



NORDIC LAM™

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NORDIC LAM™

24F-1.9E

MAXIMUM UNIFORM LOADS (plf)

WIDTH (in.)	DEPTH (in.)	CRITERIA	SPAN (ft)													
			6	8	10	12	14	16	18	20	22	24	26	28	30	
1-ply 1-3/4	9-1/2	L/360 LL		651	333	193	122	81	57	42	---	---	---	---	---	
		L/240 TL			496	285	178	118	82	58	---	---	---	---	---	
		Fact. Load	1948	1094	698	483	354	270	212	171	---	---	---	---	---	
	End/Int. B.	3.4/8.4	2.6/6.3	2.1/5.1	1.7/4.2	1.5/3.6	1.5/3.2	1.5/3	1.5/3	---	---	---	---	---	---	
	11-7/8	L/360 LL			651	377	237	159	112	81	61	47	37	---	---	
		L/240 TL				351	233	162	117	87	66	51	---	---		
		Fact. Load	2605	1711	1093	757	554	423	333	268	221	184	156	---	---	
	End/Int. B.	4.5/11.2	4/9.8	3.2/7.9	2.7/6.6	2.3/5.6	2/4.9	1.8/4.4	1.6/4	1.5/3.6	1.5/3.3	1.5/3	---	---		
	14	L/360 LL				618	389	261	183	133	100	77	61	49	40	
		L/240 TL					385	269	194	144	110	85	67	53		
		Fact. Load	2981	2121	1520	1053	772	589	464	374	308	258	218	187	162	
	End/Int. B.	5.2/12.8	4.9/12.2	4.4/10.9	3.7/9.1	3.2/7.8	2.8/6.8	2.5/6.1	2.2/5.5	2/5	1.9/4.6	1.7/4.2	1.6/3.9	1.5/3.7		
	16	L/360 LL					580	389	273	199	150	115	91	73	59	
		L/240 TL						403	292	218	166	129	102	82		
		Fact. Load	3326	2366	1816	1377	1009	771	607	490	404	338	287	246	213	
	End/Int. B.	5.8/14.3	5.5/13.6	5.3/13.1	4.8/11.9	4.1/10.2	3.6/8.9	3.2/7.9	2.9/7.1	2.6/6.5	2.4/6	2.2/5.5	2.1/5.1	1.9/4.8		
	18	L/360 LL						827	554	389	284	213	164	129	103	84
		L/240 TL							418	312	238	186	147	118		
		Fact. Load	3663	2606	2000	1611	1279	977	770	622	512	429	364	312	271	
	End/Int. B.	6.3/15.8	6/15	5.8/14.4	5.6/13.9	5.2/12.9	4.5/11.3	4/10	3.6/9	3.3/8.2	3/7.5	2.8/6.9	2.6/6.4	2.4/6		
2-ply 1-3/4 or 3-1/2	9-1/2	L/360 LL		1302	667	386	243	163	114	83	63	48	38	30	---	
		L/240 TL			992	571	356	236	163	117	86	64	49	37	---	
		Fact. Load	3829	2188	1396	967	707	539	424	342	280	234	198	169	---	
	End/Int. B.	3.3/8.3	2.6/6.3	2.1/5.1	1.7/4.2	1.5/3.6	1.5/3.2	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	---		
	11-7/8	L/360 LL			1302	754	475	318	223	163	122	94	74	59	48	
		L/240 TL				702	467	325	234	173	131	101	79	62		
		Fact. Load	4597	3270	2185	1514	1109	846	666	537	441	369	312	268	232	
	End/Int. B.	4/9.9	3.8/9.4	3.2/7.9	2.7/6.6	2.3/5.6	2/4.9	1.8/4.4	1.6/4	1.5/3.6	1.5/3.3	1.5/3	1.5/3	1.5/3		
	14	L/360 LL				1235	778	521	366	267	200	154	121	97	79	
		L/240 TL					770	537	388	289	220	170	134	107		
		Fact. Load	5261	3742	2873	2106	1544	1178	928	749	616	515	437	375	325	
	End/Int. B.	4.6/11.3	4.3/10.8	4.2/10.3	3.7/9.1	3.2/7.8	2.8/6.8	2.5/6.1	2.2/5.5	2/5	1.9/4.6	1.7/4.2	1.6/3.9	1.5/3.7		
	16	L/360 LL					1161	778	546	398	299	230	181	145	118	
		L/240 TL						806	584	435	332	258	204	163		
		Fact. Load	5869	4175	3205	2581	2018	1541	1214	980	807	676	573	492	426	
	End/Int. B.	5.1/12.6	4.8/12	4.6/11.5	4.5/11.2	4.1/10.2	3.6/8.9	3.2/7.9	2.9/7.1	2.6/6.5	2.4/6	2.2/5.5	2.1/5.1	1.9/4.8		
	18	L/360 LL						1107	778	567	426	328	258	207	168	
		L/240 TL							835	624	477	372	295	237		
		Fact. Load	6464	4598	3529	2842	2366	1953	1539	1243	1024	857	728	625	542	
	End/Int. B.	5.6/13.9	5.3/13.2	5.1/12.7	4.9/12.3	4.8/11.9	4.5/11.3	4/10	3.6/9	3.3/8.2	3/7.5	2.8/6.9	2.6/6.4	2.4/6		

See notes on page 3.

24F-1.9E

MAXIMUM UNIFORM LOADS (plf) (continued)

WIDTH (in.)	DEPTH (in.)	CRITERIA	SPAN (ft)												
			6	8	10	12	14	16	18	20	22	24	26	28	30
3-ply 1-3/4 or 5-1/2	9-1/2	L/360 LL		1954	1000	579	365	244	172	125	94	72	57	46	37
		L/240 TL			1488	856	535	354	245	175	129	96	73	56	43
		Fact. Load	5338	3281	2095	1450	1061	809	636	512	421	351	297	254	218
	End/Int. B.	3.1/7.7	2.6/6.3	2.1/5.1	1.7/4.2	1.5/3.6	1.5/3.2	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3
	11-7/8	L/360 LL			1954	1131	712	477	335	244	183	141	111	89	72
		L/240 TL				1053	700	487	351	260	197	152	118	93	
		Fact. Load	6409	4559	3278	2270	1663	1269	998	805	662	553	469	402	345
	End/Int. B.	3.7/9.2	3.5/8.8	3.2/7.9	2.7/6.6	2.3/5.6	2/4.9	1.8/4.4	1.6/4	1.5/3.6	1.5/3.3	1.5/3	1.5/3	1.5/3	1.5/3
	14	L/360 LL				1853	1167	782	549	400	301	232	182	146	119
		L/240 TL					1154	806	582	433	330	255	201	160	
		Fact. Load	7335	5217	4004	3159	2315	1767	1392	1123	924	773	655	562	484
	End/Int. B.	4.2/10.5	4/10	3.9/9.6	3.7/9.1	3.2/7.8	2.8/6.8	2.5/6.1	2.2/5.5	2/5	1.9/4.6	1.7/4.2	1.6/3.9	1.5/3.6	
	16	L/360 LL					1741	1167	819	597	449	346	272	218	177
		L/240 TL						1209	876	653	498	387	306	245	
		Fact. Load	8183	5820	4467	3597	2995	2312	1822	1471	1211	1013	860	738	635
	End/Int. B.	4.7/11.8	4.5/11.2	4.3/10.7	4.2/10.4	4.1/10.1	3.6/8.9	3.2/7.9	2.9/7.1	2.6/6.5	2.4/6	2.2/5.5	2.1/5.1	1.9/4.7	
	18	L/360 LL						1661	1167	851	639	492	387	310	252
		L/240 TL							1253	936	715	558	442	355	
		Fact. Load	9012	6410	4919	3961	3298	2813	2309	1865	1536	1286	1092	937	808
	End/Int. B.	5.2/12.9	4.9/12.3	4.8/11.8	4.6/11.4	4.5/11.1	4.4/10.8	4/10	3.6/9	3.3/8.2	3/7.5	2.8/6.9	2.6/6.4	2.4/6	
4-ply 1-3/4 or 7	9-1/2	L/360 LL		2605	1334	772	486	326	229	167	125	96	76	61	49
		L/240 TL			1984	1142	713	472	327	234	172	129	98	75	58
		Fact. Load	6757	4375	2793	1933	1415	1079	848	683	560	460	383	323	275
	End/Int. B.	3/7.3	2.6/6.3	2.1/5.1	1.7/4.2	1.5/3.6	1.5/3.2	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	1.5/3	
	11-7/8	L/360 LL			2605	1507	949	636	447	326	245	188	148	119	96
		L/240 TL					1404	934	650	468	347	262	202	158	125
		Fact. Load	8113	5770	4370	3027	2217	1692	1331	1074	881	724	604	510	436
	End/Int. B.	3.5/8.8	3.4/8.3	3.2/7.9	2.7/6.6	2.3/5.6	2/4.9	1.8/4.4	1.6/4	1.5/3.6	1.5/3.2	1.5/3	1.5/3	1.5/3	
	14	L/360 LL				2470	1556	1042	732	534	401	309	243	194	158
		L/240 TL					1539	1074	777	577	439	340	268	213	
		Fact. Load	9285	6603	5068	4081	3087	2357	1856	1497	1230	1012	845	715	611
	End/Int. B.	4/10	3.8/9.5	3.7/9.1	3.6/8.8	3.2/7.8	2.8/6.8	2.5/6.1	2.2/5.5	2/5	1.8/4.5	1.7/4.1	1.5/3.7	1.5/3.4	
	16	L/360 LL					2322	1556	1093	796	598	461	363	290	236
		L/240 TL						1612	1167	870	664	517	408	327	
		Fact. Load	10358	7367	5653	4553	3790	3083	2429	1961	1611	1327	1109	938	803
	End/Int. B.	4.5/11.2	4.3/10.6	4.1/10.2	4/9.9	3.9/9.6	3.6/8.9	3.2/7.9	2.9/7.1	2.6/6.5	2.4/5.8	2.2/5.3	2/4.9	1.8/4.5	
	18	L/360 LL						2215	1556	1134	852	656	516	413	336
		L/240 TL							1670	1247	954	744	589	473	
		Fact. Load	11408	8113	6226	5013	4173	3559	3079	2486	2044	1684	1408	1193	1021
	End/Int. B.	4.9/12.3	4.7/11.7	4.5/11.2	4.4/10.9	4.3/10.6	4.1/10.3	4/10	3.6/9	3.3/8.2	3/7.4	2.7/6.7	2.5/6.2	2.3/5.7	

NOTES:

- Values shown are the maximum uniform loads, in pounds per linear foot (plf), that can be applied to the beam in addition to its own weight.
- Selected beam shall satisfy both live (LL) and total (TL) specified loads, and the total factored load (Fact. Load). When no value is shown in the live load and/or total load row, the factored total load governs the design.
- Table is based on uniform loads and the most restrictive of simple or continuous spans, and dry-use conditions. Span is measured centre to centre of supports. The maximum uniform loads are for standard term duration of load.
- Maximum deflection = L/360 under specified live load, and L/240 under specified total load. Other deflection limits may apply. For deflection limit of L/480, multiply live load values by 0.75. The resulting live load shall not exceed the factored total load shown.
- Table values assume that lateral support is provided at each support and continuously along the compression edge of the beam.
- Multiple pieces may be used when properly connected. For 3-ply 1-3/4 or 5-1/2-inch beams, the tabulated values are based on a net width of 5-1/4 inches. For 5-1/2-inch beams, the tabulated values may be increased by 5%.
- Sufficient bearing length shall be provided at supports. Review bearing length requirements (shown in inches) to ensure adequacy.

DESIGN VALUES FOR NORDIC LAM™



SPECIFIED STRENGTHS AND DESIGN PROPERTIES (1,2,3)

APPLICATION	BEAMS AND HEADERS
APPEARANCE GRADE	INDUSTRIAL
STRESS GRADE	24F-1.9E
EWS LAYUP	24F-E/ES1M1
Bending about X-X axis	
Bending at extreme fibre (F_{bx}) ^(4,5)	4453 psi
Longitudinal shear (F_v) ⁽⁶⁾	319 psi
Compression perpendicular to grain ($F_{cp\perp}$) ⁽⁷⁾	1088 psi
Shear-free modulus of elasticity (E_v)	1.9E+06 psi
Apparent modulus of elasticity ($E_{x,app}$) ⁽⁸⁾	1.8E+06 psi
Bending about Y-Y axis	
Bending at extreme fibre (F_{by}) ⁽⁵⁾	2045 psi
Longitudinal shear (F_v) ⁽⁶⁾	218 psi
Compression perpendicular to grain ($F_{cp\perp}$) ⁽⁷⁾	551 psi
Shear-free modulus of elasticity (E_v)	1.6E+06 psi
Apparent modulus of elasticity ($E_{y,app}$) ⁽⁸⁾	1.5E+06 psi
Axially loaded	
Compression parallel to grain (F_c)	2393 psi
Tension parallel to grain (F_t)	1944 psi
Tension perpendicular to grain ($F_{t\perp}$)	74 psi
Modulus of elasticity (E_a) ⁽⁸⁾	1.6E+06 psi
Mean relative density	0.42
Density (for member weight)	35 pcf

- (1) The combinations in this table are applicable to members consisting of 4 or more laminations, unless otherwise noted.
- (2) The tabulated design values are for dry service conditions. For wet service conditions, multiply the tabulated values by the wet service condition factors, K_s , per CSA O86-09, Clause 6.4.2.
- (3) The tabulated design values are for standard term duration of load. For other durations of load, see applicable design code (CSA O86-09, Clauses 4.3.2 and 6).
- (4) Nordic Lam bending members are symmetrical throughout the depth of the member (balanced layups). Vertically glued-laminated beams shall be designed using the specified strengths and modulus of elasticity for bending about Y-Y axis. (Clause 6.5.3 of CSA O86-09 is not applicable.)
- (5) The tabulated specified strengths in bending (F_{bx} and F_{by}) shall be multiplied by a size factor, K_{zbg} . The size factor formula is: $K_{zbg} = 1.03 (BL)^{-0.18} \leq 1.0$, where B = net beam width (m), and L = length of beam segment from point of zero moment to point of zero moment (m).
- (6) At the location of notches in rectangular members, the specified strength in shear (F_v) shall be multiplied by a notch factor, K_{Nv} , determined per CSA O86-09, Clause 6.5.7.2.2.
- (7) The compression perpendicular to grain strength values ($F_{cp\perp}$) shall be permitted to be adjusted by a size factor for bearing, $K_{zcp\perp}$, per CSA O86-09, Clause 6.5.9.2.
- (8) The tabulated apparent E values already include a 5% shear deflection. For column stability calculations, E_{05} shall be determined by multiplying the tabulated apparent modulus of elasticity by 0.87.
- (9) Design of glulam members shall be in accordance to CSA O86-09 Standard.

Refer to Nordic Lam Design and Construction Guide for more information.

Nordic Lam products are listed in APA Product Report PR-L294C and CCMC Evaluation Report 13216-R.



Sustainable Wood Solutions

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