



Freres Industrial Mass Ply Panel Matting
Freres Lumber Co., Inc.
dba Freres Engineered Wood

PR-L337

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Products: Freres Industrial MPP Matting
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1. Basis of the product report:
 - ANSI/APA PRG 320-2019 Standard for Performance-Rated Cross-Laminated Timber
 - APA Custom Product Specification L-375 Industrial CLT Matting
 - APA Report T2021P-03 and other qualification data
2. Product description:

Freres industrial Mass Ply Panel (MPP) matting is manufactured with nominal 1-inch-thick Freres 1.6E and 1.0E Douglas-fir LVL recognized in APA Product Report PR-L324 in accordance with custom layups of ANSI/APA PRG 320 through product qualification and mathematical models using principles of engineering mechanics. The LVL layers are parallel-laminated, bonded with approved structural adhesives, and pressed to form a solid panel. The unglued edge joints between the 1-inch-thick LVL pieces within the same layer of the industrial MPP matting, when present, are staggered between adjacent layers. Freres industrial MPP matting shall be limited to industrial applications and are not intended for use in timber structures or similar constructions, except for spanning over a short opening (up to 18 times the MPP thickness) recommended by the manufacturer. Freres industrial MPP matting is manufactured in a plank billet (see Figure 1) in nominal thicknesses (t) of 2-1/16 to 12-1/4 inches, nominal widths (w) of 4, 8, 10, and 12 feet, and lengths up to 48 feet. The Freres' Industrial matting is known as Monolithic Industrial Bridge (MIB) Mat and Monolithic Industrial Ground (MIG) Mat for the products using nominal 1-inch-thick Freres 1.6E and 1.0E Douglas fir LVL, respectively.
3. Design properties:

Freres industrial MPP matting shall be designed with the design properties and capacities provided in Tables 1 and 2, when used in different moisture conditions, or with the recommendations provided by the manufacturer (www.frereswood.com).
4. Product installation:

Freres industrial MPP matting shall be installed in accordance with the recommendations provided by the manufacturer (see link above).
5. Limitations:
 - a) Freres industrial MPP matting shall be designed in accordance with principles of mechanics using the design properties specified in this report or provided by the manufacturer.
 - b) Freres industrial MPP matting shall be limited to industrial applications and are not intended for use in timber structures or similar constructions, except for spanning over a short opening (up to 18 times the MPP thickness) recommended by the manufacturer.
 - c) Freres industrial MPP matting shall be manufactured in accordance with proprietary Freres industrial MPP matting manufacturing specifications documented in the in-plant manufacturing standard approved by APA.

- d) The design values recognized in this report are limited to new products. The effect of re-use on the design values is beyond the scope of this report.
 - e) Freres industrial MPP matting is produced at the Freres facility in Lyons, Oregon under a quality assurance program audited by APA.
 - f) This report is subject to re-examination in one year.
6. Identification:
Freres industrial MPP matting described in this report is identified by a label (stamp or sticker) bearing the manufacturer's name (Freres) and/or trademark, the APA assigned plant number (1121), the APA Custom Product Specification (L-375), the APA logo, the industrial MPP matting grade, the report number PR-L337, and a means of identifying the date of manufacture.

Table 1. ASD Reference Design Values^(a,b) for Freres Industrial MPP Matting (**Dry Conditions**) (for Use in the U.S.)

MPP Grade	Layup ID	Thickness, t_p (in.)	Major Strength Direction				Minor Strength Direction			
			$(F_b S)_{eff,f,0}$ (lbf-ft/ft)	$(EI)_{eff,f,0}$ (10^6 lbf-in. ² /ft)	$(GA)_{eff,f,0}$ (10^6 lbf/ft)	$V_{s,0}$ (lbf/ft)	$(F_b S)_{eff,f,90}$ (lbf-ft/ft)	$(EI)_{eff,f,90}$ (10^6 lbf-in. ² /ft)	$(GA)_{eff,f,90}$ (10^6 lbf/ft)	$V_{s,90}$ (lbf/ft)
MIB	MIB-2	2-1/16	980	14	0.72	2,190	75	0.47	0.03	695
	MIB-3	3-1/16	1,870	48	1.1	2,190	225	4.6	0.28	695
	MIB-4	4-1/16	3,325	113	1.4	2,925	510	16	0.41	930
	MIB-5	5-1/8	5,200	221	1.8	3,650	910	37	0.55	1,160
	MIB-6	6-1/8	7,500	382	2.2	4,375	1,420	72	0.69	1,390
	MIB-7	7-1/8	10,200	606	2.3	5,100	1,690	93	0.75	1,630
	MIB-8	8-3/16	13,325	904	2.7	5,825	2,300	148	0.88	1,860
	MIB-9	9-3/16	16,850	1,288	3.0	6,575	3,000	221	1.0	2,090
	MIB-10	10-3/16	20,825	1,766	3.3	7,300	3,800	315	1.1	2,320
	MIB-11	11-1/4	25,175	2,351	3.7	8,025	4,690	432	1.3	2,550
	MIB-12	12-1/4	29,975	3,052	4.0	8,750	5,675	575	1.4	2,775
	MIG	MIG-2	2-1/16	670	7.3	0.38	1,280	170	2.2	0.11
MIG-3		3-1/16	1,510	25	0.58	1,530	585	12	0.40	980
MIG-4		4-1/16	2,675	58	0.77	2,030	1,320	39	0.60	1,310
MIG-5		5-1/8	4,200	114	0.96	2,550	1,580	74	0.61	1,640
MIG-6		6-1/8	6,050	197	1.2	3,050	2,470	144	0.76	1,960
MIG-7		7-1/8	8,225	312	1.3	3,550	3,550	249	0.91	2,290
MIG-8		8-3/16	10,750	466	1.5	4,075	4,475	291	1.1	2,625
MIG-9		9-3/16	13,600	664	1.7	4,575	5,825	434	1.2	2,950
MIG-10		10-3/16	16,775	910	1.9	5,075	7,375	618	1.4	3,275
MIG-11		11-1/4	20,300	1,212	2.1	5,600	9,110	848	1.5	3,600
MIG-12		12-1/4	24,175	1,573	2.3	6,100	11,025	1,129	1.7	3,925

For SI: 1 in. = 25.4 mm; 1 ft = 304.8 mm; 1 lbf = 4.448N

^(a) Tabulated values are allowable design values. The tabulated allowable design values are for dry conditions of use where the average equilibrium moisture content of solid-sawn lumber is less than 16%.

^(b) Tabulated values are limited to MIB and MIG industrial MPP matting manufactured with 1-inch-thick Freres 1.6E and 1.0E Douglas-fir LVL, respectively, as recognized in APA Product Report PR-L324.

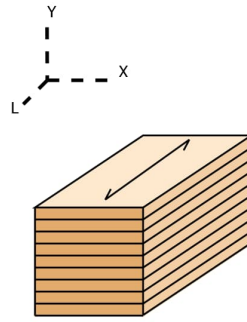
Table 2. ASD Reference Design Values^(a,b) for Freres Industrial MPP Matting (**Wet Conditions**) (for Use in the U.S.)

MPP Grade	Layup ID	Thickness, t_p (in.)	Major Strength Direction				Minor Strength Direction			
			$(F_b S)_{\text{eff},f,0}$ (lbf-ft/ft)	$(EI)_{\text{eff},f,0}$ (10^6 lbf-in. ² /ft)	$(GA)_{\text{eff},f,0}$ (10^6 lbf/ft)	$V_{s,0}$ (lbf/ft)	$(F_b S)_{\text{eff},f,90}$ (lbf-ft/ft)	$(EI)_{\text{eff},f,90}$ (10^6 lbf-in. ² /ft)	$(GA)_{\text{eff},f,90}$ (10^6 lbf/ft)	$V_{s,90}$ (lbf/ft)
MIB	MIB-2	2-1/16	735	12	0.61	1,640	55	0.40	0.02	450
	MIB-3	3-1/16	1,400	41	0.94	1,640	170	3.9	0.22	450
	MIB-4	4-1/16	2,490	96	1.2	2,190	385	14	0.33	605
	MIB-5	5-1/8	3,900	188	1.5	2,750	685	31	0.44	755
	MIB-6	6-1/8	5,625	325	1.9	3,275	1,070	61	0.55	905
	MIB-7	7-1/8	7,650	515	2.0	3,825	1,270	79	0.60	1,060
	MIB-8	8-3/16	10,000	768	2.3	4,375	1,730	126	0.70	1,210
	MIB-9	9-3/16	12,650	1,095	2.6	4,925	2,250	188	0.80	1,360
	MIB-10	10-3/16	15,625	1,501	2.8	5,475	2,850	268	0.88	1,510
	MIB-11	11-1/4	18,875	1,998	3.1	6,025	3,525	367	1.0	1,660
	MIB-12	12-1/4	22,475	2,594	3.4	6,575	4,250	489	1.1	1,800
	MIG	MIG-2	2-1/16	505	6.2	0.32	960	130	1.9	0.09
MIG-3		3-1/16	1,130	21	0.49	1,150	440	10	0.32	635
MIG-4		4-1/16	2,010	49	0.65	1,520	990	33	0.48	850
MIG-5		5-1/8	3,150	97	0.82	1,910	1,190	63	0.49	1,070
MIG-6		6-1/8	4,550	167	1.0	2,290	1,850	122	0.61	1,270
MIG-7		7-1/8	6,175	265	1.1	2,675	2,675	212	0.73	1,490
MIG-8		8-3/16	8,075	396	1.3	3,050	3,350	247	0.88	1,710
MIG-9		9-3/16	10,200	564	1.4	3,425	4,375	369	0.96	1,920
MIG-10		10-3/16	12,575	774	1.6	3,800	5,525	525	1.1	2,130
MIG-11		11-1/4	15,225	1,030	1.8	4,200	6,825	721	1.2	2,340
MIG-12		12-1/4	18,125	1,337	2.0	4,575	8,275	960	1.4	2,550

For SI: 1 in. = 25.4 mm; 1 ft = 304.8 mm; 1 lbf = 4.448N

^(a) Tabulated values are allowable design values. The tabulated allowable design values are for wet conditions of use where the average equilibrium moisture content of solid-sawn lumber is 16% or greater.

^(b) Tabulated values are limited to MIB and MIG industrial MPP matting manufactured with 1-inch-thick Freres 1.6E and 1.0E Douglas-fir LVL, respectively, as recognized in APA Product Report PR-L324.



Plank (Flat) Orientation

Thickness (t) along Y-axis; Width (w) along X-axis; Length (L) along L-axis

Plies	2	3	4	5	6	7	8	9	10	11	12
Fractional Nominal (in.)	2 1/16	3 1/16	4 1/16	5 1/8	6 1/8	7 1/8	8 3/16	9 3/16	10 3/16	11 1/4	12 1/4
Decimal Nominal (in.)	2.04	3.06	4.08	5.10	6.12	7.14	8.16	9.18	10.20	11.22	12.24

Figure 1. Freres Industrial MPP Matting Orientations and Thicknesses

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