

Mississippi Laminators Glulam Products
Mississippi Laminators, Inc.

PR-L297

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Products: Mississippi Laminators Glulam Products
Mississippi Laminators, Inc., 1151 County Road, P.O. Box 405, Shubuta, Mississippi, 39360.
(601) 687-1571

1. Basis of the product report:

- 2015, 2012 and 2009 International Building Code (IBC): Sections 104.11 Alternative materials and 2303.1.3 Structural glued laminated timber
- 2015 International Residential Code (IRC): Sections R104.11 Alternative materials, and R502.1.3, R602.1.3, and R802.1.2 Structural glued laminated timber
- 2012 and 2009 IRC: Sections R104.11 Alternative materials, and R502.1.5, R602.1.2, and R802.1.4 Structural glued laminated timber
- ASTM D3737-12, D3737-08, and D3737-07 recognized by the 2015 IBC and IRC, 2012 IBC and IRC, and 2009 IBC and IRC, respectively
- ANSI A190.1-2012 and ANSI/AITC A190.1-2007 recognized by the 2015 IBC and IRC, and 2012 IBC and IRC and 2009 IBC and IRC, respectively
- Qualification data

2. Product description:

Mississippi Laminators glulam products are structural glued laminated timber manufactured with Southern Pine laminations in accordance with ANSI A190.1 using the layout combinations recognized in the 2015 National Design Specification (NDS) Supplement, *APA Glulam Design Specification*, Form Y117 (www.apawood.org/resource-library), and ANSI 117.

The adhesives used to manufacture the glulam products are exterior-type adhesives meeting the requirements of ASTM D2559. Mississippi Laminators glulam products are used as beams, headers, rafters, or purlins, and are manufactured in nominal widths of 4, 6, and 8 inches, depths to 39 inches, and lengths up to 52 feet.

3. Design properties:

Tables 1 and 2 list the allowable design properties for Mississippi Laminators glulam products. The allowable spans for Mississippi Laminators glulam products shall be in accordance with EWS Data File: *Glued Laminated Beam Design Tables*, Form S475 (see link above), or shall be determined based on the design properties listed in Tables 1 or 2, as appropriate.

4. Product installation:

Mississippi Laminators glulam products shall be installed in accordance with the recommendations provided by the manufacturer and APA Construction Guide: *Glulam Connection Details*, Form T300 (see link above). Permissible field notching and drilling shall be in accordance with the recommendations provided by the manufacturer and EWS Technical Note: *Field Notching and Drilling of Glued Laminated Timber Beams*, Form S560 (see link above).

5. Fire-rated assemblies:

Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer, and APA Design/Construction Guide: *Fire-Rated Systems*, Form W305 (see link above). For one- or two-hour rated glulam beams, Mississippi Laminators glulam products shall be constructed in accordance with ANSI A190.1 and

designed in accordance with the recommendations provided by the manufacturer, and EWS Technical Note: *Calculating Fire Resistance of Glulam Beams and Columns*, Form Y245 (see link above) or Chapter 16 of the 2015 NDS.

6. Limitations:

- a) Mississippi Laminators glulam products shall be designed in accordance with the code using the design properties specified in this report.
- b) Mississippi Laminators glulam products are produced at the Shubuta, Mississippi facility under a quality assurance program audited by APA.
- c) This report is subject to re-examination in one year.

7. Identification:

Mississippi Laminators glulam products described in this report are identified by a label bearing the manufacturer's name (Mississippi Laminators, Inc.) and/or trademark, the APA assigned plant number (1074), the product standard (ANSI A190.1), the APA logo, the layup combination symbol, the report number PR-L297, and a means of identifying the date of manufacture.

Table 1. Allowable Design Values for Glulam Products Manufactured by Mississippi Laminators, Inc. for Normal Duration of Load ^(1,2)

Symbol	Species Outer/ Core ⁽³⁾ (Bal or Unbal ⁽⁴⁾)	Bending About X-X Axis (Loaded Perpendicular to Wide Faces of Laminations)									Bending About Y-Y Axis (Loaded Parallel to Wide Faces of Laminations)						Axially Loaded		Fasteners	
		Extreme Fiber in Bending ⁽⁵⁾		Compression Perpendicular to Grain		Shear Parallel to Grain ⁽⁶⁾	Modulus of Elasticity ⁽⁷⁾			Extreme Fiber in Bending ⁽⁸⁾	Comp. Perpen-dicular to Grain	Shear Parallel to Grain ⁽⁶⁾	Modulus of Elasticity ⁽⁷⁾			Tension Parallel to Grain	Comp. Parallel to Grain	Specific Gravity for Dowel-Type Fastener Design		
		Bottom of Beam Stressed in Tension (Positive Bending)	Top of Beam Stressed in Tension (Negative Bending)	Ten. Face	Comp. Face		True	App-arent	Beam Stabi-lity				True	App-arent	Beam Stabi-lity			Top or Bottom Face	Side Face	
		F _{bx} ⁺ (psi)	F _{bx} ⁻ (psi)	F _{cLx} (psi)		F _{vx} (psi)	E _{x true} (10 ⁶ psi)	E _{x app} (10 ⁶ psi)	E _{x min} (10 ⁶ psi)	F _{by} (psi)	F _{cLy} (psi)	F _{vy} (psi)	E _{y true} (10 ⁶ psi)	E _{y app} (10 ⁶ psi)	E _{y min} (10 ⁶ psi)	F _t (psi)	F _c (psi)	SG		
24F-V1	SP/SP (U)	2,400	1,750	740	650	300	1.8	1.7	0.90	1,450	650	265	1.6	1.5	0.79	1,100	1,550	0.55	0.55	
24F-V3	SP/SP (U)	2,400	1,950	740	740	300	1.9	1.8	0.95	1,750	650	265	1.7	1.6	0.84	1,150	1,650	0.55	0.55	
24F-V4	SP/SP (U)	2,400	1,450	740	650	210	1.8	1.7	0.90	1,050	470	185	1.4	1.3	0.69	875	1,000	0.55	0.43	
24F-V5	SP/SP (B)	2,400	2,400	740	740	300	1.8	1.7	0.90	1,750	650	265	1.6	1.5	0.79	1,150	1,650	0.55	0.55	
24F-V5M1	SP/SP (B)	2,400	2,400	740	740	300	1.9	1.8	0.95	1,750	650	265	1.6	1.5	0.79	1,150	1,650	0.55	0.55	
26F-V1	SP/SP (U)	2,600	1,950	740	740	300	1.9	1.8	0.95	1,900	650	265	1.7	1.6	0.84	1,150	1,600	0.55	0.55	
26F-V3	SP/SP (U)	2,600	2,100	740	740	300	2.0	1.9	1.00	2,100	650	265	1.9	1.8	0.95	1,200	1,600	0.55	0.55	
26F-V3M1 ⁽⁹⁾	SP/SP (U)	2,600	2,100	740	740	300	2.0	1.9	1.00	2,100	650	265	1.9	1.8	0.95	1,200	1,600	0.55	0.55	
26F-V4	SP/SP (B)	2,600	2,600	740	740	300	2.0	1.9	1.00	2,100	650	265	1.9	1.8	0.95	1,200	1,600	0.55	0.55	
26F-V4M1 ⁽⁹⁾	SP/SP (B)	2,600	2,600	740	740	300	2.0	1.9	1.00	2,100	650	265	1.9	1.8	0.95	1,200	1,600	0.55	0.55	
28F-E1	SP/SP (U)	2,800	2,300	805	805	300	2.2 ⁽¹¹⁾	2.1 ⁽¹¹⁾	1.11 ⁽¹¹⁾	1,600	650	265	1.8	1.7	0.90	1,300	1,850	0.55	0.55	
28F-E2	SP/SP (B)	2,800	2,800	805	805	300	2.2 ⁽¹¹⁾	2.1 ⁽¹¹⁾	1.11 ⁽¹¹⁾	2,000	650	265	1.8	1.7	0.90	1,300	1,850	0.55	0.55	
30F-E1 ⁽¹⁰⁾	SP/SP (U)	3,000	2,400	805	805	300	2.2 ⁽¹¹⁾	2.1 ⁽¹¹⁾	1.11 ⁽¹¹⁾	1,750	650	265	1.8	1.7	0.90	1,250	1,750	0.55	0.55	
30F-E2 ⁽¹⁰⁾	SP/SP (B)	3,000	3,000	805	805	300	2.2 ⁽¹¹⁾	2.1 ⁽¹¹⁾	1.11 ⁽¹¹⁾	1,750	650	265	1.8	1.7	0.90	1,350	1,750	0.55	0.55	
Wet-use factor		0.8		0.53		0.875	0.833			0.8	0.53	0.875	0.833			0.8	0.73	see NDS		

⁽¹⁾ The combinations in this table are intended primarily for members stressed in bending due to loads applied perpendicular to the wide faces of the laminations. Allowable design values are tabulated, however, for loading both perpendicular and parallel to the wide faces of the laminations.

⁽²⁾ The tabulated allowable design values are for normal duration of loading. For other durations of loading, see the applicable building code. The tabulated allowable design values are for dry conditions of use. For wet conditions of use, multiply the tabulated values by the wet-use factors shown at the bottom of the table.

⁽³⁾ SP = Southern pine.

⁽⁴⁾ The unbalanced (U) layup is intended primarily for simple-span applications and the balanced (B) layup is intended primarily for continuous or cantilevered applications.

⁽⁵⁾ The values of F_{bx} are based on members 5-1/8 inches in width by 12 inches in depth by 21 feet in length. For members with a larger volume, F_{bx} shall be multiplied by a volume factor, C_v = (5.125/b)^{1/20} (12/d)^{1/20} (21/L)^{1/20}, where b is the beam width (in.), d is the beam depth (in.), and L is the beam length between the points of zero moment (ft).

⁽⁶⁾ For non-prismatic members, members subject to impact or cyclic loading, or shear design of bending members at connections (NDS 3.4.3.3), the F_{vx} and F_{vy} values shall be multiplied by a factor of 0.72. The tabulated F_{vy} values are for timbers with laminations made from a single piece of lumber across the width or multiple pieces that have been edge bonded. For timber manufactured from multiple piece laminations (across width) that are not edge bonded, value shall be multiplied by 0.4 for members with 5, 7, or 9 laminations or by 0.5 for all other members.

⁽⁷⁾ The tabulated E values include true E (also known as "shear-free E"), apparent E, and E for beam stability calculation (NDS 3.3.3.8). For calculating beam deflections, the tabulated E_{app} values shall be used unless the shear deflection is determined in addition to bending deflection based on the tabulated E_{true}. The axial modulus of elasticity, E_{axial} and E_{axial min}, shall be equal to the tabulated E_{y true} and E_{y min} values.

⁽⁸⁾ The values of F_{by} are based on members 12 inches in depth. For depths less than 12 inches, F_{by} shall be permitted to be increased by multiplying by the size factor, (12/d)^{1/9}, where d is the beam depth in inches. When d is less than 3 inches, use the size adjustment factor for 3 inches.

⁽⁹⁾ When containing wane, this combination must be used in dry conditions only. In this case, wet-use factors must not be applied. Because of the wane, this combination is available only for an industrial appearance characteristic. If wane is omitted, these restrictions must not apply. This combination is limited to 9 to 20 laminations in depth, which contains a maximum of 1/6 wane on each side and must be 4 laminations or more in depth.

⁽¹⁰⁾ This layup combination is limited to nominal 6 inches or less in width.

⁽¹¹⁾ For members of more than 15 laminations, E_{x true} = 2.1 x 10⁶ psi, E_{x app} = 2.0 x 10⁶ psi, and E_{x min} = 1.06 x 10⁶ psi.

Table 2. Allowable Design Values for Glulam Products Manufactured by Mississippi Laminators, Inc. Stressed Primarily in Axial Tension and Compression for Normal Duration of Load ⁽¹⁾

Combination Symbol	Species ⁽²⁾	Grade	All Loading				Axially Loaded			Bending about Y-Y Axis				Bending about X-X Axis		Fasteners Specific Gravity for Dowel-Type Fastener Design SG
			Modulus of Elasticity ⁽³⁾			Compression Perpendicular to Grain F_{cL} (psi)	Tension Parallel to Grain F_t (psi)	Compression Parallel to Grain			Loaded Parallel to Wide Faces of Laminations			Loaded Perpendicular to Wide Faces of Laminations		
			E_{axial} (10 ⁶ psi)	0.95 E_{axial} (10 ⁶ psi)	E_{axial min} (10 ⁶ psi)			2 or More Lams F_c (psi)	4 or More Lams F_c (psi)	2 or 3 Lams F_c (psi)	Bending			Shear Parallel to Grain ^(4,5) F_{vy} (psi)	Bending ⁽⁶⁾ 2 Lams to 15 in. Deep ⁽⁷⁾ F_{bx} (psi)	
						4 or More Lams F_{by} (psi)	3 Lams F_{by} (psi)				2 Lams F_{by} (psi)					
EWS 49	SP	N1M16	1.8	1.7	0.90	650	1,350	2,100	1,450	1,950	1,750	1,500	260	1,800	300	0.55
EWS 50	SP	N1D14	2.0	1.9	1.00	740	1,550	2,300	1,700	2,300	2,100	1,750	260	2,100	300	0.55
Wet-use factors			0.833			0.53	0.8	0.73			0.8		0.875	0.8	0.875	see NDS

⁽¹⁾ The tabulated allowable design values are for normal duration of loading. For other durations of loading, see applicable building code. The tabulated allowable design values are for dry conditions of use. For wet conditions of use, multiply the tabulated values by the factors shown at the bottom of the table.

⁽²⁾ SP = South pine.

⁽³⁾ The tabulated E values include axial modulus of elasticity (**E_{axial}**), 0.95 **E_{axial}**, and E for column stability calculation (**E_{axial min}**, NDS 3.7.1). For calculating column deflections due to lateral loads, the tabulated 0.95 **E_{axial}** values shall be used unless the shear deflection is determined in addition to bending deflection based on the tabulated **E_{axial}**.

⁽⁴⁾ For non-prismatic members, notched members, members subject to impact or cyclic loading, or shear design of bending members at connections (NDS 3.4.3.3), the tabulated **F_{vx}** and **F_{vy}** values shall be multiplied by 0.72.

⁽⁵⁾ The tabulated **F_{vy}** values are for members of 4 or more lams. The tabulated **F_v** values shall be multiplied by a factor of 0.95 for 3 lams and 0.84 for 2 lams. For members with 5, 7, or 9 lams manufactured from multiple-piece lams with unbonded edge joints, the tabulated **F_{vy}** values shall be multiplied by a factor of 0.4. For all other members manufactured from multiple-piece lams with unbonded edge joints, the tabulated **F_{vy}** values shall be multiplied by a factor of 0.5. This adjustment shall be cumulative with the adjustment specified in Footnote 5.

⁽⁶⁾ The values of **F_{bx}** are based on members 5-1/8 inches in width by 12 inches in depth by 21 feet in length. For members with a larger volume, **F_{bx}** shall be multiplied by a volume factor, $C_v = (5.125/b)^{1/20} (12/d)^{1/20} (21/L)^{1/20}$, where b is the beam width (in.), d is the beam depth (in.), and L is the beam length between the points of zero moment (ft).

⁽⁷⁾ The tabulated **F_{bx}** values are for members without special tension lams up to 15 inches in depth. If the member depth is greater than 15 inches without special tension lams, the tabulated **F_{bx}** values must be multiplied by a factor of 0.88. If special tension lams are used, the tabulated **F_{bx}** values are permitted to be increased by a factor of 1.18 regardless of the member depth.

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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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