



# **Xlam CLT Panel**

## **Product Technical Statement New Zealand**

## 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 Laminate Timber (CLT).

<b>Product Description</b>	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.
<b>Origin of Manufacture</b>	XLam CLT panels are manufactured at 19 Bilston Drive, Barnawartha North 3691, Victoria, Australia.
<b>Scope of Use</b>	<p>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 adequate protection from the elements and consideration of long-term moisture control. Where panels may be exposed to periodic moisture episodes such as balconies, soffits and wet areas, the use of lamellas treated with Hyne T3 Plus treatment is advised.</p> <p>XLam CLT panels are NOT subject to a warning or ban under section 26 of the Building Act 2004.</p>
<b>Conditions</b>	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.
<b>Limitations</b>	<p>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.</p> <p>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.</p> <p>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. Examples of this are where the building height exceeds 10m and there are sleeping uses or other property in upper stories. Where this is the case 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 an Acceptable Solution.</p>

**New Zealand 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 New Zealand Building Code:

NZBC Building Code Clause	Basis of Compliance	References
B1 Structure B1.3.1 B1.3.2 B1.3.3 (a, b, c, f, g, h, q) B1.3.4 (a, b, d, e)	Design to NZS 3603:1993 Product Certification	Testing to AS/NZS 1748* Testing to EN16351 C3.1 EWPAA Certification to ISO 16696-1
B2 Durability B2.3.1(a)	Product Certification	CodeMark Certificate CM70119
C3 -Fire Affecting Areas Beyond the Fire Source C3.4(a) C3.4(b)	Testing & Assessment AS 5837 Testing & Assessment ISO 9239.1	RIR 45980.4 RIR 21419-03
C6 Structural Reliability C6.2 C6.3	Testing & Assessment to AS 1530.4	FCO-3336 Rev C
F2 Hazardous Building Materials F2.3.1	Product Certification	CodeMark Certificate CM70119
G6- Airborne and Impact Sound G6.3.1 G6.3.2	Testing & Assessment to ISO 717-1:2013	CLT Acoustic Research Program XLam Australia Project PKA-A172
H 1 Energy Efficiency Provisions H1.3.1(a)(c)	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 on flat, as this more closely approximates how the product is actually loaded in service conditions as a panel

<b>Condensation</b>	<p>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.</p>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• An EPD has been completed on XLam CLT panels registration number S-P-02326 to ISO 14025 and EN 15804+A1.</li> <li>• The formaldehyde emissions rate of XLam CLT panels is less than 0.1 mg/m<sup>2</sup>/hr this has been certified by testing of panels to ASTM D5116:2017 by CETEC laboratories.</li> <li>• 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.</li> <li>• XLam CLT panels treated &amp; untreated have both achieved Declare Red List Free Status.</li> </ul>
<b>Dimensional Stability</b>	<p>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.</p>
<b>Joint Group</b>	<p>XLam CLT panels are Joint Group 5 unless fixing supplier has testing which shows evidence of a different joint group number.</p>
<b>Visual Appearance</b>	<p>XLam have two visual grades: Industrial (IND) and Natural (NAT) a detailed description of these two grades is provided in the XLam Product Guide.</p>
<b>Quality Assurance:</b>	<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 &amp; 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 &amp; New Zealand standards as appropriate. These additional standards include:</p> <ul style="list-style-type: none"> <li>• <b>AS/NZS1748:2011</b> <i>“Timber – Solid – Stress-graded for structural purposes”</i></li> <li>• <b>AS1604.1:2010</b> <i>“Specification for preservative treatment Part 1: Sawn and round timber”</i></li> <li>• <b>AS/NZS 1328</b> <i>“Glue Laminated Timber Parts 1 &amp; 2”</i></li> <li>• <b>AS/NZS 1491:1996</b> <i>“Finger Jointed Structural Timber”</i></li> <li>• <b>AS/NZS 4063.1:2010</b> <i>“Characterization of structural timber Part 1: Test Methods”</i></li> </ul>
<b>Warranty</b>	<p>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.</p>

<b>Maintenance &amp; Operation</b>	<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"> <li>• Water proofing of building envelope including cladding, roofing &amp; around openings/penetrations</li> <li>• Function &amp; performance of ventilation</li> <li>• Integrity of vapour barrier</li> <li>• The presence of termites</li> <li>• The integrity of fasteners</li> </ul>
<b>Timber Treatment</b>	<p>XLam CLT panels can be supplied using timber lamellas that has been treated with Hyne T3 Plus. This meets NZBC B2 .3.1(a) &amp; B2.3.2 via CodeMark certification CM70119.</p>
<b>Durability</b>	<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>
<b>Adhesion</b>	<p>XLam utilises Henkel Loctite HBS &amp; 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>
<b>Fixings and Fittings</b>	<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>
<b>Product Support</b>	<p>XLam has experienced sales, manufacturing, design, technical and construction teams available to assist in the design, specification and construction of CLT mass timber projects teams from initial project concept to development of detailed designs, manufacture and construction.</p>
<b>Traceability</b>	<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>
<b>Validity</b>	<p>This document is reviewed annually to ensure that it is up to date with the most recent testing and versions of the NZBC.</p>

<b>Related Documents</b>	<ul style="list-style-type: none"> <li>XLam Product Guide</li> <li>XLam Site Guide</li> <li>XLam Structural Design Guide</li> <li>XLam Acoustic Guide</li> <li>XLam Fire Design Guide</li> <li>XLam Shop Drawing Guide</li> <li>XLam Product Data Sheet</li> <li>XLam Operations and Maintenance Guide</li> <li>XLam Technical Note 2.1 Standard Details</li> <li>XLam Quality Process Summary</li> <li>PEFC Certificate SCS-PEFC/COC-05795</li> <li>EPD XLam CLT Panel Registration No. S-P-02326</li> <li>Formaldehyde Test Certificate Untreated Panels</li> <li>Formaldehyde Test Certificate Treated Panels</li> <li>XLam Envelope Guide</li> <li>XLam CLT Panels SDS</li> <li><u><a href="#">EWPA certificate Home - Engineered Wood Products Association Of Australasia   EWPA</a></u></li> </ul>
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<b>Reference Websites</b>	<ul style="list-style-type: none"> <li><u><a href="https://www.speckel.io/">https://www.speckel.io/</a></u></li> <li><u><a href="#">Declare - International Living Future Institute (living-future.org)</a></u></li> <li><u><a href="https://wufi.de/en/">https://wufi.de/en/</a></u></li> <li><u><a href="#">EPD Australasia (epd-australasia.com)</a></u></li> <li><u><a href="#">PEFC - Programme for the Endorsement of Forest Certification CodeMark   XLam CLT T3 Plus   Product certificate (building.govt.nz)</a></u></li> <li><u><a href="#">Masterspec - Write Construction Specifications Online</a></u></li> </ul>
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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](mailto:technical@xlam.co.nz) or [technical@xlam.com.au](mailto: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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