



Xlam CLT Panel
Product Technical Statement Australia

Use of This Product Technical Statement

Thank you for choosing to design with mass timber. XLam manufacture Cross Laminated Timber (CLT) from one hundred percent natural and renewable radiata pine. Each lamella and panel is unique, even with great care by XLam, slight deviations in grain pattern, knot location and colour will occur. By choosing to design in mass timber you are embracing the natural beauty of a renewable building material, it's perfection is in its natural imperfection. The information in this Product Technical Statement applies to XLam Cross Laminated Timber (CLT) only. The Product Technical Statement is not intended as general information and guidance for all manufactured Cross Laminated Timber (CLT).

Product Description	XLam Cross Laminated Timber (CLT) Panels are structural timber panels 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.
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Scope of Use	XLam CLT panels are structural building components for floors, roofs, stairs, soffits, balconies, internal and external walls. XLam CLT panels can be used in most AS/NZS 4364:2010 Service Class 1 and 2 environments for structural applications subject to project specific design requirements. XLam CLT panels need to be installed as part of a complete envelope or roof design with special consideration given to the management of long-term moisture control, ensuring the CLT panels stay warm and dry and are not exposed to elevated moisture levels. Where CLT panels have an increased risk of exposure to moisture, panels will need to be treated with Hyne T3 Plus and be designed and installed to minimise water uptake and allow drying out of panels after wetting occurs.
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Conditions	XLam CLT panels must be installed in accordance with the XLam Site Guide. XLam CLT panels are available as preservative treated or untreated dependant on the application. The design of buildings using CLT panels as structural elements should only be completed by a certified engineer with a comprehensive understanding of the design principles which apply to the use of engineered wood products. XLam has developed several guides to assist designers and specifiers in detailing the design and specification requirements. These can be found on XLam's web site or be supplied upon request. A maintenance plan should be devised and followed to ensure the CLT is not exposed to prolonged elevated moisture or conditions that would encourage mould and fungi growth.
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Limitations	XLam CLT panels should not be used as the external finished surface to facades, roofs or in areas where high levels of moisture exposure are anticipated without the ability for adequate drying. The transport of moisture across the complete building envelope and the ability for moisture to be dissipated should be modelled. XLam CLT panels should not be used in sites designated to have a high flood risk.
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The use of XLam CLT panels in building structures is dependent on the use of structural fixings to join the panels together and to other structural elements. For the appropriate design and installation of the fixings reference should be made to the relevant structural standards and material suppliers.

In some buildings due to the height and purpose of the building the use of a combustible building element such as timber may be prohibited as a deemed to satisfy option. Where this is the case either Specification C1.13a Fire Protected Timber should be adhered to or an appropriately experienced fire engineer is required to work together with the design team, building certifier and other interested bodies such as fire brigades to develop and certify a Performance Solution.

Australian Building Code Compliance: XLam CLT panels when designed and specified by an appropriately qualified person and approval of this design is provided by the Relevant Building Consent Authority can meet the following provisions of the Australian Building Code:

NCC Volume One	Basis of Compliance	References
BP 1.2 (b)(d)(e) Structural resistance	AS 1720.1, 1.3.1 (h)	Testing to AS/NZS 1748* Testing to EN16351 C3.1 EWPAA Certification to ISO 16696-1
B1.4(f)(iii) Treatment of timber structures H3	CodeMark Certificate	CM40200
B1.4(i)(i)(F) Termite Risk Management H3	CodeMark Certificate	CM40200
C1.1(b) Fire resistance and stability	Testing & Assessment to AS 1530.4	FCO-3337 Rev C
C1.10(a) (i)	The fire hazard properties of Radiata Pine are provided in AS1684.2-2010	AS1684.2-2010
C1.10(a) (ii)	Testing & Assessment AS 5837	RIR 45980.4
C1.10(a) (ix)	Testing & Assessment ISO 9239.1.	RIR 21419-05
C1.13 Fire protected timber	Follow DTS requirements	
FP 5.1 Sound transmission through floors	Testing & Assessment to ISO 717-1:2013	CLT Acoustic Research Program XLam Australia Project PKA-A172
FP 5.2 Sound transmission through walls		
J1 Building fabric	The thermal conductivity of Radiata Pine in NZS 4214:2006 at 12% moisture content is defined as 0.12 W/mK	NZS 4214:2006

NCC Volume Two	Basis of Compliance	References
P2.1.1(c) Structural stability and resistance	AS 1720.1, 1.3.1 (h)	Testing to AS/NZS 1748* Testing to EN16351 C3.1 EWPAA Certification to ISO 16696-1
3.4.1.12(e)(iii)(A) Sub floor framing H3	CodeMark Certificate	CM40200
3.4.3 Timber framing H3	CodeMark Certificate	CM40200
3.4.3.0(c)(d)(e) Acceptable Construction manual timber Framing	CodeMark Certificate	CM40200
3.1.4.2(b)(vi) Termite preservative treated H3	CodeMark Certificate	CM40200
Qld 3.4.3.0(g) Timber species H3	CodeMark Certificate	CM40200
Qld 3.1.4.2(b) termite Management H3	CodeMark Certificate	CM40200
3.7.2.4(b) Protection from the spread of fire	Testing & Assessment to AS 1530.4	FCO-3337 Rev C
P2.4.6 Sound Insulation	Testing & Assessment to ISO 717-1:2013	CLT Acoustic Research Program XLam Australia Project PKA-A172
Part 3.12.1 Energy efficiency Building Fabric	The thermal conductivity of Radiata Pine in NZS 4214:2006 at 12% moisture content is defined as 0.12 W/mK	NZS 4214:2006

*All XLam feedstock specimens are tested to AS/NZS on flat, as this more closely approximates how the product is actually loaded in service conditions as a panel

Condensation	Dependant on the class of buildings, local climate and interrelationship with other building elements, designs may need to be evaluated/modelled for the possibility of interstitial condensation, modelling can be conducted on the Speckel platform. To assist in initial stages of the design process XLam has developed the XLam Envelope Design Guide. The hygrothermal properties of XLam CLT panels have been measured and are listed on the WuFi data base.
Environmental	<ul style="list-style-type: none"> • An EPD has been completed on XLam CLT panels registration number S-P-02326 to ISO 14025 and EN 15804+A1. • The formaldehyde emissions rate of XLam CLT panels is less than 0.1 mg/m²/hr this has been certified by testing of panels to ASTM D5116:2017 by CETEC laboratories. • 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. • XLam CLT panels treated & untreated have both achieved Declare Red List Free Status.
Dimensional Stability	Across the thickness of a panel the shrinkage/expansion is 0.2-0.25% per % change in moisture content, longitudinally the shrinkage/expansion is 0.01-0.02% per % change in MC content.
Joint Group	XLam CLT panels are Joint Group 5, unless fixing supplier has testing which shows evidence of a different joint group number.
Visual Appearance	XLam have two visual grades: Industrial (IND)) and Natural (NAT) a detailed description of these two grades is provided in the XLam Product Guide.
Quality Assurance:	<p>XLam CLT panels are certified by the EWPAA under their Product Certification Scheme to be manufactured according to ISO 16696:2019 <i>“Timber Structures – Cross laminated Timber – part 1: Component performance and production requirements”</i>. The EWPAA certification process includes auditing XLam’s Quality Framework annually, reviewing qualification testing to AS/NZS 1748.1:2011 & AS/NZS 1748.2011, subsequent verification testing, and ongoing monitoring. The EWPAA’s product certification scheme is accredited under JAS-ANZ.</p> <p>The European Manufacturing Standard EN 16351: 2017 <i>“Timber Structures – Cross Laminated Timber – Requirements”</i> has been used as the basis for XLam’s Quality Framework with reference to Australian standards as appropriate. These additional standards include:</p> <ul style="list-style-type: none"> • AS/NZS1748:2011 <i>“Timber – Solid – Stress-graded for structural purposes”</i> • AS1604.1:2010 <i>“Specification for preservative treatment Part 1: Sawn and round timber”</i> • AS/NZS 1328 <i>“Glue Laminated Timber Parts 1 & 2”</i> • AS/NZS 1491:1996 <i>“Finger Jointed Structural Timber”</i> • AS/NZS 4063.1:2010 <i>“Characterization of structural timber Part 1: Test Methods”</i>
Warranty	Unless otherwise specified in the Quotation, XLam warrants XLam CLT against faulty materials or workmanship for a period of 12 months from the date of delivery of CLT to the Customer. For further information refer to the Product Guide.

Maintenance & Operation	<p>Guidance on the maintenance and operation of XLam CLT panels in use is provided in the XLam CLT Panel Maintenance and Operation Guide. All plumbing leaks should be rectified immediately. During commissioning of the building the facility manager should develop a maintenance plan which incorporates measures to ensure the CLT is maintained in dry environment, including but not limited to reviews of:</p> <ul style="list-style-type: none"> • Water proofing of building envelope including cladding, roofing & around openings/penetrations • Function & performance of ventilation • Integrity of vapour barrier • The presence of termites • The integrity of fasteners
Timber Treatment	<p>XLam CLT panels can be supplied using timber lamellas that has been treated with Hyne T3 Plus, suitable for use in H3 hazard classes.</p>
Durability	<p>XLam CLT panels when installed in accordance with the XLam Site Guide, XLam Product Guide and project specifications which included a thorough review of the possibility of condensation and provides sufficient detailing to ensure CLT panels will not be exposed to extended periods of high humidity/moisture without the ability to adequately dry, and maintained in accordance with the recommendations provided here, are expected to have a minimum service life of 50 years.</p>
Adhesion	<p>XLam utilises Henkel Loctite HBS & HBX adhesives which have been confirmed as Type 1 adhesives as defined in AS/NZS 4364:2010 by independent laboratories.</p> <p>Adhesion of lamellas of each billet manufactured is tested to <i>Annex A – EN 16351:2017 “Delamination test of glue lines between layers”</i>.</p> <p>A minimum of three finger joint samples are tested per shift for testing for bending and bonding strength as per AS/NZS1491.</p>
Fixings and Fittings	<p>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.</p>
Product Support	<p>XLam has experienced sales, manufacturing, design, technical and construction teams available to assist in the design, specification and project management of CLT mass timber projects teams from initial project concept to development of detailed designs, manufacture and construction.</p>
Traceability	<p>Each XLam CLT panel is manufactured to precise dimensions from 3D CAD modelling of plans developed by the XLam design team based on architectural drawings provided by the specifying team. A full set of CAD plans and information for each project are handed over upon delivery, and identification of individual panels on site can be traced back to the three-dimensional model and the QA checks completed at the time of manufacture.</p>
Validity	<p>This document is reviewed annually to ensure that it is up to date with the most recent testing and versions of the NCC.</p>

Related Documents	<ul style="list-style-type: none">XLam Product GuideXLam Site GuideXLam Structural Design GuideXLam Acoustic GuideXLam Fire Design GuideXLam Shop Drawing GuideXLam Product Data SheetXLam Operations and Maintenance GuideXLam Technical Note 2.1 Standard DetailsXLam Quality Process SummaryPEFC Certificate SCS-PEFC/COC-05795EPD XLam CLT Panel Registration No. S-P-02326Formaldehyde Test Certificate Untreated Panels & Treated PanelsXLam Envelope GuideXLam CLT Panel Safety Data Sheets<u>EWPAA certificate Home - Engineered Wood Products Association Of Australasia EWPAA</u>
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Reference Websites	<ul style="list-style-type: none"><u>https://www.speckel.io/</u><u>Declare - International Living Future Institute (living-future.org)</u><u>https://www.wufi.de/en/</u><u>EPD Australasia (epd-australasia.com)</u><u>PEFC - Programme for the Endorsement of Forest Certification</u><u>CodeMark JAS ANZ (jas-anz.org)</u><u>Home - Engineered Wood Products Association Of Australasia EWPAA</u>
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Further Information

If you require further information on the properties of XLam panels, the design of mass timber buildings, manufacturing and or installation process of XLam CLT panels please contact technical@xlam.co.nz or technical@xlam.com.au and we would be happy to assist. We can provide information and introductions to external consultants who can assist in your project and further information as appropriate.

Disclaimer

This Product Technical Statement provides information on XLam CLT wall panels. 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 particular purposes and specific circumstances. No warranty or assurance can be given that other restrictions and or limitations to the use of CLT panels separate to the information provided may apply. 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 Product Technical Statement.



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