

PRODUCT AND SPECIFICATION GUIDE FOR THE PROFESSIONAL AND HOME HANDYPERSON

This brochure details the properties and characteristics of modern engineered plywoods, LVL and I-beams, which are manufactured under the EWPAA JAS-ANZ accredited Quality Control Program and Product Certification Scheme for optimum safety and reliability.



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Structural Plywood

Structural plywood manufactured under the EWPAAs Quality Control and Product Certification scheme to Australian/New Zealand Standard AS/NZS 2269.0 Plywood – Structural processes the following characteristics:

Bond

Type A (phenol formaldehyde) which is dark in colour. The A bond provides a permanent, durable ‘marine’ bond between veneers. The plywood bond is capable of performing under long term stress and permanent exposure.

Stress Grades

F8, F11, F14, F17, F22, F27, F34 (F7 is included in the standard but is not presently produced). The stress grading system allows the application of characteristic strengths and elastic moduli to plywood manufactured from a wide range of timber species. These structured plywoods have known and consistent structural performance and the design properties are published in the Timber Structures Code AS1720.1 and EWPAAs literature.

Face Grades

Structural plywood is manufactured with A, S, B, C, or D grade faces with C and D grade being the most common. C faces are non appearance grade with a solid surface in that all permissible open defects have been filled and sanded, whereas D grade faces allow open defects such as splits and holes.

The A, S, and B veneer faces are appearance grades. A grade veneer faces are highly quality and suitable for all finishing, while S grade permits, on agreement between specifier and manufacturer, natural characteristics such as knots, holes and discolouration to be promoted as a decorative feature. B grade veneer faces are an appearance grade suitable for high quality paint finishing. Generally, structured plywoods with higher quality faces have a D grade back veneer for economy.

To maximise economy to the minimum required face grades should be specified e.g., DD grade (D grade face/D grade back) for plywood bracing where structural performance alone is required; CD grade (C grade face/ D grade back) in plywood flooring which requires one solid face to take overlays such as vinyl or carpet; or AD grade where the plywood panel is going to be clear finished for an aesthetic application.

Standard Tolerances

EWPAAs/JAS-ANZ Product Certified plywood has standard tolerance on dimensions of length, width, thickness, squareness and edge straightness. The tolerances are reproduced in the section [Standard Tolerances for Veneer Laminated Products](#).

Panels have controlled lengths, widths, squareness, edge straightness and thicknesses. Standard tolerances are most important when laying large areas such as residential or industrial floors, wall or ceiling linings, external cladding, formwork or even shelving.

Branding

All EWPAAs/JAS-ANZ Product Certified structural plywood is branded as follows:

- Manufacture’s name
- The word “Structural”
- Face grade, back grade and bond (e.g. CD – A bond)
- Stress grade (e.g. F14)
- The Standard No. i.e. AS/NZS 2269.0
- The formaldehyde emission class (e.g. E₀)

The correct branding is your guaranteed of a Product Certified engineered plywood panel with a permanent durable Type A marine bond and reliable and predictable design properties.



Structural Plywood Characteristics

Structural Plywood is the only wood based panel that can be considered an engineering material as it is the only wood panel that possesses defined, standardised structural properties. CD grade and DD grade structural plywoods are designed for structural rather than aesthetic function. Special structural plywoods which perform both a structural and a decorative function e.g., claddings or linings used also as bracing, can be manufactured with the higher quality A, B or S faces to order. Structural plywood possesses additional characteristics to benefit in construction:

Cross Laminated Two Way Strength

Rigidly gluing alternative veneers at right angles overcomes timber's tendency to split along the grain, spreads loads giving plywood excellent impact and damage resistance, and allows nailing close to panel edges. Structural plywood is a rugged building and construction panel.

High Strength and Stiffness to Weight Ratio

An advantage in such application as formwork, industrial and domestic flooring, containers, packaging, transportable housing and plywood webbed beams.

High Dimensional Stability

Because of the cross laminated construction, plywood tends to adopt the stability of wood along its grain. This two way dimensional stability of plywood under changes of temperature and moisture is used to advantage when laying large plywood areas such as concrete formwork or domestic industrial flooring.

High Panel Shear Strength

Also, because of the cross laminated construction, plywood possesses high panel shear; approximately twice the shear carrying capacity of timber. This property is used to advantage in plywood bracing, webbed beams, gussets and portal frames.

Chemical Resistance

Plywood is non-corrosive and can be used for industrial floors, webbed beams and containers subjected to corrosive environments e.g., potash and salt storage, and floors in chemical works.

Standard Available Dimensions of Structural Plywood

Panel sizes

- 2400 x 1200mm and 2700 x 1200mm, however panels of 1800mm length or of 900mm width are available but not commonly stocked.
- For bracing, standard panel lengths are 2440mm and 2700 or 2745mm to provide better top and bottom plate cover.
- Other sizes and larger scarf jointed panels are available to special order.

Thickness

4.5, 7, 9, 12, 15, 17, 19, 21 and 25mm are common thicknesses. Note that thicker panels are available on special order.



Structural Laminated Veneer Lumber (LVL)

Structural laminated veneer lumber (LVL) manufactured under the EWPAA Quality Control and Product Certification scheme is manufactured to comply with the specifications in the Australian/New Zealand Standard AS/NZS 4357.0 “Structural Laminated Veneer Lumber – Specifications”. LVL is primarily used as long length structural beams or columns, or as flanges in wooden I-beams. It is manufactured in a similar manner to plywood except all, or most, of the veneers are aligned longitudinally. Structural LVL possess the following characteristics:

Bond

Type A (phenol formaldehyde) which is dark in colour. The A bond provides a permanent, durable bond capable of performing under long term stress and permanent exposure.

Stress Grades

Stress grades may be applied to LVL, however to maximise efficiencies it is current practice to structurally characterise specific LVL products using the ‘in-grade testing and evaluation procedures’ specified in AS/NZS 4063. Generally, after the manufacturer has had the LVL’s structural properties evaluated in this manner, the values are published and / or are used to publish application specific span tables.

Structural designers using Section 8 of AS1720 “Timber Structures – Part 1 Design Methods”, can confidently use LVL’s predictable and reliable structural properties as published by each manufacturer. LVL possess excellent structural reliability based upon a tight coefficient of variation due to the randomisation of natural defects achieved through the veneer laminating process.

Face Grades

There are no face grade requirements for structural LVL apart from each manufactures own manufacturing specification. As a guide, the face veneers on LVL being non-appearance, can contain knots and face splits.

Standard Tolerances

EWPAA/JAS-ANZ Product Certified structural LVL has standard tolerance on length, width, thickness, straightness and squareness. The tolerances are reproduced in the section [Standard Tolerances for Veneer Laminated Products](#). The inherent straightness and ‘trueness’ of LVL is a major benefit to users.

Branding

All EWPAA/JAS-ANZ Product Certified structural LVL is branded as follows:

- The manufacturers name or registered mark that clearly identifies the LVL to published literature and/or its structural properties
- If relevant, any limitation of end use will be shown
- If immunised or preservative treated, branding appropriate to the relevant Standard
- The bond type, i.e. A bond
- The Formaldehyde Emission Class (e.g. E₀)

The correct branding is your guarantee of a Product Certified engineered LVL member with permanent, durable Type A bond with reliable and consistent properties.



For structural Predictability and Reliability Use Only Properly Branded PAA Structural LVL

Structural LVL Characteristics

Structural LVL is a reconstituted engineered timber product comprised of veneers usually aligned in the longitudinal direction and permanently bonded with type A phenolic bond. LVL is generally manufactured in a continuous process and rip sawn into beams of a range of depths. Alternatively, LVL is made in 2.4 or 2.7m lengths with the beams being 'wrap-around' nail-plated into longer lengths. Maximum standard LVL lengths are 13.2m or 12m. Structural LVL possesses additional characteristics of benefit in construction.

Defined and Reliable Strength and Stiffness

LVL's manufacturing process disperses the natural wood characteristics such as knot and sloping grain. This creates a uniform material which has low variability in strength and stiffness properties making LVL both predictable and reliable. Specifiers and users can be confident LVL will perform consistently.

Lightweight, Strong and Stiff

The randomisation of the natural characteristics during LVL manufacture significantly increases its design strength and stiffness above the parent wood. LVL's light weight means easier installation, and allows use of its long lengths for further economies through the structural and practical benefits of multiple spanning.



Straight and True

The exceptional straightness without spring, bow or twist in LVL beams leads to a reduced need for nogging and allows accurate and fast installation.

Long Lengths

The availability of long lengths coupled with lightness and straightness provides design flexibility and ease of construction.



Stability and Dimensional Accuracy

Structural LVL is seasoned so it is quite stable and not subject to shrinkage concerns. This, coupled with the close manufacturing tolerances, provides accurate, consistent and stable constructions thereby meeting customer expectations with less 'call backs'.

Cost Effectiveness

Structural LVL's enhanced but reliable structural properties together with its straight long lengths and consistent dimensions mean real cost savings in materials and construction labour.

Standard Available Dimensions of Structural LVL

Length	Up to 13.2m, longer lengths to special order.
Width	95 to 600mm.
Thickness	36mm, 45mm and 63mm Note: 75 and 100mm thicknesses are available to special order.

Marine Plywood

Marine plywood manufactured under the EWPAAs Quality Control and Product Certification scheme to Australian/New Zealand Standard AS/NZS 2272 Plywood – Marine has been designed specifically for structural applications where high impact resistance and high quality face finishes are required (which is why it is very popular in applications such as boat hulls). Marine plywood possesses the following characteristics:

Bond

Type A (phenol formaldehyde) which is dark in colour. The A bond is completely durable under a marine environment.

Stress Grade

F14. Marine plywood has known structural performance. Species are chosen on the basis of bending strength and stiffness, impact resistance, density, dimensional stability, glueability and paintability. The arrangement of veneers in the plywood is limited also to provide two way panel strength, stability and impact resistance.

Face Grade

Marine plywood is manufactured with A grade veneer on both the face and back. The natural wood characteristics are limited by both structural and aesthetic considerations.

Marine plywood can be painted or clear finished on both surfaces. Surfaces provide an excellent base for marine paints and varnishes and quality high gloss finishes can be achieved. For best results, it is recommended to use high quality marine paints. Surface checks or crazing will occur with ageing of paint film or varnish but do not impair the structural properties of the plywood. The surface can be re-sanded and re-finished. For long term durability of the wood in the plywood that may be subject to fungal attack (e.g. In areas that are poorly ventilated and therefore remain damp for much of the time such as bilges), the plywood should be preservative treated.

Standard Tolerances

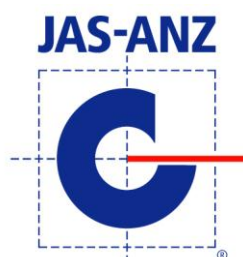
EWPAAs/ JAS-ANZ Product Certified marine plywood has standard tolerances on dimensions of length, width, thickness, squareness and edge straightness. The tolerances are reproduced in the section [Standard Tolerances for Veneer Laminated Products](#).

Marine plywood has controlled panel dimensions which allow for ease of construction. Panels are square, have straight edges and standard lengths, widths and thicknesses. The tolerances on dimension are detailed in AS/NZS 2272 Plywood – Marine.

Branding

All EWPAAs/JAS-ANZ Product Certified marine plywood is branded as follows:

- Manufacture's name
- The word "Marine"
- Face grade, back grade and bond (e.g. AA – A bond)
- Stress grade of the sheet if it is other than F14 (e.g. F17)
- The Standard - i.e. AS/NZS 2272
- The formaldehyde emission class (e.g. E₀)



For Security, Use Only Properly Branded Marine Plywood made to the Australian / New Zealand Standards

Marine Plywood Characteristics

Marine Plywood possesses many beneficial characteristics. Marine plywood is basically a high quality face grade structural plywood. The advantage of cross laminated two way strength, high strength and stiffness to weight ratio, high dimensional stability, high shear and chemical resistance therefore apply equally for marine as they do for structural plywood. Each characteristic is used to advantage in marine applications. Additionally, the following characteristics of marine plywood are used to advantage:

Workability

Marine plywood can be sawn, bored, drilled, screwed, glued and nailed with no requirements for sophisticated equipment. This is particularly advantageous to the do-it-yourself boat builder.

High Impact Resistance

This property of marine plywood ensures resistance to impact damage caused by floating debris or rough weather.

Paintability

A high quality finish can be achieved cutting down drag through the water and minimising fuel consumption. Remember to closely follow the paint manufacturer's instructions.



Standard Available Dimensions of Marine Plywood

Panel Sizes

2400 x 1200mm and to a lesser extent 1800 x 900mm. Panels of 2100mm length and combinations of the above dimensions are available on special order.

Thickness

Range between 1.5mm – 25mm depending on each manufacturer.



Exterior Plywood

Exterior plywood is manufactured under the EWPAAs Quality Control and Production Certification scheme to Australian/New Zealand Standard AS/NZS2271 – Plywood and Blockboard for Exterior use. Exterior plywood is manufactured for use in fully or semi-exposed non-structural applications requiring high quality aesthetic finishes. Exterior plywood possesses the following characteristics:

Bond

- Type A (phenol formaldehyde) which is dark in colour. The A bond is the same as described for structural and marine plywood. It is a durable permanent bond which will not break down under fully exposed conditions.
- Type B (melamine urea formaldehyde) which is light in colour. Type B bonded plywood can be used in applications involving a maximum fully exposed life of two years e.g., concrete formwork, or in semi exposed environments such as exterior doors on a permanent basis. Type B bonds are therefore considered only semi-durable under exposure to weather, but totally durable in a human interior environment.

Stress Grades

Stress grades are not applied to exterior plywoods manufactured to AS/NZS 2271. Exterior plywood must not be used in structural applications.

Face Grades

Exterior plywood is manufactured with A, B or S grade faces. A grade is a high quality coloured match veneer suitable for clear finishing. B grade is also a high quality face grade but is not colour matched and is suitable for high quality paint finishing. Grade S faces allow material characteristics such as sound knots as a decorative feature subject to an agreed specification between the purchaser and manufacturer. Exterior plywood usually has a reduced quality C or D grade back.

A grade faces should be specified where a clear finish or high gloss paint finish is required. B grade faces should be specified where a normal exterior paint finish is required. Exterior plywood is usually used in applications in which only the face will be seen and the lower quality back is of no consequence. Exterior plywood can also on agreement be manufactured with a highly decorative sliced cut face veneer.

Standard Tolerances

EWPAAs/JAS-ANZ Product Certified exterior plywood has standard tolerances on length, width, squareness, thickness and edge straightness. The tolerances are reproduced in the section [Standard Tolerances for Veneer Laminated Products](#).

The tolerances on dimensions allow minimum wastage and ease of setting out in construction or fabrication. The standard tolerances are given in AS/NZS 2271.

Branding

All EWPAAs/JAS-ANZ Product Certified exterior plywood is branded as follows:

- Manufacturers name
- The word “Exterior”
- The face grade, back grade and bond (e.g. AC-A Bond)
- The Standard No. i.e. AS/NZS 2271
- The formaldehyde emission class (e.g. E₀)

**For Durability, Purchase
Only Properly Branded PAA
Exterior Plywood**



Exterior Plywood Characteristics

EXTERIOR PLYWOOD is a high quality plywood manufactured with one high grade face and a reduced grade of back. The face is usually of high decorative rotary cut veneer but on agreement can be sliced decorative veneer. It is designed, depending on bond, for fully or semi-exposed applications where the application does not require engineered structural performance. Exterior plywood is dimensionally stable, easy to work and is suitable, when manufactured with the type A bond, for applications involving long term exposure to Australia's harsh environment with no fear of delamination. It should be remembered that preservative treatment will be required if exterior plywood is to be fully exposed to the weather for prolonged periods. Exterior plywood provides an excellent substrate for high quality exterior finishes. Acrylic based paints are recommended. The following characteristics of exterior plywood are often used to advantage:

Permanent Type A Bond

A necessity in wet areas such as around kitchen sinks and vanity basins exposed applications such as external cladding.

Dimensional Stability Under Moisture Changes

Because of the cross laminated construction, plywood tends to adopt the stability of wood along its grain. This two way dimensional stability of plywood under changes of temperature and moisture is used to advantage when plywood is used in fitments around sinks, showers, baths, and other potentially wet areas.

Easily Finished

Exterior plywoods can be finished with clear finishes, paints or overlaid with a range of medium or high pressure laminates depending on the application.

Versatility

Exterior plywood can be used for external cladding, exterior door skins, hoardings, signs, billboards, fitments and furniture in wet areas and in special cases, concrete formwork.



Standard Available Dimensions of Exterior Plywood

Length 2700, 2400, 2100 and 1800mm

Width 1200 and 900mm

Thickness 1.5, 3, 4, 6, 9, 12, 15 or 16, 18 or 19 and 25mm

NOTE: B bonded formply is normally 17mm thick and is bonded in accordance with AS/NZS 2271 and AS 2754.1. Its structural properties comply with AS/NZS 2269 on the basis it has a limited structural life on construction sites.

Interior Plywood

Interior plywood is manufactured, quality controlled and Product Certified to the Australian/New Zealand Standard AS/NZS 2270 – Plywood and Blockboard for Interior Use. Interior plywood is designed for use in applications which are completely protected from weather or wet or damp environments. Faces are rotary cut veneer, or on agreement sliced decorative veneer, suitable for clear finishing or painting. Interior plywood possesses the following characteristics:

BOND

- Type C - (low extension urea formaldehyde) which is light in colour.
- Type D - (high extension urea formaldehyde) which is light in colour.

Interior plywood possessing a Type C bond is suitable for use in areas completely protected from weather or wet or damp environments but can be used in rooms such as bathrooms which experience high humidity or in tropical locations.

Plywood with Type D bonds should be used only in non-structural, fully protected, low humidity environments e.g., interior panelling or furniture in sub tropical or temperate locations.

Stress Grades

Stress grades are not applied to interior plywoods manufactured to AS/NZS2270. Interior plywood must not be used in structural applications.

Face Grades

A, B or S. A grade is a high quality colour matched veneer suitable for clear finishing. B grade is also a high quality face veneer but is not colour matched and is suitable for high quality paint finishing. Grade S allows natural characteristics such as knots as decorative features subject to agreement between the purchaser and manufacturer.

A grade faces should be specified where a clear finish is required B grade faces should be specified where a normal interior satin or matt paint finish is required. As with exterior plywood, interior plywood is commonly available with a reduced quality back. Standard interior plywood is usually used in applications in which only the face will be seen and the reduced quality back is of no consequence. Interior plywood can be manufactured with a highly decorative sliced cut veneer on agreement between the purchaser and manufacturer.

Standard Tolerances

EWPAAs Product Certified interior plywood has standard tolerances on length, width, squareness, thickness and edge straightness. The tolerances are reproduced in the section [Standard Tolerances for Veneer Laminated Products](#).

Similar to all EWPAAs Product Certified plywood, the controlled standard tolerances on panel dimensions save on wastage and allow ease of setting out in construction or fabrication.

5. BRANDING – All EWPAAs Product Certified interior plywood is branded as follows:

- Manufacturer's name
- The word "Interior"
- The face grade, back grade and bond type (e.g. AD-D Bond)
- The Standard No. i.e. AS/NZS 2270
- The formaldehyde emission class (e.g. E₀)



**For Guaranteed Performance,
Purchase Only Properly
Branded PAA Interior Plywood**

Interior Plywood Characteristics

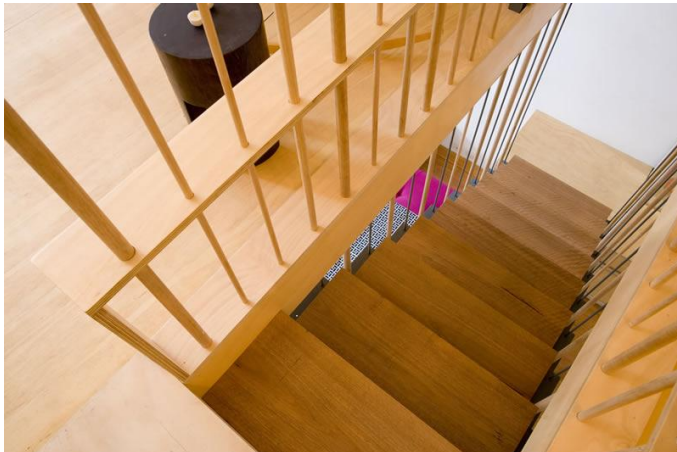
Interior Plywood is a high quality appearance grade of plywood designed for use in interior non-structural applications protected from the weather or wet or damp conditions. The type C and D bonds are durable under these conditions. Interior plywood is unsuited for exterior or structural applications. Interior plywood possesses many of the characteristics of exterior, marine and structural plywood. It is easily worked with conventional wood working tools and can be nailed close to the edge without fear of splitting. Interior plywood can be glued with normal wood working adhesives and can be clear finished or painted giving high quality decorative appearance. Interior plywood is generally manufactured from rotary cut pine veneers however, on agreement, it can be faced with a range of decorative timber species. The natural beauty is used to advantage in such applications as internal panelling and fitments.

Natural Beauty

The natural warmth and hue of real wood is used to advantage when decorative interior plywood is used as wood panelling.

Versatility

Interior plywood can be used in applications ranging from panelling and fitments to fine furniture and children's toys.



Standard Available Dimensions of Interior Plywood

Length 2700, 2400, 2100 and 1800mm

Width 1200 and 900mm

Thickness 1.5, 3, 4, 6, 9, 12, 15 or 16, 18 or 19 and 25mm

NOTE: Non standard sized panels are available from a limited number of suppliers.

Specialised Plywood and LVL Products

Overlaid Formply



This product is designed specifically for use as concrete formwork. Formply, due to its short life as a structural member as concrete formwork, may be manufactured to either the structural plywood Standard AS/NZS2269 with Type A bond and B grade or better faces on two sides, or bonded to the exterior plywood Standard AS/NZS2271 with Type B bond or the interior plywood Standard AS/NZS2270 with a Type C bond and B grade or better faces both sides.

The plywood is overlaid with a high density phenolic resin impregnated paper to give excellent off form finishes and multiple reuse. Edges of the panel are usually sealed.

FULL DETAILS ON THE USE OF OVERLAID FORMPLY ARE GIVEN IN THE DESIGN MANUAL “PLYWOOD IN CONCRETE FORMWORK”

Plywood may be overlaid with medium density overlays to provide an excellent paint surface, particularly for exterior applications. Metal overlays can be applied to plywood with adhesive, but this is a specialist job and each application should be fully investigated before specifying.

LVL and Plywood I-Beams



Glued I-beams utilising structural LVL's high tensile and compressive strength in flanges, and plywoods high panel spear capacity in the webs, provide an economical, structurally efficient beam. These composite beams are generally used as floor joists or purlins with each manufacturer providing specific design data.

I-Beams are extremely lightweight when compared to conventional joists and allow installation of services through the web. I-Beams are available in long lengths up to 12m, are exceptionally straight and uniform, and are dimensionally stable in service.

Tongued and Grooved (T&G) Flooring



T&G plywood is manufactured to AS/NZS 2269.0 Plywood - Structural and is suitable for both residential and for commercial and industrial flooring. The T&G supports the plywood edge between joists so nogging is not required unless the design concentrated load exceeds 7.5kN live load.

Plywood flooring generally has a C face and D back, but can be ordered with an A grade face suitable for clear finishing. As a result of its A Bond and inherent dimensional stability its performance is unaffected by exposure during construction. In addition, the plywoods cross laminated construction resists high concentrated loads and impact loads thus making it eminently suitable for industrial applications.

FULL DETAILS OF THE APPLICATION OF T&G PLYWOOD FLOORING ARE CONTAINED IN THE EWPA MANUALS:

- 'T&G Structural Plywood for Residential Flooring'
- 'LP91 Low Profile Floor System'
- 'Timber Tops for Concrete Slabs' and
- 'Structural Plywood for Commercial and Industrial Flooring – Design Manual'

Structural Plywood Wall Bracing



Structural plywood manufactured to AS/NZS2269, normally a minimum of DD grade, provides a simple but reliable means of bracing building framing against wind and earthquake damage. Structural plywood claddings and linings with A grade faces can perform the dual functions of being aesthetically pleasing and structural bracing.

Plywood bracing finds widespread use because :

- it is constructed with a durable A bond;
- it has extremely high shear strength relative to its weight;
- it is rugged and has resistance to impact damage, and
- it has the ability to be nailed close to its edges.

Purpose built panels can be 2745mm, 2700mm or 2440mm long by either 900mm or 1200mm width.

Structural plywood wall bracing manufactured to AS/NZS 2269.0 is an approved bracing system in AS1684 Parts 2, 3 and 4 Timber Framed Construction which is deemed to satisfy the requirements of the Building Code of Australia (BCA).

FULL DETAILS ON PLYWOOD BRACING ARE CONTAINED IN 'STRUCTURAL PLYWOOD WALL BRACING – LIMIT STATE DESIGN MANUAL'

External Cladding and Internal Lining



Preservative treated structural plywood manufactured to AS/NZS 2269.0 with a textured face veneer is finding widespread architectural acceptance as a high quality exterior cladding. The rough textured face is often grooved to give a sawn planked effect. Alternatively an A or B grade faced, preservative treated, A bonded plywood may be used as exterior cladding. To maintain the finish on plywood claddings it is recommended the panels be stained, or finished with 100% acrylic latex paint system or a reliable water repellent.

Decorative structural, exterior or interior plywood with A or B grade faces, perhaps with V grooves, are finding increasing use providing a real timber finish as interior wall or ceiling lining.

FULL DETAILS ON THE USE OF PLYWOOD AS EXTERIOR CLADDING, DECORATIVE LININGS AND AS A LIGHTWEIGHT BUT STRONG ROOFING SUBSTRATE ARE CONTAINED IN 'FEATURING PLYWOOD IN BUILDINGS'

Plywood Webbed Beams



Structural plywood to AS/NZS 2269.0 can be simply nailed to timber or LVL flanges to form structurally efficient but lightweight plywood webbed C or box beams. Plywood webbed beams can provide economical lintels of roof beams in residential constructions, or rafters, columns and purlins in industrial type buildings.

FOR DETAILED DESIGN ASSISTANCE REFER TO THE EWPAAs MANUAL 'DESIGN GUIDE FOR PLYWOOD WEBBED BEAMS' AND FOR SPAN TABLES REFER TO 'PLYWOOD WEBBED STRUCTURAL BEAMS FOR DOMESTIC HOUSING – DESIGN MANUAL'.

Preservative Treatment



For special applications such as cladding, marine work or cooling towers where veneer laminating may be subject to fungal or insect attack the product should be treated to meet the hazard requirement. The treatments available are copper chrome arsenate (CCA), light organic solvent preservatives (LOSP), Ruply, ammoniacal copper quatamary compounds (ACQ), copper azole or paint on products such as copper napthenate.

FURTHER DETAILS ON PRESERVATIVE TREATMENT AND FINISHING ARE CONTAINED IN "FACTS ABOUT PLYWOOD", OR FROM YOUR LOCAL PLYWOOD EXPERT.

Scarf-Jointed Plywood

For special applications, standard length plywood panels can be scarf jointed together to provide panels of extremely long lengths. The scarf joint is made with an adhesive of equal durability to that used in plywood's manufacture.

Standard Tolerances for Veneer Laminated Products

As measured in accordance with AS/NZS 2098 Method of Test for Veneer and Plywood

Plywood

Thickness

Sanded panels up to 7.5mm thick	± 7%
Sanded panels over 7.5mm up to 17.5mm thick	± 4%
Sanded panels over 17.5mm thick	± 3%
Unsanded panels (Interior and Structural only)	Additional tolerance of +0.3mm

Other Dimensions

Length and Width	± 1.5mm
Squareness	0.2% of longest diagonal
Straightness	0.05% of edge length
Moisture Content for panels ≤ 7.5mm thick	10% - 15%
Moisture Content for panels > 7.5mm thick	8% - 15%

LVL

Thickness	+4mm, -0mm
Width of pieces ≤ 400mm	+2mm, -0mm
Width of pieces > 400mm	+5mm, -0mm
Length	- 0mm
Squareness	1 in 100mm
Straightness – Spring and Bow	1 in 1000mm
Twist	L x W / (3500 x Thick) – dimensions in mm.
Moisture Content	8% - 15%

Product Quality Certification

All EWPAA /JAS-ANZ branded products are manufactured and product certified to the relevant Australian/New Zealand Standards under a JAS-ANZ accredited, third party audited quality control program that is internationally recognised. Plywood made under this system meets all requirements of product certification as 'evidence of suitability' under the Building Code of Australia. The EWPAA has developed this industry wide process based, quality controlled program continuously since 1963. Approximately 98% of plywood and all LVL manufactured in Australia, as well as product manufactured by three large New Zealand, one Papua New Guinean and two Fijian companies is quality controlled under this program. The EWPAA Product Certification scheme is an industry self help program consisting of a combination of process quality control and end product testing carried out within each participating mill as well as independent end product testing carried out at the EWPAA's National Association of Testing Authorities (NATA) registered laboratory.

Additionally, EWPAA technical staff regularly audit the quality control procedures within participating mills as well as the quality of the end product in the marketplace. The highest level of independence and credibility was achieved in 1996 when the EWPAA quality control program was directly accredited by the Joint Accreditation System of Australia and New Zealand. JAS-ANZ is the peak accreditation body in New Zealand and Australia and was established under treaty to oversee certification bodies for quality management systems and products. Plywood and LVL products certified by the EWPAA are branded with the EWPAA product certification stamp as well as the JAS-ANZ mark.

FOR GUARANTEED COMPLIANCE AND RELIABILITY SPECIFY THAT PLYWOOD AND LVL USED MUST BE BRANDED WITH THE APPROPRIATE EWPAA PRODUCT CERTIFICATION STAMP.

Summary of Plywood and LVL Products

Product	Standard	Bond Type	Adhesive Type	Bond Test	Stress Grades	Standard Face Grades	Standard Back Grades	Application
Structural Plywood	AS/NZS 2269.0	Type A	Phenol Formaldehyde (colour – dark)	72 hours in boiling water or 6 hours 200 kPa steam	F7, F8, F11, F14, F17, F22, F27, F34 (most common F11 and F14)	A, S, B, C, D (most common C&D)	A, S, B, C, D (most common D)	All permanent structural applications e.g. Flooring, bracing, webs in beams.
Structural Laminated Veneer Lumber (LVL)	AS/NZS 4357.0	Type A	Phenol Formaldehyde (colour-dark)	72 hours in boiling water or 6 hours 200 kPa steam	Tested “in grade” and properties published or expressed as span tables	Not Applicable	Not Applicable	All permanent structural applications e.g. Beams, rafters, purlins, lintels.
Marine Plywood	AS/NZS 2272	Type A	Phenol Formaldehyde (colour-dark)	72 hours in boiling water or 6 hours 200 kPa steam	F14	A	A	Boat hulls and ultralight aircraft may require preservative treatment for durability.
Exterior Plywood	AS/NZS 2271	Type A	Phenol Formaldehyde (colour-dark)	72 hours in boiling water or 6 hours 200 kPa steam	Not Applicable	S, A, B	C, D	Exterior non-structural applications requiring high appearance grade face for painting or finishing e.g. highway signs, hoardings, exterior doors.
		Type B	Melamine Urea Formaldehyde (colour-light)	6 hours in boiling water	Not Applicable (other than special industry formply standard. F8, F11, F14, F17, F22, F27)	S, A, B	C, D	Exterior exposure for a maximum of two years or semi-exposed permanently e.g. formwork, exterior doors (plywood in concrete formwork allows B bonded plywood to be used structurally as formwork only).
Interior Plywood	AS/NZS 2270	Type C	Urea Formaldehyde (colour light)	3 hours in water @ 70°C	Not Applicable (other than special industry formply standard. F8, F11, F14, F17, F22, F27)	S, A, B	C, D	Interior non-structural applications in humid environments e.g. bathroom panelling, tropical locations (plywood in Concrete Formwork allows C bonded plywood to be used for single or limited uses as formply only).
		Type D	‘Extended’ Urea Formaldehyde (colour light)	20 hours in cold water	Not Applicable	S, A, B	C.D	Interior non-structural applications in sub tropical and temperate environments.

Check Sheet for Plywood Specification

What is the Application ?	Suitable Products	Bond Type	Face Veneer Quality
Structural	Structural Plywood AS/NZS 2269.0	A	A, B, C, D, S
	Marine Plywood AS/NZS 2272	A	A (both faces)
Non-Structural	Structural Plywood and Marine Plywood as per above	A	As Above
	Exterior Plywood AS/NZS 2271	A or B	Faces: A, B, S Backs: C, D or better if required
	Interior Plywood AS/NZS 2270	C or D	



Where is it Going to be Used ? (ie. What is the exposure hazard ?)

	Inside, Dry Environment	Subject to Occasional Wetting	Full Exterior Exposure
Veneer Durability	No special requirements, (other than borers in hardwood - preservative treat to H1 level, or termites - preservative treat to H2 level)	Preservative treatment against decay is often unnecessary if the product is infrequently wetted, eg wetting due to wind blown rain. If product is sealed (eg. painted) to minimise moisture ingress, the product can readily dry out if wetted. Preservative treatment against decay (H3 level minimum), may be required in critical structural applications, where maintenance or access to the product is not possible or where the client requires certainty of long term performance.	Preservative treat against decay and attack. Preservative treatment level : H3 - H6 as appropriate to hazard. (Metal fasteners must be compatible with exposure level and treatment type). Note: For a short life span in a non-structural application or for full exposure for a short period of time, preservative treatment of veneers may be unnecessary.

Bond Types	Suitable For :
A	All applications Including Permanent Exposed & Structural Applications
B	Semi-Exposed Applications OR Full Exposure Applications for Approximately 2 Years
C & D	Interior, Dry, Non-Structural Applications.

Preservative Treatment Hazard Classes Exposure & Hazard (AS/NZS 1604.3)	
H1	Inside, above ground, Lyctid Borers
H2	Inside, above ground, Borers & Termites
H3	Outside, above ground, Moderate Decay, Borers & Termites
H4	Outside, in-ground, Severe Decay, Borers & Termites
H5	Outside, in-ground, subject to wetting, Very Severe Decay, Borers & Termites
H6	Marine Waters, Marine Borers, Decay

Finishing	Require an "A" quality face for clear finishing, or a "B" quality face for quality paint finish. Cautions: 1. High gloss finishes may highlight natural / manufacturing defects. Therefore, satin and matt finishes are recommended. 2. Keep thickness of face veneer in mind when sanding is required (eg clear finished floors)	<p>Surface finish to protect against weathering (greying) and surface checking. Horizontal surfaces are more prone to weathering and surface checking, particularly if subject to wear from foot traffic. Edge seal to minimise moisture uptake and edge swelling. Sealing of the unexposed back is usually not necessary and may even trap moisture inside the product.</p> <p>Some Surface Finish Options : Paint or Water Repellent Stains: Use good quality acrylic paints with a minimum of a "B" face veneer. Textured or machined surfaces are also very suitable. Don't use rigid paint systems. They may crack with any moisture movement in the timber. Ensure paint is compatible with any preservative treatment used. Stains may require more frequent re-application. Medium Density Overlaid plywood can be painted with both rigid and acrylic paints. Outdoor Carpet for horizontal surfaces.</p>
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PAA Technical Literature		
Design Manuals	Structural Plywood Wall Bracing	Bracing Capacities & Nailing Patterns
	Commercial and Industrial Flooring	Flooring, Trafficable Roofs
	Residential Flooring	Flooring grade / thickness & fixings
	Plywood in Concrete Formwork	Formply Span Tables
Fact Sheets	Facts About Plywood	General info - Products, Finishes, Treatments, Bond Types, Veneer Qualities
	Product Specification Guide	
	Featuring Plywood in Buildings	Claddings, Wall Linings, Ceiling Linings, Non-Trafficable Roofs.

Revision History

Revision	Changes	Date	Who
4	<ul style="list-style-type: none">Updated logos and member lists	07-02-12	MB
3	<ul style="list-style-type: none">Minor grammatical / spelling changes	16-03-09	VR / MB
2	<ul style="list-style-type: none">Reformatted.Updated requirements to latest versions of standardsClarified some statements in the Marine Plywood sectionAdded the "Check Sheet for Plywood Specification"	09-03-09	MB
1	Initial Release	21-11-07	MB

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Brown Wood Panels Pty Ltd.	Australia / SA	+618 8294 3877	+618 8294 6871	www.bwp.com.au
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Particleboard and MDF				
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D & R Henderson Pty Ltd	Australia / NSW	+612 4577 4033	+612 4577 4759	www.drhenderson.com.au
Tasmanian Wood Panels (Aust)	Australia / TAS	+613 9460 7766	+613 9460 7268	



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