

Pacific Woodtech Laminated Veneer Lumber PR-L233
Pacific Woodtech Corporation Revised November 1, 2017

Products: Laminated veneer lumber structural building components
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1. Basis of the product report:
 - 2015 International Building Code (IBC): Sections 104.11 Alternative materials and 2303.1.10 Structural composite lumber
 - 2012 and 2009 IBC: Section 104.11 Alternative materials and Section 2303.1.9 Structural composite lumber
 - 2015 International Residential Code (IRC): Sections R104.11 Alternative materials, and R502.1.5, R602.1.5, and R802.1.4 Structural composite lumber
 - 2012 and 2009 IRC: Section R104.11 Alternative materials, and 2012 IRC Sections R502.1.7, R602.1.4, and R802.1.6 Structural composite lumber
 - ASTM D5456-14b, Standard Specification for Evaluation of Structural Composite Lumber Products
 - ASTM D5456-13, ASTM D5456-09, and ASTM D5456-05a recognized by the 2015 IBC and IRC, 2012 IBC and IRC, and 2009 IBC, respectively
 - APA Reports T99P-18, T99P-19, T99P-20, T2001P-52, T2001P-76, T2002P-31, T2003P-50, T2004P-1, T2006P-10, T2006P-88, T2008P-47, T2009P-45, T2011P-48, T2012P-32, and T2015P-23, and other qualification data
2. Product description:

Pacific Woodtech LVL is made with wood veneers laminated with grain parallel to the length of the member in accordance with the in-plant manufacturing standard approved by APA. Pacific Woodtech LVL is available in thicknesses from 3/4 inch to 7 inches, widths from 1-3/4 inches to 48 inches, and lengths up to 66-1/2 feet. Products thicker than 3-1/2 inches are fabricated by means of a secondary face-bonding process.
3. Design properties:

The structural design provisions for wood construction provided in the building code are applicable to Pacific Woodtech LVL unless noted otherwise in this report. Table 1 lists Allowable Stress Design reference properties. Table 2 lists the equivalent specific gravities for connection design. Minimum spacings for fasteners installed in the edge of a member are provided in Table 3. The allowable spans for Pacific Woodtech LVL shall be in accordance with the recommendations provided by the manufacturer (<http://www.pacificwoodtech.com/PWLVL.html>).
4. Product installation:

Pacific Woodtech LVL shall be installed in accordance with the recommendations provided by the manufacturer (see link above).
5. Fire-rated assemblies:

The provisions of IBC Section 721.6.3, Design of fire-resistant exposed wood members, shall be applicable to Pacific Woodtech LVL. Fire-rated assemblies shall be constructed in accordance with the recommendations provided by APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (www.apawood.org/resource-library) and the manufacturer (see link above).

6. Limitations:
- Pacific Woodtech LVL shall be designed in accordance with the code using the design properties specified in this report.
 - Pacific Woodtech LVL is limited to dry service conditions where the average moisture content of sawn lumber is less than 16 percent.
 - Pacific Woodtech LVL is produced at the Pacific Woodtech Corporation manufacturing plant located in Burlington, Washington, under a quality control program audited by APA.
 - This report is subject to re-examination in one year.

7. Identification:

Pacific Woodtech LVL is sold under the Pacific Woodtech and various private-label brands. Regardless of the brand applied, all products are identified by a label bearing the manufacturer's name (Pacific Woodtech) and/or trademark, the APA assigned plant number (1047), the LVL grade, the APA logo, this report number (PR-L233), and a means of identifying the date of manufacture.

Table 1. Allowable Stress Design Reference Properties for Pacific Woodtech LVL [psi] ^(a)

Grade	Beam ^(b)			Plank ^(c)			Axial		MOE ^(j)
	F _b ^{(d)(f)}	F _v	F _{c⊥}	F _b ^{(e)(f)}	F _v	F _{c⊥} ^(g)	F _t ^(h)	F _c ⁽ⁱ⁾	
1.5E	2250	230	750	2250	150	650	1500	1950	1.5x10 ⁶
1.8E	2750	285	850	2750	150	650	1850	2450	1.8x10 ⁶
2.0E	3100	285	850	3100	150	650	2100	2750	2.0x10 ⁶
2.2E	3100	285	850	3100	150	650	2350	3050	2.2x10 ⁶
2.4E	3550	285	850	3550	150	650	2600	3400	2.4x10 ⁶

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lbf = 4.448 N, 1 psi = 6.9 kPa

- The tabulated values apply to protected, dry service conditions. Except for modulus of elasticity (MOE) and compression perpendicular to grain (F_{c⊥}), the tabulated values are permitted to be adjusted for duration of load as provided in the code.
- Beam values apply to members loaded and supported on faces showing the narrow edge of all veneers, typically the narrow faces of the member.
- Plank values apply to members loaded and supported on faces showing the face of one veneer, typically the wide faces of the member.
- Flexural stress, F_b, for the beam orientation is based on a reference depth of 12 inches. For other depths, multiply by a size factor of $(12/d)^{1/3}$, where *d* is the depth in inches. For depths less than 1-3/4 inches, multiply by 1.47.
- Flexural stress, F_b, for the plank orientation is based on a reference depth of 1-3/4 inches. For other depths, multiply by a size factor of $(1.75/d)^{1/3}$, where *d* is the depth in inches. For depths less than 1-3/4 inches, multiply by 1.00.
- Flexural stress, F_b, values are permitted to be increased by 4 percent for repetitive members as provided by the code.
- The tabulated compressive stress perpendicular to grain (F_{c⊥}) value is based on the average stress at the proportional limit or 0.04-in. deformation, whichever is less, in accordance with ASTM D5456-14b.
- Tension parallel to grain, F_t, is based on a reference gage length of 4 feet. For longer lengths, multiply by a length factor of $(4/L)^{1/10}$, where L is the length in feet.
- Compression parallel to grain, F_c.
- Apparent modulus of elasticity. Coefficient of variation of modulus of elasticity, COV_E = 0.10.

Table 2. Equivalent Specific Gravity for Connection Design

Connection Type	Face	Edge
Nail – Withdrawal	0.50	0.47
Nail – Lateral	0.50	0.50
Bolt – Lateral	0.50	N. A.

Face: member faces showing the face of one veneer, typically the wide faces of the member

Edge: member faces showing the narrow edge of all veneers, typically the narrow faces of the member

Table 3. Minimum Spacing for Fasteners Installed into Edge of Pacific Woodtech LVL

LVL Dimensions	Fastener ^(a)	Minimum Spacing (inches)
Minimum 3/4-inch thick and 3-1/2-inch deep	8d Nail	3
	10d Nail	4
	12d Nail	4
	16d Nail	Not Permitted
	14 Gage Staple	4
Minimum 1-1/4-inch thick and 3-1/2-inch deep	10d Nail	4
	12d Nail	4
	16d Nail	6 ^(b)
	14 Gage Staple	4

For SI: 1 inch = 25.4 mm

(a) Nails are either common or box nails.

(b) May be 4 inches when nailing through bottom wall plate and sheathing (maximum 1-3/8-inch penetration).

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