



FTMA TECH TALK

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FIT FOR PURPOSE USE OF LAMINATED VENEER LUMBER (LVL)

Our Industry is experiencing a deluge of Engineered Wood Products [EWP], especially LVLs. Both local and overseas manufacturers are offering, multiple compliant products. However the clarity on 'fit-for-purpose' or conforming use of such products is still evolving in our industry.

Compliance vs Conformance:

Compliance is the minimal requirement, set by standards, to sell a structural product in Australia. AS/NZS 4357.0 through to AS/NZS 4357.4 establish the compliance pathway for LVLs.

- AS/ NZS 4357.0 establishes geometric, manufacturing, and structural requirements of an LVL while providing some guidelines on QA/ QC on the products. Section 3 – Table 2 provides guidance on what information is required from a structural LVL .
- AS/ NZS 4357.2 establishes testing methods for structural LVLs
- AS/NZS 4063 establishes testing methods for some structural properties that are not covered in AS/NZS 4357.2
- AS/NZS 4357.3 establishes the evaluation methods for test results generated through use of AS/NZS 4357.2

Table 2 – Properties to be determined depending upon end use

Intended application	Strength and stiffness											Joint strength					
	Bending shear and bearing										Axial		Nails	Bolts	Self-drilling screws, e.g. Type 17	Nail plates	
	On flat					On edge					f'_t	f'_c					
	E	f'_b	f'_s	f'_p	f'_{sj}	E	f'_b	f'_s	f'_p	f'_{sj}							
General structural use	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General beams used on edge only						✓	✓	✓	✓					✓	✓	✓	
Scaffold planks or other applications involving flat-wise bending only	✓	✓	✓	✓													
Nailplate jointed trusses (see Note 3)						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

NOTE 1 Refer to AS 1720.1 for symbols/notations of E , f'_b , f'_s , f'_p , f'_t and f'_c . Shear at joints, f'_{sj} is defined in Clause 3.2.2.

NOTE 2 ☐ indicates property to be determined.

NOTE 3 Assumes on-edge orientation. Where used on flat, corresponding on-flat properties will be required.

Conformance is about setting expectations on 'fit-for-purpose' use of a compliant structural LVL.

There are approved testing laboratories around Australia, who engage in delivering compliance, on emerging LVL products. It is responsibility of the certifying engineers to set the expectation on tested material, aka conformance requirements. Hence, **'fit-for-purpose' specification MUST be clearly stated in testing reports to drive compliance and conformance in our industry.**

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Every LVL is a recipe timber with unique structural properties, and hence substitution of one LVL for another is a difficult ask (unless approved by the manufacturer). Further, since LVLs display unique strengths such as;

- some LVLs are good for general purpose use, while others are more suitable for application as beams on edge, or as scaffolding materials on flat
- some LVLs, which are 'fit-for-purpose' in wall frames, may not be suitable for use in roof trusses. LVLs which are 'fit-for-purpose' in roof trusses, may not be fit for use in floor trusses/ joists
- some LVLs, irrespective of being suitable for general purpose use, are not suitable to manufacture frames and trusses (unless approved for that specific application by nail-plate manufacturer). Performance of LVLs with nail-plates, is not the same as for screws or nails and specific testing should be done [over and above testing for compliance] to determine performance of LVLs with nail plates. Commonly understood joint groups for nails and screws [JD Groups] do not apply for nail-plate capacities either. Nail plate capacity is highly dependent on species and thickness of each laminate. Hence, even though we may have multiple LVLs rated F17 or E14, they do not perform the same with nail plates and are not inter-changeable

So, what should we do?

Try and adopt a three-step process:

Step 1:

Ensure testing of the LVL is done at one of the approved testing laboratories and minimum test data as seen in AS/NZS 4357.0: Section 3 – Table 2 is provided (page 1).

Step 2:

Ensure the certifying engineer has nominated the 'fit-for-purpose' use of the LVL for your specific application.

Step 3:

Ensure your nail-plate manufacture has approved the use of proposed LVL for specified application, be it in wall frames/ beams/ lintels/ bearers/ joists OR in manufacturing nail-plate jointed frames and trusses. Ensure the nail-plate testing for the proposed LVL has been completed and nail-plate group has been assigned to the proposed LVL in design software for use, especially for jointed timber as required in roof trusses and posi-trusses or laminated lintels.

Managing the risk around conforming use of compliant products can save us a lot of heart ache in many circumstances. So, call your timber design specialist and ensure all is well.