

# STRUCTUREPRO™

Treated Glulam





## Eastern Engineered Wood Products

Our total focus on the engineered wood products business is what distinguishes us. At Eastern Engineered Wood Products we take pride in providing our customers with premium quality products and industry-leading services.

## Demand for High-Strength Wood Preservative Treated Beams is on the Rise

More than ever, homeowners are demanding larger and more elaborate outdoor living spaces. StructurePRO Treated Glulam makes it possible to design larger raised decks with fewer support columns, significantly improving the usability and aesthetics of the outdoor living environment, while protecting the deck's underpinning from the elements, as well as wood-ingesting insects and fungi.

Construction in coastal areas often requires raised wood floors built on pilings or piers. StructurePRO Treated Glulam makes it possible to frame these projects using fewer supports, lowering costs and improving the space utilization of the area beneath the first floor.



## StructurePRO Treated Glulam

StructurePRO Treated Glulam is comprised of southern pine glulam, manufactured with adhesives specifically designed for impregnation with wood preservatives and bearing either the APA-EWS or AITC trademark. The APA-EWS trademark indicates manufacture by members of Engineered Wood Systems (EWS), of APA - The Engineered Wood Association, and the AITC trademark indicates manufacture by members of the AITC/West Coast Lumber Inspection Bureau. The southern pine glulam is then pressure treated in accordance with standards set forth by the American Wood Protection Association (AWPA).

We have carefully selected preservative treatments that are carried by light solvent to reduce damage to the wood products often caused by water-borne treatments. As a result, these treatments do not require strength reductions after treatment.

StructurePRO Treated Glulam Beams and Columns are sized to match standard framing widths and are manufactured to the Framing Appearance classification that allows wane, glue squeeze, and other visual imperfections. A light planing removes most of the imperfections, balancing strength and appearance, making it ideal for its intended use.

StructurePRO Treated Glulam Beams are assembled in a balanced layup with zero camber. This means the beam has no top or bottom and is straight and true.

## Technical Approvals

StructurePRO Treated Glulam is manufactured in accordance with ANSI A190.1 - 2012, American National Standard for Structural Glued Laminated Timber, a code-recognized national consensus standard for glulam.

# StructurePRO Treated Glulam™

## StructurePRO Treated Glulam Resists Fungal Decay, Rot, and Insect Infestation

StructurePRO Treated Glulam Beams are treated with Copper 8 Quinolinolate which provides fungicidal and wood-ingesting insect protection for wood products in exterior above-ground use. Copper 8 Quinolinolate is low in toxicity and is also accepted for use by the United States Food and Drug Administration for treatment of wooden articles that have contact with foodstuff, such as crates, bins, truck decking and refrigeration units.

StructurePRO Treated Glulam Columns are treated with Copper Napthenate which provides fungicidal and insect protection for wood products in both ground contact and above-ground use. Copper Napthenate is also accepted for use by the United States Department of Agriculture and the United States Military.

## Use Categories, Retentions, and Restricted Uses

StructurePRO Treated Glulam Beams are intended only for above ground exterior applications. StructurePRO Treated Glulam Columns are permitted in both above ground exterior and ground-contact applications limited to the following AWPA Use Categories.

## Recommended Hardware, Resealing and Finishing

Moisture can accumulate around connections such as hangers, fasteners, bolts, nails, and screws. StructurePRO Treated Glulam Beams and Columns provide protection from moisture induced rot and decay at these locations. Field fabrication, trimming, hole-drilling, or minor surface damage should be resealed with Copper Napthenate which is available at local home centers. We have specifically selected treatments that are known to be non-corrosive to metal; however we recommend the use of hangers and fasteners specified for treated wood products such as hot-dipped galvanized or stainless steel. Oil-based stains and paints can be applied as a final finish to StructurePRO Glulam Beams but not Columns.



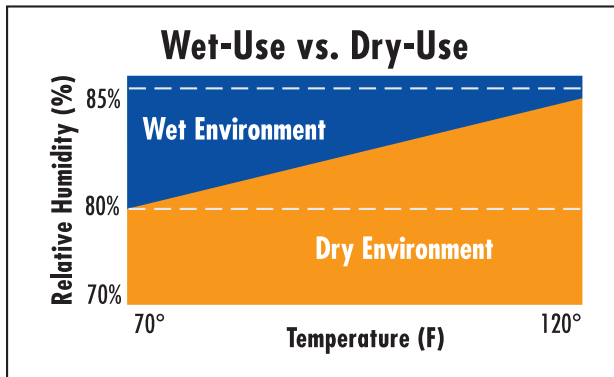
AWPA Use Category	Service Condition	StructurePRO Treated Glulam Beams Copper 8 Quinolinolate 0.02pcf	StructurePRO Treated Glulam Columns Copper Napthenate 0.075pcf
UC3B	Above Ground Exposed	✓	✓
UC4A	Ground Contact – General Use	n/a	✓
UC4B	Ground Contact – Heavy Duty	n/a	✓
UC4C	Ground Contact – Extreme Duty	n/a	✓



## Understanding Wet-Use vs. Dry-Use

Wet-use and dry-use are terms that are associated with in-service conditions. Usually a glulam member is exposed to water on an intermittent basis only. Any wetting is typically followed by a drying cycle, and the product never reaches a consistent wet-use condition. This situation is classified as dry-use.

The technical measure of wet-use is accepted as consistent moisture content within the beam of 16% or greater. A wet-use condition is rarely reached unless the beam is submerged in water or subjected to an artificially humid moisture condition. For example, using the chart below, a beam in an environment having a constant relative humidity of 80% and a temperature above 70° F will not reach a consistent moisture content of 16% or greater. Since a combination of high relative humidity and temperature outside of this range is seldom reached in the U.S., ambient air conditions rarely result in a wet-use classification. If there is any question regarding use condition, a licensed design professional should be retained to determine if wet-use design adjustments apply.



To retain an open-air moisture content of at least 16% (wet-use application), a beam must stay in a constant wet environment for a prolonged period (as illustrated above).

## StructurePRO Treated Glulam Beam Sizes Available<sup>1</sup>

Width: 3<sup>1</sup>/<sub>2</sub>", 5<sup>7</sup>/<sub>16</sub>"

Depth: 9<sup>1</sup>/<sub>2</sub>", 11<sup>7</sup>/<sub>8</sub>", 14", 16", 18"

Maximum Length: 48'

(1) Not all sizes stocked locally. Check for availability.

## StructurePRO Treated Glulam Column Sizes Available<sup>1</sup>

Width: 3<sup>3</sup>/<sub>8</sub>"

Depth: 3<sup>1</sup>/<sub>2</sub>", 5<sup>1</sup>/<sub>2</sub>"

Width: 5<sup>1</sup>/<sub>4</sub>"

Depth: 5<sup>1</sup>/<sub>2</sub>", 7"

Width: 7"

Depth: 7"

(1) Not all sizes stocked locally. Check for availability.

## Warranty

StructurePRO Treated Glulam Beams and Columns are warranted for 30 years against defects in materials, workmanship, fungal decay, and termite damage. Contact us for a complete copy of our limited warranty.

## Sizing Software

To better assist engineers, designers, and specifiers, Eastern Engineered Wood Products has partnered with Calculated Structured Designs, an industry leader in software development for the engineered wood industry. isDesign, our single member sizing program recognizes all the United States building codes and offers printable design calculations and beam capabilities. The software user can specify simple span applications, point loads, cantilevers and many more common applications. Please contact us to learn more about receiving complimentary copy of isDesign.

# StructurePRO Treated Glulam™ Design Properties

## StructurePRO Treated Glulam Beam Design Values<sup>1</sup>

Layup Combination	Flexural Stress $F_{bx}$ (psi)		Compression Perpendicular to Grain $F_{cx}$ (psi)	Shear $F_{vx}$ (psi)	$E_x$ ( $10^6$ psi)	
	Tension Zone	Compression Zone			Apparent	True
EWS 24F-V5M1/SP	2400	2400	740	300	1.8	1.9
Wet-Use factor	0.80	0.80	0.53	0.875	0.833	

## StructurePRO Treated Glulam Column Design Values<sup>1</sup>

Layup Combination EWS 50	$F_{bx}$ (psi) - x axis	$F_{by}$ (psi) - y axis		E ( $10^6$ psi)	Compression Parallel to Grain $F_c$ (psi)	
		3 Laminations	4 or More Laminations		3 Laminations	4 or More Laminations
Design Value	2100	2100	2300	1.9	1700	2300
Wet-Use factor	0.80	0.80	0.80	0.833	0.73	0.73

(1) The tabulated values are for dry conditions of use (moisture content of less than 16%) and normal load duration (10 years). For Wet-Use, the design values shall be multiplied by the Wet-Use factor given at the bottom of the tables. For glulam design and design value adjustments, reference Chapter 5 and Table 5.3.1 of the 2012 National Design Specification for Wood Construction (NDS).

## StructurePRO Treated Glulam Capacities

24F-V5M1 Southern Pine Dry Use  $F_{bx} = 2,400$ psi $F_{vx} = 300$ psi $E_x = 1.8 \times 10^6$ psi	Width (in.)	Depth (in.)	Weight (lb/ft.)	Maximum Resistive Shear (lbf)			Maximum Resistive Moment (ft.-lbf)			EI ( $10^6$ in. <sup>2</sup> - lbf)
				100%	115%	125%	100%	115%	125%	
				<b>3 1/2</b>						
		9 1/2	10.2	6,650	7,648	8,313	10,529	12,109	13,161	450
		11 7/8	12.7	8,313	9,559	10,391	16,452	18,920	20,565	878
		14	15.0	9,800	11,270	12,250	22,867	26,297	28,583	1,440
		16	17.1	11,200	12,880	14,000	29,867	34,347	37,333	2,151
		18	19.3	12,600	14,490	15,750	37,800	43,470	47,250	3,062
<b>5 7/16</b>										
		9 1/2	15.8	10,331	11,881	12,914	16,358	18,811	20,447	698
		11 7/8	19.7	12,914	14,851	16,143	25,559	29,393	31,949	1,366
		14	23.3	15,225	17,509	19,031	35,525	40,854	44,406	2,237
		16	26.6	17,400	20,010	21,750	46,400	53,360	58,000	3,341
		18	29.9	19,575	22,511	24,469	58,725	67,534	73,406	4,757

(1) Beam weight is assumed to be 44 pcf.

(2) Maximum resistive moment shall be adjusted by the volume factor based on the 2012 NDS.

## StructurePRO Treated Glulam Minimum Bearing Length (in.)

Product	Width (in.)	Reaction (lbf)																	
		3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000
Treated Glulam Dry-Use ( $F_{cx} = 740$ psi)	3 1/2	1.50	1.54	1.93	2.32	2.70	3.09	3.47	3.86	4.63	5.41	6.18	6.95	7.72	8.49	9.27	10.04	10.81	11.58
	5 7/16	1.50	1.50	1.50	1.50	1.74	1.99	2.24	2.49	2.98	3.48	3.98	4.47	4.97	5.47	5.96	6.46	6.96	7.46

(1) Minimum bearing length is 1 1/2".

(2) Bearing across full width of the beam is required.

(3) Bearing length shall be adjusted when the allowable bearing stress of the supporting member is less than the tabulated  $F_{cx}$  values of the glulam beam.

# StructurePRO Treated Glulam™ Allowable Load Tables



## StructurePRO Treated Glulam Floor Beams (plf)

24F-V5M1 Southern Pine	Width (in.)	Depth (in.)	Span (ft.)											
			10	12	14	16	18	20	22	24	26	28	30	32
LDF = 1.00 F <sub>bx</sub> = 2,400 psi F <sub>vx</sub> = 300 psi E <sub>x</sub> = 1.8 x 10 <sup>6</sup> psi	3 1/2	9 1/2	823	472	293	193	133	94	68	50	-	-	-	-
		11 7/8	1304	902	581	385	267	191	141	105	80	62	-	-
		14	1814	1255	918	636	442	318	235	178	137	106	84	66
		16	2372	1642	1202	916	666	481	357	271	210	164	130	105
5 7/16	9 1/2	1279	734	456	300	206	146	106	78	58	-	-	-	
	11 7/8	2025	1400	902	597	414	296	217	163	124	95	74	57	
	14	2819	1951	1427	989	688	495	366	277	213	166	130	103	
	16	3685	2551	1867	1418	1034	747	554	421	325	255	202	162	
		18	4669	3233	2360	1788	1398	1072	798	608	472	372	297	239

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = L/360 under live load. Where additional stiffness is desired or other live/total load ratios, design for deflection must be modified per requirements.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads based on live/total load = 0.8 and have taken the beam weight (assumed 44 PCF) into account.
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

## StructurePRO Treated Glulam Roof Beams (plf) - Snow Loads 115%

24F-V5M1 Southern Pine	Width (in.)	Depth (in.)	Span (ft.)											
			10	12	14	16	18	20	22	24	26	28	30	32
LDF = 1.15 F <sub>bx</sub> = 2,400 psi F <sub>vx</sub> = 300 psi E <sub>x</sub> = 1.8 x 10 <sup>6</sup> psi	3 1/2	9 1/2	958	662	476	315	218	156	115	86	66	50	-	-
		11 7/8	1501	1039	760	579	434	313	232	176	136	106	84	67
		14	2088	1446	1058	807	634	511	386	294	228	179	143	115
		16	2731	1891	1385	1056	831	670	551	444	346	273	219	177
5 7/16	9 1/2	1489	1029	739	490	339	243	179	134	102	78	61	47	
	11 7/8	2331	1613	1180	898	674	486	360	273	210	164	130	103	
	14	3245	2247	1644	1254	983	787	600	457	354	279	223	179	
	16	4242	2938	2151	1635	1278	1025	838	689	536	424	340	275	
		18	5373	3722	2719	2061	1612	1293	1059	881	743	613	493	401

## StructurePRO Treated Glulam Roof Beams (plf) - Non Snow Loads 125%

24F-V5M1 Southern Pine	Width (in.)	Depth (in.)	Span (ft.)											
			10	12	14	16	18	20	22	24	26	28	30	32
LDF = 1.25 F <sub>bx</sub> = 2,400 psi F <sub>vx</sub> = 300 psi E <sub>x</sub> = 1.8 x 10 <sup>6</sup> psi	3 1/2	9 1/2	1043	721	476	315	218	156	115	86	66	50	-	-
		11 7/8	1633	1130	827	624	434	313	232	176	136	106	84	67
		14	2271	1573	1151	878	691	518	386	294	228	179	143	115
		16	2970	2057	1507	1150	905	730	581	444	346	273	219	177
5 7/16	9 1/2	1620	1120	739	490	339	243	179	134	102	78	61	47	
	11 7/8	2536	1755	1284	968	674	486	360	273	210	164	130	103	
	14	3529	2444	1789	1365	1070	806	600	457	354	279	223	179	
	16	4613	3195	2341	1779	1392	1116	903	689	536	424	340	275	
		18	5843	4049	2958	2242	1755	1408	1153	960	772	613	493	401

- (1) For preliminary design use only. Final design should include a complete analysis, including bearing stresses and lateral stability.
- (2) Span = simply supported beam.
- (3) Maximum deflection = L/180 under total load. Other deflection limits may apply.
- (4) Service condition = dry.
- (5) Tabulated values represent total loads and have taken the beam weight (assumed 44 PCF) into account.
- (6) Sufficient bearing length shall be provided at supports.
- (7) Maximum beam shear is located at a distance from the supports equal to the depth of the beam.

# StructurePRO Treated Glulam™

## Allowable Axial Load Tables

### Allowable Axial Loads (lbf) - Combination No.50 Columns - Dry Use <sup>1,2,4,5,6</sup>

Effective Column Length (ft.)	Lamination Net Width = 3 3/8 in.						Lamination Net Width = 5 1/4 in.						Lamination Net Width = 7 in.		
	Net Depth = 3 1/2 in. (3 lams)			Net Depth = 5 1/2 in. (4 lams)			Net Depth = 5 1/2 in. (4 lams)			Net Depth = 7 in. (5 lams)			Net Depth = 7 in. (5 lams)		
	Load Duration Factor			Load Duration Factor			Load Duration Factor			Load Duration Factor			Load Duration Factor		
	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25
6	8,070	8,590	8,890	13,500	14,230	14,650	31,130	34,630	36,800	41,250	45,730	48,460	55,570	62,640	67,180
7	6,740	7,080	7,270	11,070	11,550	11,830	28,710	31,500	33,190	37,680	41,130	43,170	52,960	59,240	63,200
8	5,640	5,870	6,000	9,170	9,500	9,700	26,090	28,230	29,480	33,870	36,430	37,910	50,050	55,480	58,840
9	4,760	4,920	5,020	7,680	7,930	8,070	23,450	25,070	26,010	30,130	32,020	33,110	46,900	51,460	54,210
10	4,050	4,180	4,250	6,520	6,710	6,810	20,960	22,210	22,930	26,690	28,120	28,950	43,580	47,320	49,520
11	3,490	3,580	3,640	5,600	5,740	5,820	18,720	19,710	20,280	23,660	24,770	25,420	40,220	43,240	45,000
12	3,030	3,110	3,150	4,850	4,960	5,030	16,760	17,540	17,950	21,040	21,930	22,440	36,950	39,390	40,810
13	2,660	2,720	2,750	4,240	4,330	4,380	15,030	15,610	15,940	18,790	19,510	19,920	33,870	35,870	37,040
14							13,490	13,960	14,230	16,860	17,450	17,790	31,040	32,700	33,670
15							12,160	12,550	12,770	15,190	15,680	15,970	28,470	29,870	30,690
16							11,000	11,330	11,520	13,750	14,160	14,400	26,170	27,360	28,040
17							10,000	10,280	10,440	12,500	12,850	13,050	24,100	25,120	25,700
18							9,120	9,360	9,500	11,410	11,700	11,880	22,240	23,120	23,630
19							8,360	8,560	8,680	10,450	10,700	10,850	20,580	21,340	21,780
20							7,680	7,860	7,960	9,600	9,820	9,950	19,080	19,750	20,130

### Allowable Axial Loads (lbf) - Combination No.50 Columns - Wet Use <sup>1,3,4,5,7</sup>

Effective Column Length (ft.)	Lamination Net Width = 3 3/8 in.						Lamination Net Width = 5 1/4 in.						Lamination Net Width = 7 in.		
	Net Depth = 3 1/2 in. (3 lams)			Net Depth = 5 1/2 in. (4 lams)			Net Depth = 5 1/2 in. (4 lams)			Net Depth = 7 in. (5 lams)			Net Depth = 7 in. (5 lams)		
	Load Duration Factor			Load Duration Factor			Load Duration Factor			Load Duration Factor			Load Duration Factor		
	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25	1.00	1.15	1.25
6	6,480	6,940	7,210	10,970	11,610	11,970	24,360	27,210	28,990	32,060	35,930	38,190	43,060	48,650	52,270
7	5,480	5,780	5,950	9,060	9,470	9,710	22,690	25,030	26,460	29,800	32,710	34,470	41,270	46,320	49,540
8	4,620	4,820	4,930	7,530	7,820	7,980	20,840	22,670	23,760	27,090	29,320	30,610	39,270	43,720	46,500
9	3,910	4,050	4,130	6,330	6,540	6,660	18,900	20,310	21,120	24,340	25,990	26,940	37,080	40,890	43,220
10	3,340	3,440	3,510	5,380	5,540	5,630	17,010	18,090	18,710	21,710	22,950	23,660	34,730	37,920	39,810
11	2,880	2,960	3,010	4,620	4,740	4,810	15,270	16,110	16,600	19,330	20,290	20,840	32,300	34,900	36,420
12	2,500	2,570	2,600	4,010	4,100	4,160	13,710	14,380	14,750	17,240	18,000	18,440	29,860	31,970	33,200
13	2,190	2,250	2,270	3,510	3,580	3,630	12,340	12,840	13,120	15,430	16,050	16,400	27,500	29,230	30,230
14							11,090	11,500	11,730	13,870	14,370	14,660	25,300	26,730	27,550
15							10,010	10,340	10,530	12,510	12,930	13,170	23,270	24,470	25,160
16							9,070	9,350	9,510	11,340	11,690	11,890	21,430	22,440	23,030
17							8,250	8,490	8,620	10,310	10,610	10,780	19,760	20,630	21,130
18							7,530	7,740	7,850	9,420	9,670	9,820	18,270	19,010	19,440
19							6,900	7,080	7,180	8,630	8,850	8,910	16,920	17,570	17,940
20							6,350	6,500	6,590	7,930	8,120	8,230	15,700	16,270	16,590

Side loads are not permitted. End loads are limited to a maximum eccentricity of either 1/6 column width or depth, whichever is worse.

- The tabulated allowable loads apply only to one piece glulam members made with all N1D14 laminations (Combination 50) without special tension laminations.
- Applicable service conditions = dry.
- Applicable service conditions = wet.
- The tabulated allowable loads are based on simply axially loaded columns subjected to a maximum eccentricity of either 1/6 column width or 1/6 column depth, whichever is worse. For side loads, other eccentric end loads, or combined axial and flexural loads, see 2012 NDS.
- The column is assumed to be unbraced, except at the column ends, and the effective column length is equal to the actual column length.
- Design properties for normal load duration and dry-use service conditions:
  - Compression parallel to grain ( $F_c$ ) = 2,300 psi for 4 or more lams, or 1,700 psi for 2 or 3 lams.
  - Modulus of elasticity ( $E$ ) =  $1.9 \times 10^6$  psi.
  - Flexural stress when loaded parallel to wide faces of lamination ( $F_{bx}$ ) = 2,300 psi for 4 or more lams, or 2,100 psi for 3 lams.
  - Flexural stress when loaded perpendicular to wide faces of lamination ( $F_{by}$ ) equals 2,100 psi for 2 lams to 15 in. deep without special tension laminations.
  - Volume factor for  $F_{bx}$  is in accordance with 2012 NDS. Size factor for  $F_{by}$  is  $(12/d)^{1/9}$ , where  $d$  is equal to the lamination width in inches.
- Design properties for normal load duration and wet-use service conditions:
  - Compression parallel to grain ( $F_c$ ) =  $0.73 \times 2,300$  psi for 4 or more lams, or  $0.73 \times 1,700$  psi for 2 or 3 lams.
  - Modulus of elasticity ( $E$ ) =  $0.833 \times 1.9 \times 10^6$  psi.
  - Flexural stress when loaded parallel to wide faces of lamination ( $F_{bx}$ ) =  $0.8 \times 2,300$  psi for 4 or more lams, or  $0.8 \times 2,100$  psi for 3 lams.
  - Flexural stress when loaded perpendicular to wide faces of lamination ( $F_{by}$ ) equals  $0.8 \times 2,100$  psi for 2 lams to 15 in. deep without special tension laminations.
  - Volume factor for  $F_{bx}$  is in accordance with 2012 NDS. Size factor for  $F_{by}$  is  $(12/d)^{1/9}$ , where  $d$  is equal to the lamination width in inches.



## StructurePRO Treated Glulam™

### Features

Superior Structural Strength

Balanced Layup

Zero Camber

Full Framing Width Beams

Backed by a 30-Year Limited Warranty

### Benefits

Longer spans reduce the number of deck support columns, improving visibility and aesthetic appeal

No top orientation for the beam simplifies installation and eliminates the potential of installing the beam upside-down

No built-in camber means each beam is straight and true

Matches dimension lumber framing widths and simplifies framing

Assures peace of mind

### EASTERN ENGINEERED WOOD PRODUCTS, INC.

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