APA PRODUCT REPORT®

Murphy Laminated Veneer Lumber
Murphy Engineered Wood Division

PR-L292
Revised December 19, 2025

Products: Murphy T1 and T2 Laminated Veneer Lumber Tension Lams
Murphy Engineered Wood Division, 412 West Central, Sutherlin, Oregon 97479
(541) 459-4545
www.murphyplywood.com

1. Basis of the product report:
   - 2024 International Building Code (IBC): Sections 104.2.3 Alternative materials and 2303.1.10 Structural composite lumber
   - 2021, 2018, and 2015 IBC: Sections 104.11 Alternative materials and 2303.1.10 Structural composite lumber
   - 2024 International Residential Code (IRC): Sections R104.2.2 Alternative materials, and R502.1.5, R602.1.5, and R802.1.4 Structural composite lumber
   - 2021, 2018, and 2015 IRC: Sections R104.11 Alternative materials, and R502.1.5, R602.1.5, and R802.1.4 Structural composite lumber
   - ASTM D3737-18e1 and D3737-12 recognized in the 2024 and 2021 IBC and IRC, and 2018 and 2015 IBC and IRC, respectively
   - ASTM D5456-21e1, ASTM D5456-18, D5456-14b, and D5456-13 recognized in the 2024 IBC and IRC, 2021 IBC and IRC, 2018 IBC and IRC, and 2015 IBC and IRC, respectively
   - ANSI A190.1-2022, ANSI A190.1-2017, and ANSI A190.1-2012 recognized in the 2024 IBC and IRC, 2021 and 2018 IBC and IRC, and 2015 IBC and IRC, respectively
   - AITC 402-2005, Standard for Structural Composite Lumber (SCL) for Use in Structural Glued Laminated Timber
   - APA Reports T2008P-10, T2008P-31, T2010P-60, and T2015P-14, and other qualification data

2. Product description:
   Murphy T1 and T2 Laminated Veneer Lumber (LVL) Tension Lams are 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. Murphy T1 and T2 LVL Tension Lams are available in thicknesses from 1 to 1-3/4 inches, widths up to 24 inches, and lengths up to 80 feet.

3. Design properties:
   Table 1 lists the design properties and Table 2 lists the equivalent specific gravities for connection design for Murphy T1 and T2 LVL Tension Lams, which are intended primarily for use as the tension laminations of glulam layup combinations recognized by approved agencies defined in Section 202 of the 2024, 2021, 2018, and 2015 IBC, and Section R202 of the 2024, 2021, 2018, and 2015 IRC. Murphy T1 and T2 LVL Tension Lams meet the requirements of ANSI A190.1, AITC 402, and ASTM D5456.

4. Limitations:
   a) Murphy T1 and T2 LVL Tension Lams shall be designed, when appropriate, in accordance with the code using the design properties specified in this report.
   b) Murphy T1 and T2 LVL Tension Lams shall be qualified and used in manufacturing glulam beams in accordance with the applicable provisions specified in ANSI A190.1.
   c) Murphy T1 and T2 LVL Tension Lams are limited to dry service conditions where the average moisture content of lumber is less than 16%.
   d) Murphy T1 and T2 LVL Tension Lams are produced at Murphy Engineered Wood Division, Sutherlin, Oregon, under a quality assurance program audited by APA.

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e) This report is subject to re-examination in one year.

5. Identification:
The Murphy T1 and T2 LVL Tension Lams described in this report are identified by a label bearing the manufacturer's name (Murphy Engineered Wood Division) and/or trademark, the APA assigned plant number (1089), the product grade, the APA logo, the report number PR-L292, and a means of identifying the date of manufacture.

Table 1. Design Properties (Allowable Stress Design) for Murphy T1 and T2 Tension Lams[a,b]

Property		Design Stress (psi)	
		T1 LVL Tension Lam	T2 LVL Tension Lam
Bending (F_b) [c]	Joist [d]	3,100	3,100
	Plank	3,100	3,100
Tension parallel to grain (F_t) [e]		2,570	3,050
Longitudinal shear (F_v)	Joist	290	290
	Plank	150	150
Compression parallel ($F_{c\|\|}$)		3,200	3,200
Compression perpendicular ($F_{c\perp}$)	Joist	750	750
	Plank	650	650
Modulus of Elasticity, E [f]	Joist	2.00×10^6	2.00×10^6
	Plank	2.40×10^6	2.40×10^6

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

[a] The tabulated values are design values for normal duration of load. All values, except for E and $F_{c\perp}$, are permitted to be adjusted for other load durations as permitted by the code. The design stresses are limited to conditions in which the maximum moisture content of lumber is less than 16 percent.

[b] Joist = load parallel to glueline. Plank = load perpendicular to glueline.

[c] Tabulated flexural stress (F_b) may be increased by 4 percent when the member qualifies as a repetitive member as defined in the NDS.

[d] The tabulated values are based on a reference depth of 12 inches. For other depths, when loaded edgewise, the allowable bending stress (F_b) shall be modified by $(12/d)^{0.18}$, as shown in the following table. For depths less than 2-1/2 inches, the factor for the 2-1/2-inch depth shall be used.

Depth (in.)	2-1/2	3-1/2	5-1/2	7-1/4	9-1/4	11-1/4	12	16	18	20	24
Multiply by	1.33	1.25	1.15	1.09	1.05	1.01	1.0	0.95	0.93	0.91	0.88

[e] The tabulated values are based on a reference length of 3 feet. For other lengths, the allowable tensile stress shall be modified by $(3/\ell)^{0.11}$, where ℓ = length in feet. For lengths less than 3 feet, use the allowable tension stresses in Table 1 unadjusted.

[f] The tabulated values are apparent modulus of elasticity based on a span-to-depth ratio of 18:1.

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Table 2. Fastener Design for Murphy T1 and T2 Tension Lams[a,b]

Equivalent Specific Gravity (S.G.)				
Nails and Wood Screws				Bolts and Lag Screws
Withdrawal Load		Lateral Load		Lateral Load
Installed in Edge	Installed in Face	Installed in Edge	Installed in Face	Installed in Face
0.50	0.50	0.50	0.50	0.50

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

[a] Fastener values based on the equivalent specific gravities in the above table are for normal load duration and shall be permitted to be adjusted using the load duration factors in accordance with the code.

[b] The bolt edge distance when loaded parallel and perpendicular to the grain shall be a minimum of four times the bolt diameter.

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APA – THE ENGINEERED WOOD ASSOCIATION
HEADQUARTERS
7011 So. 19th St. ▪ Tacoma, Washington 98466
Phone: (253) 565-6600 ▪ Fax: (253) 565-7265 ▪ Internet Address: www.apawood.org

PRODUCT SUPPORT HELP DESK
(253) 620-7400 ▪ *E-mail Address*: help@apawood.org

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