be magnified over this initial period, especially on darker substrates.

Curing of the coating will take 4 to 6 days depending on the weather. Complete curing is achieved in 21 days.

SITE CONDITIONS AND SAFETY

Special care should be taken to ensure that all direct sunlight on the floor is eliminated as sunlight may create uneven gloss levels.

Do not apply coating when the ambient temperature is below 10˚C or above 35˚C

Always ensure that all safety procedures and requirements are in place before any work is undertaken. There must be adequate ventilation of the work area. Safety equipment must be worn at all times.

The following basic application instructions should be followed when coating Big River UltraCote flooring with the Loba Duo 2K Contact coating system.

No sanding activity is required in this process. This reduces the potential for sanding problems and contamination of the coating by dust and foreign matter.

Complete any repairs as required; this will include any slightly damaged boards, splinters, etc.

Clean the floor thoroughly and remove any residues from other trades with an applicable cleaning agent. Give the floor a general clean with LobaCare Remover and allow to dry.

Mix the 2 components of Loba 2K Contact together slowly, stirring thoroughly. Do not combine all components at once, but add slowly as the parts are combined.

Apply Loba 2K Contact to the surface with the 2K Contact Applicator or with a stainless steel trowel (covers 60m2 per litre) and allow to dry for at least 3 hours, but not more than 24 hours.

Apply a coat of Loba 2K Duo evenly over the floor area using the recommended 10 or 12mm roller at a coverage rate of 8 to 12 square metres per litre to ensure good coverage and a finish similar to the factory coating. Multiple coats of Loba 2K Duo can be applied if desired.

Allow overnight drying (12 hours) before foot traffic and 7-14 days for full cure.

Loba 2K Duo is available in:

Matt/Satin
H/M Semi-Gloss
Extra Matte
Anti Slip for stairs, etc.

An optional UV blocking additive is available for even greater protection.

Armourfloor® Raw is an engineered flooring product with the properties of a natural board and therefore can be coated like any other timber flooring product.

Before sanding, apply a trowel fill with a quality putty such as TimberMate. If unsure of the closest putty match, contact your nearest Big River branch or flooring outlet.

Sand the timber floor with a polisher to a 120 to 150 grit finish.

Apply sealer coat as required, either Loba EasyPrime, Loba Exotengrund (for exotics) or Loba PrimaSeal (for a richer look).

Start the coating process using the recommended roller type, coverage rate and drying time as outlined in the relevant sealer data sheet. This sealer coat does not require a cutback but may be buffed with a maroon nylon pad for a superior finish.

Apply a second coat using Loba WS Duo, Loba WS EasyFinish or Loba WS Viva with an application rate of between 8 and 12 square metres per litre (depending on the species).

This coating should dry in 2 to 4 hours, depending on conditions and airflow, and can be sanded after 6 hours.

Cut the floor back lightly with a 22 screen or a maroon pad with "320 grit wings" to remove any dust or foreign matter and prepare for the final coat.

Apply a third coat using Loba WS Duo, Loba WS EasyFinish or Loba WS Viva with a coverage rate of between 8 and 12 litres per square metre, depending on the timber species.

This coating should be dry in 2 to 4 hours, depending on the ambient conditions and airflow, and will be ready for light foot traffic after 24 hours.

NOTE: In hot or humid weather, add Loba WS ARGO (Wet Edge Extender) to the Loba top coats for superior performance. For extra UV protection against timber oxidisation, add Loba UV Protect to each top coat application.

Care and Maintenance

Big River uses and recommends Loba coating systems for the care of Big River flooring. The Armourfloor® UltraCote product range is coated in the factory using a UV coating system developed and supplied by the Treffert Coating Company. Loba Coatings and the Treffert Coating Company have an agreement whereby all coating systems developed and produced by Treffert are tested by Loba to ensure compatibility between the two systems.

Floors Exposed to Extreme Wear

Sweeping: In retail environments, it is recommended that sweeping be carried out daily, ideally in the morning, to reduce the presence of potentially damaging grit before the day's trading.

Mopping: Should be carried out as required (normally weekly) using as little water as possible, with the recommended dilution of LobaCare Floor Clean. Small spills should be wiped up immediately, with only localised cleaning required.

Rejuvenating: Heavy commercial foot traffic always creates a challenge for polished timber floors. Therefore, it is important to plan for it in advance. LobaCare FloorPolish Plus provides a "sacrificial" wear layer that will take the wear and tear of daily traffic, while the primary coating remains intact. This allows the floor to retain its decorative value for much longer, while reducing maintenance requirements. It also refreshes the floor's polished appearance. LobaCare FloorPolish Plus is easy to apply and the floor is ready to walk on in less than an hour.

It is recommended that the rejuvenation process be carried out as required, but for the average store it is expected that every two months would be sufficient (busier stores may require increased attention). Every 12 months (or after 6 applications of LobaCare FloorPolish Plus) the floor should be stripped with LobaCare Remover and the rejuvenation cycle restarted.

TECHNICAL NOTES FOR CLEANING CONTRACTORS

The following technical information on Loba products includes general instructions for maintaining timber floors pre-finished with Treffert coatings. A consistent maintenance program is necessary for floors exposed to extreme wear.

A regular care, cleaning and maintenance cycle should help to keep the floor in as good a condition as possible. Note that other products might not be compatible with the Treffert UV coating, as most care products have no adhesion to modern anti-scratch UV coatings.
Big River recommends Loba care and cleaning products and Lobadur water-based coatings for the renovation of timber floors pre-finished with Treffert UV coatings.

BASIC CLEANING

Clean the floor with water and Loba Cleaner (50-100ml into 10 litres of water) after installation. Floor must be free of dust, grease, dirt, etc.

FIRST CARE (NEWLY INSTALLED FLOORS)

Apply Loba FloorPolish Plus (undiluted) as primary care. Apply using the LobaTool Applicator.

Loba FloorPolish Plus
Consumption rate: 1 litre per 50 square metres
Drying time: 30 minutes

ESTABLISHED FLOORS

Basic cleaning with Loba Remover and single disc machine with green pad will clean the floor thoroughly and improve the adhesion of Loba ParkettCare.

CLEANING AFTER POLISHING

Loba Cleaner diluted in water.

Consumption rate: 100-200ml per 100 square metres

If the floor is heavily soiled it should be cleaned using Loba Remover (diluted 1:10 with water) and, if necessary, spot treated with a green pad (by hand) to remove remaining deposits. This will improve the outcome of the maintenance procedures.

The floor should be swept daily and mopped as required.

After about two months, an additional layer of Loba FloorPolish Plus should be applied as per "First Care" instructions (more frequently if necessary). After 6 applications it is recommended that the Loba FloorPolish Plus be stripped. Loba Remover and a buffing machine with green pad will remove all layers of care product. This should leave the floor looking like new, ready for the cycle to be resumed.

STRIPPING

Loba Remover diluted with water (1 part Loba Remover to 5 parts water).

Consumption rate: 2 litres per 100 square metres

Apply cleaning solution to the floor using LobaTool Pump Sprayer. Leave for about 5 minutes. Buff off old layers of Loba FloorPolish Plus using single disc buffing machine with a green pad. Use a water vacuum or mop to clean the floor. Clean the floor with clear water afterwards.

Basic cleaning is not recommended more often than twice a year.

TOUCH-UP OF SCRATCHES

After basic cleaning, minor white scratches can be made less obvious by rubbing in Lobadur ProColor with a cloth (touch-up pens also available). ProColor must be wiped off the surface, allowing it to remain only in the scratch. A range of colours is available to suit the timber species.

After a drying time of approximately 2 hours Loba FloorPolish Plus can be applied to the whole floor.

LONG TERM MAINTENANCE

After a long period of use (approximately 5 to 7 years) some floors will have absorbed significant damage and may require re-sanding. At this point it is recommended that the floor be recoated with Loba WS Duo two-component water-based polyurethane finish.

Floors with intact UV coating should be given a basic cleaning, primed with Loba WS 2K Contact and coated with Loba WS Duo two-component water-based polyurethane finish.

If significant damage is evident, the UV coating should be sanded off completely to the bare timber. Apply a coat of Loba sealer and 2 top coats of Loba WS Duo two-component water-based polyurethane finish.


BigRiver
ARMOURPANEL™

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 areas 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. It was used exclusively in the **Kangaroo Pub** at Expo 1992, Seville, Spain. 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 is for interior Use Only

BENEFITS

Below are some of the 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.
- It can be used on heated concrete slabs.
- 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 to restrict this type of movement. This certainly applies to doors where it is important that the plywood remain flat.

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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: 2004 "Plywood – Structural".

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

Face material is as per AS2269.

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

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 2400x1200, 1800x1200 and 1200x1200
Sheet thicknesses 15,18,21,27,33 and up to 40mm
Sheet grades C-D and D-D (see Grading info. sheet)
Glue line Durable type "B" bond
Face veneers 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.

Important Change To This Product

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.

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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 movement or beam shear limited.

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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	51.5	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	15.1	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.

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PROPERTIES OF TIMBER SPECIES

Species	Average density (kg/m3)	Colour	Hardness (JANKA kN)
Alpine Ash	650	Yellowish Brown through to pale pink	4.9
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
Walnut	750	Pale to dark reddish brown	5.7

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						
	Bending	Tension	Shear	Compression in the plane of the sheet	Compression normal to the plane of the sheet	Short duration modulus of elasticity	Short duration modulus of rigidity
	Fb	Ft	Fs	Fc	Fp	MPa - E	MPA - G
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	18 500	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 AS1720.1 "Timber Structures Code"

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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/NZS 2269:1994

- 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) – Must not exceed 30% of the panel surface and a depth of 2.5mm (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 Big River Group P/L on one of the telephone numbers below.

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Armourpanel Stress Grading Properties

Identification code	Thickness (mm)	Blackbutt	Flooded gum	Spotted gum	Alpine Ash
15-30-5	15	F34	F27	F34	
18-30-6	18	F34	F17	F34	
21-30-7	21	F34	F34	F34	
27-30-9	27	F34	F34	F34	
33-30-11	33	F34	F34	F34	
Identification code	Thickness (mm)	Autumn Gold	Walnut	Sydney Blue Gum	
15-30-5	15		F22		
18-30-6	18		F17		
21-30-7	21		F22		
27-30-9	27		T.B.A		
33-30-11	33		T.B.A		

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

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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 Areas	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 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 nogging 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.

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Fixing & Installation

Information Sheet 20

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 loads specified in AS1170.1. **Armourpanel used in flooring applications must have both long edges Tongue and Grooved. This will minimise lipping.**

Minimum Fastener Specification

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 e.g. 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 Finishing instructions).

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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.

Solvent-based polyurethane finishes are recommended for heavy traffic areas because of their excellent wear characteristics.

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.

See over for finishing Walnut Armourpanel.

Armourpanel is for Interior Use Only

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FINISHING WALNUT ARMOURPANEL

Walnut is generally a clean timber with minimal natural characteristic such as splits, knotholes, gum veins, rough grain and peeler marks. However, the species can exhibit pinholes and a slightly open grain.

To achieve the best finish the face will require on-site filling.

Below is a guide to achieving this result. At all times the directions from the coating manufacturers and normal industry practices should be followed.

STEP 1 Sand the floor with appropriate sanding equipment to the required finish (100-120 grit).
STEP 2 Apply a sealant coat and, when it has dried, sand lightly 120 to 150 grit.
STEP 3 Trowel fill the whole surface using a colour-matched grain filling putty; the colour should be one or two shades darker because after a few months the timber will darken with age. When it has dried, sand lightly.
STEP 4 Apply the first "finishing" coating and when it has dried sand lightly.
STEP 5 Apply a second "finishing" coating.
STEP 6 Apply a third "finishing" coating if required.

Armourpanel is for Interior Use Only

BigRiver

ARMOURTILE™

Armourtile™

Product Description

Information Sheet 22

Armourtile is a precision engineered, total hardwood decorative plywood product manufactured under the Plywood Association of Australian's third party audited quality control program.

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

Armourtile is available with the following species / colours as the face veneer: Alpine Ash, Blackbutt, Flooded Gum, Spotted Gum, Sydney Blue Gum and Walnut.

Sizes

Available as standard squares of 295mm, 395mm, 595mm and 1195mm.

Workability

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

Applications

Armourtile can be used in areas that require flooring with durability, resilience, stability and impact resistance, and the ability to withstand climatic changes.

Benefits

- Big River is a wholly owned and operated Australian company.
- Armourtile is manufactured to Australian Standards.
- Manufactured using total hardwood construction.
- Superior impact resistance.
- Variety of tile sizes available.

Availability

Armourtile is usually manufactured to order. When ordering this product please advise of requirements as early as possible to ensure material is supplied when required.

Armourtile is for Interior Use Only

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Armourtile™

Product Specifications

Information Sheet 23

Manufacturing Process

Armourtile 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: 2004 "Plywood – Structural".

- All tiles have a solid cross-band veneer directly under the face veneer.
- Face material is as per AS2269.
- Any defects on the face of S-D graded tiles are not puttied. These defects are to be filled on-site by the installer, ensuring putty is matched in colour and is compatible with the finish being used.
- All core material is manufactured from hardwood veneers.
- Tiles will require extra sanding once installed (see finishing data sheet).

Armourtile is manufactured with grooves on all 4 sides. A polypropylene tongue is inserted to create tongue and groove flooring.

Tile thicknesses: 15mm.
Tile grade: Select C-D (see grading information sheet).
Glue line: Durable type "B" bond.
Face veneers: 3.0mm before sanding.

Properties of Timber Species

Species	Average density (kg/m3)	Colour	Hardness (JANKA kN)
Alpine Ash	650	Yellowish Brown through to pale pink	4.9
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
Walnut	750	Pale to dark reddish brown	5.7

This product is for internal use only.

Armourtile is for Interior Use Only

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Armourtile™

Grading Properties

Face Grading Specifications

Below are the grading specifications for face veneer on an S-D tile (Big River Grade: Select C-D). Grading is as per AS/NZS2269:1994

- Splits – Permitted to a length of 25% of the tile and a width not exceeding 3mm. Up to 3 splits per face.
- Gum Veins & Pockets – Will not exceed a depth of 2mm.
- Rough Grain – Must be tight and not exceed a depth of 1mm or 20% of the tile surface.
- Colour Variation – Natural variation within a species permitted.
- Sound Intergrown Knots – Permitted.
- Unsound or Non-adhering Knots – Not permitted.
- Stain (Iron Tannate) – Permitted if low contrast.
- Fungal Decay – Not permitted.
- Cross-grain Knife Marks – Up to four per tile, not exceeding a width of 3mm.
- Holes (parallel) – Must not exceed 30% of the tile surface and a depth of 2.5mm.
- Holes (vertical) – Permitted to a diameter of 1mm with no more than one per $8cm^2$
- Edge Splinter – Slight amount is permitted..

Armourtile is for Interior Use Only

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ARMOURTILE™

FIXING & INSTALLATION

Armourtile should be installed in the same manner as parquet flooring.

DIRECT GLUED APPLICATIONS

Big River Armourtiles are glued directly to the sub-floor. Follow sub-floor preparation instructions as for Armourfloor and Armourpanel flooring.

A moisture-cured polyurethane adhesive used in accordance with the manufacturer's instructions is recommended, allowing for the appropriate field and perimeter expansion.

Spread a thin, even measure of polyurethane adhesive using a 3mm V-notch trowel.

IMPORTANT: Avoid getting glue on the face of the tile. Failure to thoroughly remove glue may result in rejection of coating.

Use special direct-stick tongues provided by your Big River agent. Tiles should be lifted and tongues inserted before laying. Lightly tap into place, ensuring each tile is securely attached. For an attractive effect, lay alternate tiles at right angles.

This product must be trowel filled as per finishing information sheets.

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

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

Check all tiles 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.

Armourtile is for Interior Use Only

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Armourtile™

Finishing

Information Sheet 26

Before applying the selected finishing product, the timber surface needs to be sanded using 100 to 120 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.

Solvent-based polyurethane finishes are recommended for heavy traffic areas because of their excellent wear characteristics.

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

For the best finish, Armourtiles should be trowel puttied.

Below is a guide to achieving this result. At all times the directions from the coating manufacturers and normal industry practices should be followed.

STEP 1 Sand the floor with appropriate sanding equipment to the required finish (100-120 grit).
STEP 2 Apply a sealant coat and, when it has dried, sand lightly (120 to 150 grit).
STEP 3 Apply a colour-matched putty; the colour should be one or two shades darker because after a few months the timber will darken with age. When it has dried, sand lightly.
STEP 4 Apply the first "finishing" coating and when it has dried sand lightly.
STEP 5 Apply a second "finishing" coating.
STEP 6 Apply a third "finishing" coating if required.

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.

Before installation the installer should inspect all materials. Any material considered not to be of the correct quality must not be laid. If there is any doubt about the quality being to the required standard, please contact the supplier of the material for further information. No claims will be allowed for visible defects in material that has been laid.

Armourtile is for Interior Use Only

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BigRiver
ARMOURTREAD®

Armourtread®

Product Description

Armourtread is a laminated product developed as an alternative to large section solid timber for stair treads. Armourtread is not subject to shrinkage like normal solid timber because each layer of hardwood veneer is dried before manufacture of the laminate.

The product is manufactured under the Plywood Association of Australia's quality control and product certification scheme to Australian/New Zealand Standard AS/NZS2271. It is designed for use in interior applications and complements the Big River Timber range of flooring products.

Armourtread is laminated with all veneers in the longitudinal direction and glued using Type B bond. Because this type of glue cures clear, the glue-line is not noticeable.

All veneers used in this product are milled from managed regrowth and plantation forest hardwoods.

Workability

This material will behave in the same manner as solid timber. It can be machined, turned, drilled, nailed, etc.

Other Uses

This product is currently being used for benchtops, stair trim, tabletops, balusters, handrails and posts. Some of these products require dimensions thicker than 42mm. The lamination of 2 or more thicknesses can achieve this.

Benefits

Below are some of the benefits of using Armourtread.

- Big River is a wholly Australian owned and operated company.
- No need to cut large section timber to produce wide boards.
- Manufactured to Australian standards
- Manufactured using total hardwood construction.
- Superior strength and impact resistance.
- Large panel sizes.
- No need to laminate smaller widths together.

Armourtread is for Interior Use Only

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Armourtread®

Product Specifications

Information Sheet 28

Manufacturing Process

Armourtread is manufactured using a total hardwood balanced construction producing plywood boards manufactured to AS/NZ2271: 1999 "Plywood and Blockboard for exterior use" and stress graded in accordance with AS/NZ2269: 1994 Plywood – Structural.

- Face veneer is a select grade veneer. These sheets have a minimal amount of naturally occurring features as listed in grading specifications.
- Because of natural colour variation, none of the imperfections on the face of the panel are puttied. These are to be filled on-site by the installer using a putty compatible with the finishing product being used.
- The glue-line is a durable type "B" bond. This ensures that the glue-line is not noticeable when machined.
- Each panel is constructed using the same species of veneer throughout its construction.
- The following species are available: Alpine Ash, Blackbutt, Flooded Gum, Spotted Gum, Sydney Blue Gum and Walnut.

Armourtread material can be supplied either in panels, cut to size with square edges or cut to size with a bullnose profile on one long edge.

Length	900, 1200
Width	290mm or 1200 for on site matching
Thicknesses	32mm and 42mm as per AS/NZS 2269
Grade	S-D as per Armourtread Grading Sheet
Glue lines	Type "B" bond
Face veneer	3.0 mm before sanding

NOTE: Please inspect all panels for visible faults before installation. 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 installed, 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 treads are in the best positions before fixing.

Because of colour variation there will be an occasional need to stain the front edge of the material to ensure the lighter veneers in the species do not stand out. This can be done using a colour matched wiping stain that is compatible with the coating to be applied to the finished product.

Armourtread is for Interior Use Only

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Armourtread®

Design Data

Properties of Timber Species

Species	Average density (kg/m3)	Colour	Hardness (JANKA kN)
Alpine Ash	650	Yellowish Brown through to pale pink	4.9
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
Walnut	750	Pale to dark reddish brown	5.7

Structural Properties

The figures below are based on figures for solid timber. Because this is a laminated product, where defects are spread throughout the product, the actual figures should be equal to or perhaps slightly higher than shown. Big River is in the process of testing this product and figures will be published as they become available.

Species	MOR (MPa)	MOE (GPa)	Max. crushing strength (MPa)	Impact (IZOD value) (J)
Alpine Ash	TBA	TBA	TBA	TBA
Blackbutt	144	19	77	22
Flooded Gum	122	17	66	16
Spotted Gum	150	23	75	24
Sydney Blue Gum	TBA	TBA	TBA	TBA
Walnut	110	14	60	TBA

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BigRiver

Armourtread®

Grading Properties

Below are the face grading specifications for Armourtread. The face grade is known as Select grade. The back veneer will usually be a "D" grade veneer as per AS/NZS2269: 1994.

- Splits – Permitted to a length of 25% of the sheet and a width not exceeding 3mm.
- Gum Veins & Pockets – Not to exceed a depth of 2mm.
- Rough Grain – Must be tight and not exceed a depth of 1mm for 20% of the board surface.
- Colour Variation – Natural variation within the species is permitted.
- Sound Intergrown Knots – Permitted.
- Unsound or Non-adhering Knots – Not permitted.
- Stain (Iron Tannate) – Permitted if low contrast.
- Fungal Decay – Not permitted.
- Cross-grain Knife Marks – Up to four per board, not exceeding a width of 3mm.
- Holes (parallel) – Not to exceed 30% of the board surface and a depth of 2.5mm.
- Holes (vertical) – Permitted to a diameter of 1mm with no more than one per 8cm2.
- Edge Splinter – Slight amount permitted.

Armourtread is for Interior Use Only

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Big River Plywood Products

Environmental Policy

With an involvement in the Australian timber industry exceeding 100 years, the Big River Group recognises that sustainability is a fundamental factor in its longevity.

The Big River Group is very conscious of a range of environmental factors associated with being a participant in the timber industry. A key component of the company policy is maximising the value extracted out of every log processed. This flows through to impact on our strategies for sourcing, manufacturing, marketing and energy usage.

Forest Certification

Big River holds long term wood supply agreements (LTWSA) with the State Government of NSW for the sourcing of our raw material log input. Forests NSW estates are accredited under the Australian Forestry Standard (AFS) which in turn is certified by the international program for endorsement of forest certification (PEFC). PEFC is the largest assessor of forestry management in the world and Forests NSW is recognised as a leader in best practice sustainable management. The AFS is also the only forest accreditation system in Australia to gain accreditation under the International Standards Organisation (ISO). This system is audited by NCS International to AS4708 (int) – 2003. It is also accredited by JAS-ANZ. Full details of Forests NSW environmental policies and practices can be found on its website.

Chain of Custody

The Big River plywood and flooring manufacturing plant at Grafton has full chain of custody certification under AS4707 (certification number 224). The registration number under AFS is 01-31-14, while the registration number under PEFC is 21-31-14. Big River was the first plywood operation in Australia to be accredited under this scheme.

Plantation Timber

Big River's LTWSAs include some 85% of the total timber sourced from plantation forests in NSW. This includes both pine and hardwood plantations. Big River is also regarded as the industry leader in adding value to these resources, in particular the hardwood plantations which were originally planted for low grade woodchip usage. Big River sees its unique processes as providing one of the best uses of such a resource, and currently utilises this timber to produce structural grade products,

including formply, high quality flooring and stair tread material. The company has received considerable funding from the Government on the basis of this unique ability to add value to the resource.

The balance of the LTWSA is re-growth hardwood, again fully accredited under the AFS and PEFC scheme and harvested on a long term rotational and sustainable basis. Big River sources no timber from old growth forests.

Third Party Product Accreditation

As part of the focus on high quality products and third party accreditation, Big River products are accredited under the Plywood Association of Australia (PAA) JAS-ANZ accreditation system, with products covered under Australian Standards 2269 and 2271. Big River also has a sourcing strategy that ensures other products marketed through our organisation are also covered by such an accreditation scheme wherever possible. For example, all LVL products marketed by Big River are also accredited under this PAA JAS-ANZ scheme.

This product accreditation scheme extends to identifying the quality and strength of products. Big River formply products (Armourform) are manufactured to maximise the reuse of the product, and hence the total value extracted is among the highest in the world. This again ensures maximum usage of the timber resource used in production.

Energy Strategy

In line with the vision to maximise the value of every log processed, Big River has installed an industry leading co-generation electricity plant, where manufacturing wood waste is used to create renewable energy on site, thereby greatly reducing the company's requirement to source energy from the grid. This power plant is officially registered with the Office of Renewable Energy, and also qualifies for Renewable Energy Credits (RECs), an official recognition of the production of "green energy". The power station accreditation number under the Renewable Energy (Electricity) Act 2000 is BEBMNS09. Big River has again been recognised by Government for this initiative through a major joint development and funding program.

Sustainable Future

Big River remains one of the oldest operating timber businesses in Australia, thanks to a clear strategy of product development and diversification. Continually assessing our precious resources to determine their maximum

utilisation is fundamental to the company philosophy, a strategy that has been recognised and supported by governments at all levels. Big River seeks to work with all our customers to ensure that the technical qualities of our many products are well understood, so maximum value can be extracted by all in the supply chain, from the public owned forest estates to the end customer. This approach will ensure a sustainable future for the resource, the company, suppliers and our many customers nationally and internationally.

Jim Bindon

Managing Director

Rig River Group

Big River Plywood Products

Information Sheet 32

Accreditation & Environmental Endorsements

Product Certified by Plywood Association of Australasia

The Plywood Association of Australasia (PAA) carries out a structured program to ensure products manufactured by member companies conform to relevant Standards and technical specifications. The program includes:

- **In-mill Process Quality Control** - To build quality at each stage of manufacture.
- **Internal Auditing** – By a quality control officer registered by the PAA.
- **External Auditing** – Every six months by a PAA auditor.
- **Marketplace Surveillance** – Random evaluation of certified products.

Products certified under the JAS-ANZ accreditation program are automatically deemed to satisfy the requirements of the Building Code of Australia.

Structural Plywood to AS/NZS2269

Environmental Endorsements

Big River hardwood products are Australian Forestry Standard (AFS) Chain of Custody certified.

AFS/01-31-14

The Australian Forestry Standard is recognized by the international PEFC Council (Program for the Endorsement of Forest Certification schemes). PEFC is an independent, non-profit, non-government organisation that promotes sustainably managed forests through independent third party certification.

PEFC/21-31-14

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Melbourne/Tasmania/South Australia (03) 9586 6901
Perth (08) 9456 0500 • Sydney/Illawarra (02) 8822 5555

Your reference
Our reference

April 5, 1999

Mr Kerry Pidcock
Managing Director
Big River Timbers Pty Ltd
PO Box 281
GRAFTON 2460

Dear Mr Pidcock

State Forests of NSW welcomes the opportunity to confirm that all wood being provided to your mill by State Forests of NSW is coming from ecologically sustainable operations. As you know thecorporate plan of State Forests is based on the principles of Ecologically Sustainable Forest Management (ESFM).

The principles of ESFM in New South Wales include:

- A recognition that the forest is managed for all values, including biodiversity conservation, productivity and health of the forest, protection of soil and water resources, conservation of carbon pools, long term socio-economic benefits and the protection of our natural and cultural heritage.
- Forest management is based on being adaptive to change and new knowledge over time.
- Management decision making reflecting openness to public comment, transparency in who is taking decisions and when, and a framework of accountability to the community in undertaking our operations.

These principles were endorsed by government in the recent Forest Agreement decisions and with the application of holistic forest licencing approach, underpin the management of all State Forests.

In addition, a growing proportion of wood supplied by State Forests to Big River Timbers will be coming from our Eucalyptus and Pine plantation forests. These plantations are established within the requirements of the Native Vegetation Conservation Act and do not involve conversion of native vegetation to plantations. These plantations are managed in accordance with a code of practice to ensure protection of soil and water values, biodiversity conservation and cultural heritage values.

Yours sincerely

BOB SMITH
CHIEF EXECUTIVE

STATE FORESTS

State Forests of
New South Wales

Building 2
423 Pennant Hills Road
Pennant Hills NSW 2120
Locked Bag 23
Pennant Hills 2120
Phone (02) 9980 4100
Fax (02) 9484 1310
DX 4713 Pennant Hills

www.forest.nsw.gov.au

Republic of the Philippines
DEPARTMENT OF
ENVIRONMENT AND
NATURAL RESOURCES
FOREST MANAGEMENT BUREAU

1898 - 1998
KALAYAAN

29 March 1999

CERTIFICATION

This is to certify that the wood veneers supplied to **BIG RIVER TIMBER PLYWOOD, LTD.,** with business address at P.O. Box 261, Graflon NSW 7460, Australia, **by Surigao Development Corporation (SUDECOR)** were produced from logs harvested within the Company's production forest areas in accordance with the prescribed **DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (DENR)** rules and regulations, and managed under the principle of sustainable forest development.

It is further certified that the Company's operations are closely supervised and regularly monitored by the DENR to ensure religious compliance to the afore-cited forestry rules and regulations. In addition, the management of the forest resources of SUDECOR follows the DENR approved Forest Management Plan that prescribes major development and forest conservation strategies, such as reforestation, timber stand improvement, enrichment planting, forest research, efficient utilization of timber, protection measures, provision of livelihood and health programs to surrounding communities, among others.

SURIGAO DEVELOPMENT CORPORATION is a holder of a 25-year Timber License Agreement (TLA) No. 56-1; first issued a timber license on February 16, 1959 and was renewed for another 25 years to expire on June 30, 2011.

This Certification is issued upon the request of **SURIGAO DEVELOPMENT CORPORATION.**

JOSE D. MALVAS, JR.
Director