Design Properties, Nordic Lam

DESIGN STRESSES AND PROPERTIES[1,2,3,4,5]

Product	Nordic Lam	Nordic Lam
Application	Beams and columns	Decking
Appearance Grade	Architectural	Architectural
Stress Grade	24F-ES/NPG	20F-ES/CPG
Bending About X-X or Y-Y Axis		
Bending Moment (F_b)[6]	2400 psi	2000 psi
Shear Parallel to Grain (F_v)[7]	300 psi	250 psi
Compression Perpendicular to Grain (F_{cp})[8]	600 psi	450 psi
Shear-Free Modulus of Elasticity (E)	1,9E+06 psi	1,9E+06 psi
Apparent Modulus of Elasticity ($E_{app.}$)[9]	1,8E+06 psi	1,8E+06 psi
Axially Loaded		
Compression Parallel to Grain (F_c)	2300 psi	1000 psi
Tension Parallel to Grain (F_t)	1600 psi	800 psi
Modulus of Elasticity (E_a)	1,9E+06 psi	1,9E+06 psi
Connections design		
Specific Gravity[10]	0,46	0,41
Characteristic density (ρ_k)[10]	27 pcf	24 pcf
Density (for member weight)	35 pcf	35 pcf

(1) Design of glulam members shall be in accordance to NDS, 2015 Edition.
(2) The tabulated values apply to members consisting of 4 or more laminations.
(3) The tabulated design values are for normal duration of loading. For other durations of loading, see applicable design code (NDS-2015, 5.3.2).
(4) The tabulated design values are for dry conditions of use. To obtain wet-use design values, multiply the tabulated values by the wet service factors, C_M (NDS-2012, 5.3.3).
(5) Nordic Lam 24F-ES/NPG and 20F-ES/CPG members are symmetrical throughout the depth and the width of the member (homogeneous layups).
(6) The tabulated design values in bending, F_{bx}, shall be multiplied by a volume effect factor, C_v. The volume factor formula is:
$C_v = (12/d)^{1/10} \times (5.125/b)^{1/10} \times (21/L)^{1/10} \leq 1.0$, where d = beam depth (in.), b = beam width (in.), and L = beam length (ft).
The values of 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.
(7) At the location of notches in rectangular members, the shear stress (F_v) shall be adjusted as per NDS-2015, 3.4.3.2. For notched members, members subject to impact or cyclic loading, or shear design of bending members at connections (NDS-2015, 3.4.3.3), the design value for shear (F_{vx} and F_{vy}) shall be multiplied by a factor of 0.72 (NDS-2015, 5.3.10).
(8) The compression design values perpendicular to grain (F_{cp}) shall be permitted to be multiplied by the bearing area factor, C_b, as specified in NDS-2015, 3.10.4.
(9) The tabulated "apparent E" values already include a 5% shear deflection. For beam stability and column stability calculations, E_{min} shall be determined by multiplying the tabulated apparent modulus of elasticity by 0.528.
(10) Specific gravity values for dowel-type fastener design in accordance to NDS-2015, and characteristic density values for dowel-type fastener design in accordance to EN 1995-1-1.
* Nordic Lam products are listed in APA Product Report PR-L294.