

# Not all LVL is Created Equal

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## LVL Misconceptions

There is a common misconception that all Laminated Veneer Lumber (LVL) is the same and can be substituted in all applications without significant difference in performance. Most members designed for specification in domestic framing are serviceability (deflection) dependant, meaning their performance is a direct function of rigidity,  $EI_x$ . When comparing LVL products of the same section,  $I_x$  is constant, therefore, the overall performance can be directly attributed to the difference in Modulus of Elasticity (E).

	hySPAN®	LVL10 <sup>1</sup>
Modulus of Elasticity (E)	13.2 GPa	10.7 GPa

When considering the performance of these two products in service the LVL10 member in question could show an additional 23.4 % deflection compared to the same section of hySPAN®. This, as you can imagine, can create significant issues if absolute clearances need to be maintained.

## Common Applications

The following three examples illustrate the differences in performance from; a deflection perspective; its spanning capability; and the spacing required for equivalent performance.

### Lintel design<sup>3</sup>

	hySPAN®	LVL10 <sup>1</sup>
Span	2.7 m	2.7 m
Roof Load Width	4.8 m	4.8 m
Roof Mass	Heavy roof & ceiling	Heavy roof & ceiling
Section Size	240x45	240x45
Deflection <sup>2</sup>	<b>8.9 mm</b>	<b>11.0 mm</b>

For an applied long term design deflection limit of span/300 (i.e. 2700/300 = 9.0 mm) the hySPAN option deflects 0.1 mm less than the upper limit however the LVL10 option deflects 2.0 mm more which is 23.4 % above the design deflection limit and, as per AS 1684.1, is not suitable for use for this lintel design.

### Floor joist design<sup>3</sup>

	hySPAN®	LVL10 <sup>1</sup>
Maximum Span	<b>6.1 m</b>	<b>5.8 m</b>
Joist spacing	450 mm	450 mm
Floor Mass	40 kg/m <sup>2</sup>	40 kg/m <sup>2</sup>
Floor live load	1.5 kPa	1.5 kPa
Section Size	300x45	300x45

The hySPAN floor joist provides an additional spanning capability of 300 mm over the same LVL10 section size.

### Rafter design<sup>3</sup>

	hySPAN®	LVL10 <sup>1</sup>
Span	7.5 m	7.5 m
Roof Mass	40 kg/m <sup>2</sup>	40 kg/m <sup>2</sup>
Wind Zone	High	High
Rafter Spacing	<b>1200 mm</b>	<b>980 mm</b>
Section Size	400x63	400x63
Deflection <sup>2*</sup>	11.9 mm	12.0 mm

\*Deflection limited to suit a flat roof with ceiling attached

To achieve similar deflection performance to a 400x63 hySPAN rafter at 1200 centres, a 400x63 LVL10 would need to be closed up to 980 mm spacing. Resulting in:

- Increased material requirements for supply and installation (approximately 23.4 % more material required for the same performance)<sup>#</sup>
- Increased amount of connections to be performed on site to suit additional material

<sup>#</sup>This ratio is based on relative stiffness and is true for single member volumes or combinations of members in systems.

## Market and Technical Support

CHH Woodproducts have significant market and technical support that includes:

- Regional Technical Account Managers supporting specification through building design professionals
- Experienced timber design engineers capable of providing design support for commercial projects
- In house software platforms including designIT for houses.

CHH Woodproducts also have a number of other targeted engineered wood products including:

- hyJOIST – a plywood and LVL I-beam
- hyONE - a high stiffness (E = 16.0 GPa) beam for large load, large span applications
- hy90 – a 90 mm thick LVL section ideal for replacement of double section MSG lintels
- hyCHORD – an 11.0 GPa product with high strength properties for use in truss design

## Can You Spot the Difference?

Don't be fooled by competitors 'substitutable' products. hySPAN has 23.4 %<sup>4</sup> superior deflection performance when compared to products currently marketed in NZ as LVL10 applied in common residential framing.

To further explore the opportunities of LVL in building systems contact CHH Woodproducts on 0800 808 131.

Notes:

1. LVL10 design properties as per "Nelson Pine Laminated Veneer Lumber LVL" brochure, published April 2008
2. Estimated average long term deflection
3. All computations in accordance with AS 1684.1
4. Based on direct comparison between hySPAN and LVL10 Modulus of Elasticity.