

# XLam Band Beam System

## Information Sheet



### XLam Band Beam Systems

The XLam Band Beam System utilises XLam CLT Panels which are made with layers of finger jointed Radiata Pine lamellas arranged at right angles or parallel to one another, laminated together with a moisture cured polyurethane glue applied to the face under pressure. The 90-degree cross lamination of alternate layers provides dimensional stability, strength, and rigidity.

### Uses

The XLam Band Beam System is used as a structural support for floors and roofs as an alternative to traditional beams, this allows improved flexibility in the placement of services and potential saving on project floor to floor heights. XLam Band Beams can be used in most AS/NZS 4364:2010 Service Class 1 and 2 environments for structural applications subject to project specific design requirements. The XLam Band Beam System needs to be installed as part of a complete envelope or roof design with adequate protection from the elements and consideration of long-term moisture control. Where XLam Band Beam Systems may be at increased risk of exposure to moisture such as balconies, soffits and wet areas, the use of lamellas treated with Hyne T3 Plus treatment is advised. The XLam Band Beam System must be installed in accordance with the XLam Site Guide.



### Manufacture

The XLam Band Beam System is a bespoke product, made to order based on detailed drawings which have been developed through extensive consultation with the customer see the XLam Shop Drawing Guide for more information. Note to maximise efficiency the billet size should be reviewed in the design phase.

### Design

The XLam Band Beam System is to be designed by an appropriately qualified structural engineer. XLam provides a range of design services (for a fee), from initial project scoping to reviewing the suitability of XLam Band Beams & other mass timber elements such as Glulam for a project, through to complete project design and documentation of the mass timber structure to ensure design efficiency is maximised.

### Layup Options

Panel Designation	Panel Thickness	Layup mm	+Mass kg/m <sup>2</sup>	Lamella Orientation	Lamella Grade
CL7/240	240	32.5 / 35 / 35 / 35 / 35 / 35 / 32.5	120	=   =   =	XGP1/XGP2/XGP2/XGP2/XGP2/XGP2/XGP1
CL7/260	260	42.5 / 35 / 35 / 35 / 35 / 35 / 42.5	130		
CL7/270	270	42.5 / 35 / 35 / 45 / 35 / 35 / 42.5	135		
CL7/290	290	42.5 / 35 / 45 / 45 / 45 / 35 / 42.5	145		
CL7/310	310	42.5 / 45 / 45 / 45 / 45 / 45 / 42.5	155		
DL8/345	345	42.5 / 42.5 / 45 / 42.5 / 42.5 / 45 / 42.5 / 42.5	173	= =   = =   = =	XGP1/ XGP1/XGP2/XGP1/XGP1/XGP2/XGP1/XGP1
DL8/350	350	42.5 / 42.5 / 45 / 45 / 45 / 45 / 42.5 / 42.5	175	= =   = =   = =	XGP1/ XGP1/XGP2/XGP2/XGP2/XGP2/XGP1/XGP1

= Lamella parallel to panel major axis orientation

| Lamella perpendicular to panel major axis orientation

+ Mass values based on 500kg/m<sup>3</sup>, please allow adequate safety factors when designing lifting strategies

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### Technical Data

Width	600mm – 1700mm
Length	6m – 15.7m
Thickness	240mm - 350mm
Layup Options	7 layers & 8 layers
Wood Species	Radiata Pine
Moisture Content (MC)	12% ± 3%
Density Mean	500 kg/m <sup>3</sup>
Bonding Adhesive	Henkel Purbond Loctite HBS Polyurethane - formaldehyde free
Thermal Resistance	0.12 W/mK at 12% moisture content
Dimensional Stability	0.2-0.25% per % change in MC across the thickness of a panel 0.01-0.02% per % change in MC longitudinally
Surface Quality	Industrial or Natural refer to XLam Product Guide for full details
Treatment Options	XLam CLT panels & XLam CLT Band Beams are available as either untreated or treated with Hyne T3 Plus for protection against mould & termite attack
Global Warming Potential	-492 kg CO <sub>2</sub> -eq. per m <sup>3</sup>
Formaldehyde Emissions	Less than 0.1 mg/m <sup>2</sup> /hr when tested to ASTM D5116:2017
Joint Group	JD5 - unless product specific testing has been conducted
Strength Group	SD6
Timber Source	PEFC Certified, 100% Australian plantation grown & processed
Declare Red List Status	Declare Red List Free for both Treated & Untreated Panels
Specific Heat Capacity	1400 J/kg K

### Physical Properties of Radiata Pine Lamellas

Structural Property	XGP1	XGP2
Modulus of Elasticity (parallel to the grain)	10,000 MPa	6,000 MPa
Bending Strength (parallel to the grain) $F_{b,0}$	17 MPa	12 MPa
Compression Strength (parallel to the grain) $F_{c,0}$	18 MPa	15 MPa
Compression Strength (perpendicular to the grain) $F_{c,90}$	10 MPa*	6 MPa*
Tension Strength (parallel to the grain) $F_{t,0}$	7.7 MPa	4.0 MPa
Shear Strength (parallel to the grain) $F_{s,0}$	2.6 MPa	2.1 MPa
Rolling Shear Strength (perpendicular to the grain) $F_{s,90}$	1.4 MPa	1.4 MPa
Shear Modulus (parallel to the grain) $G_0$	670 MPa	400 MPa
Rolling Shear Modulus $G_r$	45Mpa	29Mpa
Mean Density $\rho$	#500kg/m <sup>3</sup>	#475kg/m <sup>3</sup>
Characteristic Density $\rho$	400 kg/m <sup>3</sup>	380 kg/m <sup>3</sup>

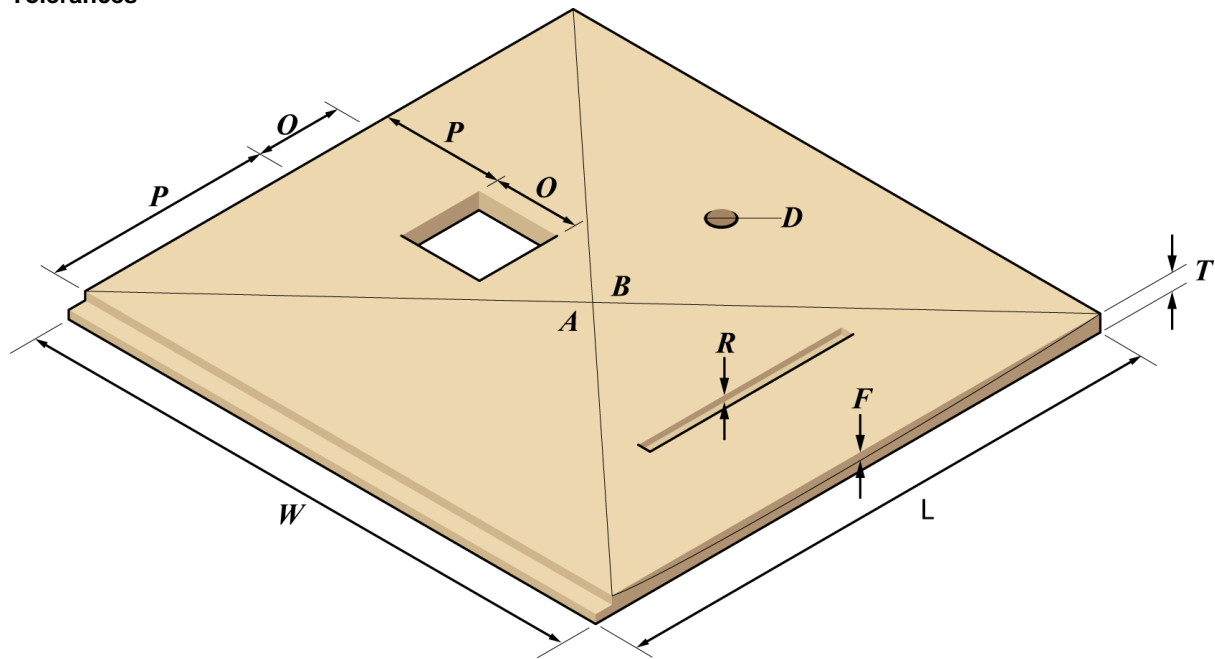
\*For structural calculation purposes as noted in "Technical Note 5.2 Sample Structural Calculations Floor and Wall Design" the value of 3MPa should be used.

#For structural connection calculations the characteristic density should be used. For reviewing lifting strategies is advised to use 500kg/m<sup>3</sup> and to allow an adequate safety factor. Masses will vary as timber is a natural product, moisture content will also have an impact on overall mass.

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## Tolerances



Thickness (T)	±2mm	Lap Width	±2mm of target dimension
Width (W)	±2mm	Opening Location (P)	±2mm of target dimension
Length (L)	±2mm	Opening Size (O)	±2mm of target dimension
Squareness (A-B)	±2mm of difference between two dimensions	Hole diameter (D)	±1mm (≤150mm)
Flatness (F)	±5mm under 3mm straight edge	Rebates/Recesses (R)	±2mm thickness
Lap Depth	±2mm of target dimension m	Lamella Thickness	±1mm

## Fixings and Fittings

Use fasteners and other hardware which comply with building code requirements for the AS/NZS 4364:2010 Service Class environment as per fixings and fittings manufacturers specifications. Hyne T3 Plus treatment does not increase corrosion risk to fixings and fittings.

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### Fire Hazard Properties

*AS 5637 Group Number:* XLam CLT panels achieve a Group 3 Rating, with an Average Extinction Area less than 250m<sup>2</sup>/kg. Where Group 1 or Group 2 ratings are required, CLT panels will need to be lined with plasterboard or painted with an intumescent paint system.

*AS 1530.3 Fire Hazard Indices:* XLam CLT panel achieve a Spread-of-Flame Index – 8 & Smoke-Developed Index – 3.  
*AS ISO 9239.1 Critical Heat Flux:* XLam CLT panel achieve a Critical Radiant Flux greater than or equal to 2.2 and less than 4.5 kW/m<sup>2</sup>.

### Fire Resistance AS 1530.4

XLam CLT Band Beams can be designed to achieve fire resistance up to 120 minutes. In the event of a fire, XLam CLT Band Beams is usually considered as a beam element supporting a CLT floor integrated as a fire rated floor system for example 90/90/90 (refer to XLam Fire Design Guide). XLam CLT band beams may also be considered as isolated beam element where considered only for structural adequacy (for example 90/-/-).

Fire assessment FAS 220370 (Warrington Fire) nominates residual sections for each XLam CLT Band Beam type in exposed or protected conditions for fire exposure up to 120 mins. Using the residual sections, the designer can assess structural adequacy of the XLam CLT band beam for the required span and loading conditions.

### Summary of XLam's Band Beam Systems FRL/FRR

Lay Up	Exposed both sides	1 layer of 16mm fire rated plasterboard	2 layers of 16mm fire rated
CL7/240	90/90/90	120/120/120	120/120/120
CL7/260	120/120/120	120/120/120	120/120/120
CL7/270	120/120/120	120/120/120	120/120/120
CL7/290	120/120/120	120/120/120	120/120/120
CL7/310	120/120/120	120/120/120	120/120/120
DL8/345	120/120/120	120/120/120	120/120/120
DL8/350	120/120/120	120/120/120	120/120/120

\*Based on Warringtonfire assessment FAS 220370, for char depth refer to XLam Fire Design Guide or assessment report

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**Installation/Handling:** A comprehensive installation sequence for XLam CLT Band Beam is to be developed as part of the design process. Determine propping required to ensure temporary stability during erection. See the XLam Site Guide for further information.

**Structural Properties:** XLam has calculated basic section properties for each band type. Refer to XLam Technical Note 5.7. Specific calculations to be made by the designer confirming serviceability and structural adequacy of XLam CLT Band Beams for each project including shear and bearing strength at connection details.

**Appearance:** XLam CLT Panels have two appearance grades: Industrial (IND) and Natural (NAT) a detailed description of these two grades is provided in the XLam Product Guide.

**Operation & Maintenance:** For advice of operation & maintenance of XLam CLT Panels refer to the XLam Operation & Maintenance Guide.

**Treatment Options:** XLam CLT Panels are available as either untreated or treated for protection against mould & termite attack.

**Hygrothermal Properties:** The transport of heat and moisture through envelopes containing XLam CLT panels can be modelled in WUFI software see <https://www.wufi.com.au/> & in the Speckel platform <https://speckel.io/> & <https://nz.speckel.io/>.

**Environmental Product Declaration:** An EPD has been completed on XLam CLT panels registration number S-P-02326 to ISO 14025 and EN 15804+A1 see [EPD Australasia \(epd-australasia.com\)](http://EPD Australasia (epd-australasia.com)).

**Responsibly Sourced:** PEFC Certified - XLam Australia and New Zealand operations and sales offices are certified to the chain of custody (COC) standards of the global forest and wood product certification scheme PEFC by SCS Global Services. Multi-site certificate number SCS-PEFC/COC-05795.

### Certifications & Accreditations

CodeMark Certificate New Zealand see [XLam CLT T3 Plus | Product certificate \(building.govt.nz\)](http://XLam CLT T3 Plus | Product certificate (building.govt.nz))

CodeMark Certificate Australia see [JAS ANZ \(jas-anz.org\)](http://JAS ANZ (jas-anz.org))

Declare Red List Free see [Declare - International Living Future Institute \(living-future.org\)](http://Declare - International Living Future Institute (living-future.org))

PEFC see [PEFC - Programme for the Endorsement of Forest Certification](http://PEFC - Programme for the Endorsement of Forest Certification)

EWPA Product Certification Scheme to ISO 16696-1:2019 Mill No 357 [X-Lam - Engineered Wood Products Association Of Australasia | EWPA](http://X-Lam - Engineered Wood Products Association Of Australasia | EWPA)

### Web Links

[Masterspec - Write Construction Specifications Online](#)

[Home | WoodSolutions](#)

[Wood Processors and Manufacturers Association of New Zealand - Home \(wpma.org.nz\)](#)

[Home - Engineered Wood Products Association Of Australasia | EWPA](#)

### Additional Documents & Resources

[XLam Site Guide](#)

[XLam Shop Drawing Guide](#)

[XLam Technical Note 2.1 Standard Details](#)

[Formaldehyde Test Certificate Untreated Panels & Treated Panels](#)

[XLam Envelope Guide](#)

[XLam CLT Panel Safety Data Sheets](#)

### Disclaimer

This Information Sheet provides general information on attributes of XLam's Band Beam System and is not intended to be used as a specification or for certification purposes. The information provided in this document is supplied in good faith and to the best of our knowledge was correct at the time of preparation. No responsibility can be accepted by XLam, its staff or its agents for any errors or omissions. Users are advised to make their own determination as to the suitability of this information in relation to their purposes and specific circumstances. No warranty or assurance can be given that XLam Band Beam System will suit individual projects. XLam disclaims all liability and responsibility for any loss or damage, direct or indirect, which may be suffered by any person acting in reliance on anything contained in or omitted from this Information Sheet.