Technical Alert

31 May 2023

LAMINATED VENEER LUMBER (LVL) COMPLIANCE IN AUSTRALIA

Laminated Veneer Lumber (LVL) use is growing for all classes of buildings in Australia, particularly in truss and frames for residential construction. Supply comes from domestic and imported manufacturing sources. Compared with some other engineered wood products, the LVL manufacturing process is complex and LVL products from each manufacturer can be unique regarding physical and structural properties. In recognition of this complexity, the Australian/New Zealand LVL product standard does not provide for standardised grades of LVL, rather it requires a manufacturer to determine the unique properties through testing and make this information available to designers and users. This requires care to be taken when comparing products from different manufacturers. Understanding the requirements of branding and communication of the product's performance and limitations are integral to choosing the correct LVL required for the specific application and ensuring that a particular LVL is 'fit for purpose' in an intended application. Instances of non-conforming and poorly branded LVL have been observed in the market – this technical alert details what you need to look for in a complying LVL that is fit for purpose and meets the National Construction Code (NCC).

LVL COMPLIANCE PATHWAY IN AUSTRALIA

All buildings must comply with the requirements of the NCC. Compliance with the NCC is by meeting the stated performance requirements of the appropriate volume – dependent on building class. This can be achieved by following deemed-to-satisfy solutions, a performance solution, or a combination of both. Most residential and commercial buildings utilise the NCC deemed-to-satisfy compliance pathways by conforming to recognised product and design standards. For timber structures, design is conducted in accordance with *AS 1720 Timber Structures – Design Methods series* and/or *AS 1684 Residential Timber Framed Construction series*. **The most direct method requires LVL to conform to all requirements of the LVL product standard, AS/NZS 4357.0 (Structural laminated veneer lumber), including testing and evaluation of characteristic structural properties to AS/NZS 4063.** LVL that conforms with standards other than AS/NZS 4357.0 can still be used but will require evidence of suitability to meet the NCC requirements before a building certifier can sign off on the construction. The best protection for your business is to use due diligence to ensure your products are compliant with Australian standards and codes.

THERE ARE NO STANDARD LVL GRADES

There are no standard LVL grades/properties in Australian design standards and codes (such as those applied to the F-grade or MGP-grade). This allows manufacturers to develop products with properties specifically engineered for the intended application. This flexibility requires that manufacturers and suppliers of LVL clearly communicate the structural performance of their unique products to the end user. This can be done through publishing characteristic design values, creating engineer underwritten span tables for specific applications, or providing software for design.

TESTING

All structural timber for use in Australia, including LVL, is tested and evaluated in accordance with the same standard – AS/NZS 4063 (Characterisation of structural timber) – to ensure a harmonised approach to determining structural design values. Additional tests specific to LVL to determine localised shear strength for joint design, bearing strength, and joint capacities, are also required. **General purpose LVL requires the full range of structural properties to be determined: Bending strength (MOR); Bending modulus of elasticity (MOE); Bending shear strength; Shear strength at joints (localised shear); Bearing strength (perp to grain); Tension strength (parallel to grain); Compression strength (parallel to grain); and Joint capacities (bolt, nails, and screws).** Because LVL is anisotropic (i.e., has different property values when measured in different directions), the bending, bearing, and shear strength at joints properties must be determined separately for the two different loading directions (on-edge and on-flat) if the product is designed to be used in both orientations. Where LVL is intended for a specific application, only the properties relevant to that application need to be determined and published.

CONNECTORS AND TRUSS DESIGN

Whenever a new LVL product is to be used in the truss and frame (T&F) market, connector companies will confirm it has a valid compliance certificate and test it for suitability with their connector solutions (e.g., nail plates), and establish teeth capacities that are specific to that product alone. These unique product specific properties are then added to truss design software, which provides access to different LVL products, each with its own brand name and set of design properties.

SUBSTITUTION IN TRUSS DESIGN

For any substitution, the producer/supplier of timber is responsible for providing the certification of table(s) and/ or capacities to Australian/ New Zealand Standards. In general, substitution is not allowed for specific LVL, except for instances where connector companies provide technical advice for their design software allowing substitution of accepted and tested alternative products.

BRANDING OF PRODUCT

The specific branding requirements of AS/NZS 4357.0 allow for clear identification of the product in the marketplace and in service, which can be linked to design guides, published design properties, and limitations of use. **Branding must include reference to the following information: Reference to AS/NZS 4357.0; The manufacturer's name or trademark; Product brand or marking that can be linked to structural properties; Clearly stated limitations of use, if relevant; The bond type (e.g., A-Bond); The formaldehyde emission class (e.g., E0); and additional branding may be required, for example, where LVL is preservative treated.**

CERTIFICATION

A reputable product certification mark (certified to a Type 5 certification scheme, by a certification body accredited to ISO 17065) is a good way to have confidence that the manufacturing facility, the LVL product, and associated claims have been inspected, audited, tested, and reviewed against the product standards by independent experts. Be aware that less credible certification based on limited product testing and without on-going or independent product testing or market surveillance do exist in the market. Be sure to research the certification being applied to products, check the certification body's online registers, and where required information is missing or not available, ask to see evidence to support claims of conformance to AS/NZS 4357.0.

FIND OUT MORE ABOUT EWPAA CERTIFICATION

The mark of safety, reliability, and trust.

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If you suspect a non-conforming building product (NCBP), you can either report it directly to your State or Territory Consumer Protection Agency here or fill in the Australian Building Codes Board form here.