



# WESBEAM e-beam LVL CHARACTERISTIC VALUES & DESIGN CRITERIA

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## NCC Building Material Compliance:

Wesbeam e-beam LVL is manufactured in accordance with AS/NZS 4357 Structural Laminated Veneer Lumber at our Neerabup facility in Western Australia. The e-beam LVL manufacturing process is independently 3rd party audited in accordance with AS/NZS 4357 by the Engineered Wood Products Association of Australasia (EWPAA). The EWPAA operate a quality control programme certified to ISO 9002 by NATA. The EWPAA is also an accredited LVL, I-Joist, plywood and veneer product certifier, by the peak certifying body in Australasia, the Joint Accreditation System – Australia and New Zealand (JAS-ANZ). JAS-ANZ certified products meet the acceptance criteria of the National Construction Code - Building Code of Australia; and State and Commonwealth purchasing authorities.

## PRODUCT DESCRIPTION

### Product Name

e-beam LVL

### Product Range

Thickness (Breadth) (mm)	Width (Depth) (mm)							
35 mm	90	130	150	200				
45 mm	90		150	200	240	300	360	400
63 mm	90		150	200	240	300	360	400

**NOTE:** Other thicknesses and widths on request for commercial quantities.

### Manufactured in Accordance with

AS/NZS 4357 Series of Standards

### Product certified by

Engineered Wood Products Association of Australasia (EWPAA)

### Grading Method

In grade tested

### In-mill Tested in Accordance with

AS/NZS4357.2

### Veneer Species

Maritime Pine, Radiata Pine and/or Karri

### Natural Durability

Class 4

### Termite Resistance of Heartwood

Not resistant

### Joints

Outer 2 veneers are scarf jointed, inner veneers scarf and/or butt jointed

Dimensional Tolerances	Length	-0, +20 mm
	Depth (<400)	-0.5, +2.0 mm
	Depth (>400)	-0.5, +4.0 mm
	Thickness	35mm -2.0, +2.0 mm
		45mm -4.5, +3.0 mm
		63mm -3, +5 mm
Straightness	Spring & Bow	1 mm in 1000 mm
	Squareness	1 mm in 100 mm
	Twist	$\frac{\text{Length (mm)} \times \text{Width (mm)}}{3500 \text{ Thickness (mm)}}$
Treatment Methods	e-beam non-treated	Nil
	e-beam e2s treated	CodeMark Certified glue-line treatment for termites and borers
	e-beam e2 treated	AS1604 Series of Standards
	e-beam H3 treated	AS1604 Series of Standards
Timber Moisture Content	8-15% (at time of despatch)	
Adhesive	Phenolic to AS2754.1	
Bond	Type A to AS2098.2	
Finish	Unsanded faces, sawn edges and edges arrised	
Storage	Store on level bearers at 1800 mm centres well clear of ground, and cover to keep dry but allow ventilation	

## DESIGN CRITERIA

	Characteristic Values for Design for Wesbeam e-beam LVL are determined by in-grade testing in accordance with AS/NZS 4063. The Characteristic Values for Design listed for Wesbeam e-beam LVL apply only when the moisture content of the LVL in service is below 15%.
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### References

- (a) AS 1720.1 - 2010 Timber Structures Part 1: Design Methods
- (b) AS/NZS 4063.1-2010 Characterization of structural timber – Part 1:Test Methods
- (c) AS/NZS 4063.2- 2010 Characterization of structural timber – Part 2:Determination of characteristic values
- (d) AS/NZS 4357.2 -2006 Structural laminated veneer lumber (LVL) Part 2: Determination of structural properties–Test methods
- (e) Engineered Wood Products Association of Australasia: Structural Plywood and LVL Manual

<b>Required Undersize for Design</b>	0mm x 0mm
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## SERVICEABILITY LIMIT STATE

<b>Duration of load factor (Refer AS1720.1-2010 Cl2.4.1.2)</b>	Duration of load $\geq 1$ year (for example Permanent Actions, Long Term Imposed Actions):		
	Bending, compression and shear members	$j_2$	2.0
	Tension members	$j_3$	1.0
	Duration of load $\leq 1$ day:		
	Bending, compression and shear members	$j_2$	1.0
	Tension members	$j_3$	1.0

## STRENGTH LIMIT STATE

<b>Capacity Reduction Factor <math>\phi</math> (refer AS1720.1-2010 Cl2.3)</b>	Structural members for houses for which failure would be unlikely to affect an area greater than 25 m <sup>2</sup> OR Secondary structural elements in structures other than housing:	0.95
	Structural members for houses for which failure would be likely to affect an area greater than 25 m <sup>2</sup> OR Primary structural elements in structures other than housing:	0.90
	Primary structural elements in structures for post disaster function	0.80
<b>Volume effect multiplier</b>	The volume effect multiplier applies to bending and tension members only and applies to the characteristic properties prior to any other calculations	
	$k = \left( \frac{95}{d} \right)^{0.140}$	

<b>Strength Sharing between parallel members (refer AS1720.1-2010 Cl8.4.6)</b>	The strength sharing factor ( $k_g$ ) for Wesbeam e-beam LVL shall be taken as 1.0.
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## Wesbeam e-beam LVL Characteristic Values for Design

The Characteristic Values for Design (Limit State) for use with AS1720.1:2010 have been determined in accordance with the requirements set forth in AS/NZS 4063:2010 – Parts 1 & 2

Characteristic Values for Design		On Edge (MPa)
$f'_b$	Bending strength	50.0
$f'_t$	Tension strength – parallel to grain	34.0
$f'_{tp}$	Tension strength – perpendicular to grain	4.2
$f'_c$	Compression strength – parallel to grain	47.0
$f'_{cp}$	Compression strength – perpendicular to grain	16.0
$f'_p$	Bearing strength – perpendicular to grain	12.0
$f'_l$	Bearing strength – parallel to grain	35.0
$f'_s$	Shear strength	5.3
$f'_{sj}$	Shear at joints	7.5
E	Short duration average modulus of elasticity	13,200
G	Short duration average modulus of rigidity	660

**NOTE:** Refer to Wesbeam for properties on flat

## Other Wesbeam e-beam LVL Properties

Strength Group, Joint Group Classifications and Design Densities	
Average Density (kg/m <sup>3</sup> )	660
Joint Group for nailplate tooth design	Refer nailplate supplier
Joint group for connector design (nails, screws and bolts)	JD3
Strength Group (Seasoned)	SD6

These product properties apply to Wesbeam e-beam branded LVL ONLY and cannot be used for other Wesbeam LVL products.

**NOTE:** Characteristic Values for Design are subject to change without notice.

Wesbeam Pty Ltd certifies that Wesbeam e-beam LVL is manufactured to conform to the LVL Characteristic Values for Design & the Design Criteria noted above, or if the above is modified by Wesbeam, then as advised in writing by way of update of this note, by Wesbeam. In addition, Wesbeam certifies that when Wesbeam manufactured e-beam LVL is designed and installed in accordance with the relevant Australian Standards and good building practice, Wesbeam e-beam LVL complies with the requirements of the National Construction Codes (2019).

**Date** August 2020



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