# Mercer Cross-Laminated Timber

## Mercer, Inc.

Initial Acceptance: March 1, 2022

Expiration: February 28, 2027

Revision: December 04, 2025

Version: 2.1

**TYPE OF ACCEPTANCE:**

**Product Material — Wood, Plastics and Composites**
CSI Specification Division: 06 00 00 and Section: 06 17 19 Cross-Laminated Timber

**MANUFACTURER IDENTIFICATION**

**Mercer Mass Timber**
19202 Garland Ave.
Spokane Valley, WA 99027
www.mercermasstimber.com

**DESCRIPTION OF THE PRODUCT EVALUATED**

**Mercer Cross-Laminated Timber (CLT)** uses Spruce-Pine-Fir (SPF), Douglas-Fir-Larch (DF-L), and Southern Yellow Pine (SYP) laminations with ANSI 405 and CSA O112.9 approved structural adhesives to manufacture defined and custom CLT layups in accordance with ANSI/APA PRG 320-2025. The SPF laminations shall be permitted to be replaced by DF-L of grades that are equal to or greater than the corresponding SPF laminations as described in Table 1 and Table 2 of this Report. The **Mercer CLT** layups described in Table 3 through Table 6 in this Report were developed by product qualification and the engineering model described in Appendix X3 of PRG 320-2025. Panels are layered and pressed and are manufactured with a maximum finished size of 12 ft by 60 ft (3.65m by 18.28m). **Mercer CLT** panels can be used for floor, roof, and wall applications.

**CODES AND STANDARDS APPLICABLE TO PRODUCT**

- 2015, 2018, 2021 International Building Code® (IBC®): Section 2303.1.4 Structural Glued Cross-Laminated Timber
- 2015, 2018, 2021 International Residential Code® (IRC®): Sections R502.1.6, R602.1.6 and R802.1.6 Cross-Laminated Timber
- ANSI/APA PRG 320-2025, *Standard for Performance-Rated Cross-Laminated Timber*
- 2015, 2018, 2021, 2024 National Design Specification® (NDS®) for Wood Construction
- 2015, 2020 National Building Code of Canada (NBCC): Clause 1.2.1.1 of Division A and Clauses 4.1, 4.3.1.1, and 9.23 of Division B
- Canadian Standards Association (CSA) O86-24, Engineering design in wood: Section 8 Cross-laminated timber, and May 2016 Update No. 1 supplement

## PROPERTIES REVIEWED

Testing of **Mercer CLT** panels was conducted in accordance with the applicable Codes and Standards. The evaluation of the testing and analysis verified the **Mercer CLT** 3-, 5-, 7- and 9-layer panels comply with the requirements of PRG 320-2025. Specific design properties and capacities for the **Mercer CLT** panels are provided in Table 1 through Table 6 in this Report.

Fire resistance of the **Mercer CLT** panels can be calculated using Section 16.2 of the NDS for the US and Annex B of CSA O86 for Canada.

## DESIGN

**Mercer CLT** panels can be used as elements in the design of floor, roof, and wall systems, although the design of such systems is beyond the scope of this Report. **Mercer CLT** panel properties and capacities are noted in Table 3 through Table 6 in this Report.

## LIMITATIONS OF ACCEPTANCE

**Mercer CLT** panels described in this Report comply with the ANSI/APA PRG 320-2025 standard and with those codes listed in the 'Codes and Standards Applicable to Product' section of this Report, subject to the following conditions:

1. The product described in this Report is limited to dry service conditions where the average in-service equilibrium moisture content of solid wood is less than 16 percent in the United States and is 15 percent or less over a year without exceeding 19 percent in Canada.
2. Design calculations, shop drawings and installation instruction must be furnished to the building official or authority having jurisdiction, verifying that the **Mercer CLT** panels are used in compliance with this Report and the requirements of the registered design professional responsible for the reference building project utilizing **Mercer CLT**. The calculations must be prepared by a registered design professional.
3. **Mercer CLT** panels are permitted to be cut to width and length for the required applications, if approved by the manufacturer and registered design professional, but the thickness shall not be altered.
4. **Mercer CLT** panels are manufactured using layup combinations defined in Tables 3 and 4 of this Report at the Mercer CLT facility located in Spokane Valley, Washington, with quality control inspections performed by PFS TECO.

## DOCUMENTATION SUBMITTED

Submitted data was provided in accordance with PFS TECO's *Certification and Inspection Policy: Cross-Laminated Timber (v1.2)*, and the product has been evaluated for compliance with ANSI/APA PRG 320-2025.

## PRODUCT IDENTIFCATION

**Mercer CLT** panels described in this Report must be identified by a mark bearing the product name, layup, production date, plant number (917), the PFS TECO Building Product Evaluation Report number (BPER 0141) and the PFS Certification Mark (Fig. 1).

**Fig. 1**: PFS Certification Mark with Canadian and United States country identifiers

**Table 1. ASD Reference Design Values[a] for Lumber Laminations Used in Mercer CLT**

| CLT Grade | Strength Class[b] | Species | Laminations used in Major Strength Direction | | | | | | Laminations used in Minor Strength Direction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $F_{b,0}$ (psi) | E ($10^6$ psi) | $F_{t,0}$ (psi) | $F_{c,0}$ (psi) | $F_{v,0}$ (psi) | $F_{s,0}$ (psi) | $F_{b,90}$ (psi) | E ($10^6$ psi) | $F_{t,90}$ (psi) | $F_{c,90}$ (psi) | $F_{v,90}$ (psi) | $F_{s,90}$ (psi) |
| 1.4V | 875 -3[c] | SPF | 875 | 1.4 | 450 | 1,150 | 135 | 45 | 500 | 1.2 | 250 | 650 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 875 -2[c] | SPF | 875 | 1.4 | 450 | 1,150 | 135 | 45 | 875 | 1.4 | 450 | 1,150 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 750-2[d] | SYP | 750 | 1.4 | 450 | 1,250 | 175 | 55 | 750 | 1.4 | 450 | 1,250 | 175 | 55 |
| 1.2M | 1,200-3[e] | SPF | 1,200 | 1.2 | 600 | 1,400 | 135 | 45 | 500 | 1.2 | 250 | 650 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 1,200-H[e] | SPF | 1,200 | 1.2 | 600 | 1,400 | 135 | 45 | 1,200 | 1.2 | 600 | 1,400 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| 1.5M | 1,650-3[f] | SPF | 1,650 | 1.5 | 1,020 | 1,700 | 135 | 45 | 500 | 1.2 | 250 | 650 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 1,650-2[f] | SPF | 1,650 | 1.5 | 1,020 | 1,700 | 135 | 45 | 875 | 1.4 | 450 | 1,150 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 1,650-H[f] | SPF | 1,650 | 1.5 | 1,020 | 1,700 | 135 | 45 | 1,650 | 1.5 | 1,020 | 1,700 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |

**Table 1. ASD Reference Design Values[a] for Lumber Laminations Used in Mercer CLT, continued**

| CLT Grade | Strength Class | Species | Laminations used in Major Strength Direction | | | | | | Laminations used in Minor Strength Direction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $F_{b,0}$ (psi) | E ($10^6$ psi) | $F_{t,0}$ (psi) | $F_{c,0}$ (psi) | $F_{v,0}$ (psi) | $F_{s,0}$ (psi) | $F_{b,90}$ (psi) | E ($10^6$ psi) | $F_{t,90}$ (psi) | $F_{c,90}$ (psi) | $F_{v,90}$ (psi) | $F_{s,90}$ (psi) |
| 1.8M | 2,100-3[g] | SPF | 2,100 | 1.8 | 1,575 | 1,875 | 160 | 50 | 500 | 1.2 | 250 | 650 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 2,100-2[g] | SPF | 2,100 | 1.8 | 1,575 | 1,875 | 160 | 50 | 875 | 1.4 | 450 | 1,150 | 135 | 45 |
| | | DF-L | | | | | | | | | | | | |
| | 2,100-H[g] | SPF | 2,100 | 1.8 | 1,575 | 1,875 | 160 | 50 | 2,100 | 1.8 | 1,575 | 1,875 | 160 | 50 |
| | | DF-L | | | | | | | | | | | | |
| | 2,100-2[h] | SYP | 2,400 | 2.0 | 1,975 | 1,875 | 190 | 63 | 750 | 1.4 | 450 | 1,250 | 175 | 55 |
| 2.0M | 2,400-3[i] | DF-L | 2,400 | 2.0 | 1925 | 1,975 | 180 | 60 | 500 | 1.2 | 250 | 650 | 135 | 45 |
| | 2,400-2[i] | | 2,400 | 2.0 | 1925 | 1,975 | 180 | 60 | 875 | 1.4 | 450 | 1,150 | 135 | 45 |
| | 2,400-H[i] | | 2,400 | 2.0 | 1925 | 1,975 | 180 | 60 | 2,400 | 2.0 | 1925 | 1,975 | 180 | 60 |

For SI: 1 psi = 0.006895 MPa

(a) Tabulated values are allowable design values and are not permitted to be increased for the lumber size adjustment factor in accordance with the NDS. The design values shall be used in conjunction with the section properties provided by the CLT manufacturer based on the actual layup used in manufacturing the CLT panel (see Tables 3 and 5).

(b) The last digit or letter of the strength class (i.e., -2, -3, or -H) identifies the grade of the lumber used in the transverse laminations, where -2 and -3 correspond to visual grades and -H means that the lay-up is homogeneous and the transverse lumber grade is the same as the lumber grade of the longitudinal layers.

(c) 1.4V-875 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be visually and/or electronically graded materials with design values that equal or exceed the 1.4V-875 design values in Table 1.

(d) 1.4V-750 grade design values are approved for Southern Yellow Pine laminations. Laminations for the species group shall be visually and/or electronically graded materials with design values that equal or exceed the 1.4V-750 lamination design values in Table 1.

(e) 1.2M-1,200 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.2M-1,200 design values in Table 1.

(f) 1.5M-1,650 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.5M-1,650 design values in Table 1.

(g) 1.8M-2,100 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.8M-2,100 design values in Table 1.

(h) 1.8M-2,100 grade design values are approved for SYP laminations. Laminations shall be electronically graded materials with design values that equal or exceed the 1.8M-2,100 SYP design values in Table 1.

(i) 2.0M-2,400 grade design values are approved for DF-L laminations. Laminations shall be electronically graded materials with design values that equal or exceed the 2.0M-2,400 design values in Table 1.

**Table 2. LSD Reference Design Values[a] for Lumber Laminations Used in Mercer CLT**

| CLT Grade | Strength Class[b] | Species | Laminations used in Major Strength Direction | | | | | | Laminations used in Minor Strength Direction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $F_{b,0}$ (MPa) | E (MPa) | $F_{t,0}$ (MPa) | $F_{c,0}$ (MPa) | $F_{v,0}$ (MPa) | $F_{s,0}$ (MPa) | $F_{b,90}$ (MPa) | E (MPa) | $F_{t,90}$ (MPa) | $F_{c,90}$ (MPa) | $F_{v,90}$ (MPa) | $F_{s,90}$ (MPa) |
| 1.4V | 875 -3[c] | SPF | 11.8 | 9,500 | 5.5 | 11.5 | 1.5 | 0.50 | 7.0 | 9,000 | 3.2 | 9.0 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| | 875 -2[c] | SPF | 11.8 | 9,500 | 5.5 | 11.5 | 1.5 | 0.50 | 11.8 | 9,500 | 5.5 | 11.5 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| 1.2M | 1,200-3[d] | SPF | 17.4 | 8,300 | 6.7 | 15.1 | 1.50 | 0.50 | 7.0 | 9,000 | 3.2 | 9.0 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| | 1,200-H[d] | SPF | 17.4 | 8,300 | 6.7 | 15.1 | 1.50 | 0.50 | 17.4 | 8,300 | 6.7 | 15.1 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| 1.5M | 1,650-3[e] | SPF | 23.9 | 10,300 | 11.4 | 18.1 | 1.5 | 0.50 | 7.0 | 9,000 | 3.2 | 9.0 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| | 1,650-2[e] | SPF | 23.9 | 10,300 | 11.4 | 18.1 | 1.5 | 0.50 | 11.8 | 9,500 | 5.5 | 11.5 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| | 1,650-H[e] | SPF | 23.9 | 10,300 | 11.4 | 18.1 | 1.5 | 0.50 | 23.9 | 10,300 | 11.4 | 18.1 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |

**Table 2. LSD Reference Design Values[a] for Lumber Laminations Used in Mercer CLT, continued**

| CLT Grade | Strength Class | Species | Laminations used in Major Strength Direction | | | | | | Laminations used in Minor Strength Direction | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $F_{b,0}$ (MPa) | E (MPa) | $F_{t,0}$ (MPa) | $F_{c,0}$ (MPa) | $F_{v,0}$ (MPa) | $F_{s,0}$ (MPa) | $F_{b,90}$ (MPa) | E (MPa) | $F_{t,90}$ (MPa) | $F_{c,90}$ (MPa) | $F_{v,90}$ (MPa) | $F_{s,90}$ (MPa) |
| 1.8M | 2,100-3[f] | SPF | 30.4 | 12,400 | 17.7 | 19.9 | 1.5 | 0.50 | 7.0 | 9,000 | 3.2 | 9.0 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| | 2,100-2[f] | SPF | 30.4 | 12,400 | 17.7 | 19.9 | 1.5 | 0.50 | 11.8 | 9,500 | 5.5 | 11.5 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| | 2,100-H[f] | SPF | 30.4 | 12,400 | 17.7 | 19.9 | 1.5 | 0.50 | 30.4 | 12,400 | 17.7 | 19.9 | 1.5 | 0.50 |
| | | DF-L | | | | | | | | | | | | |
| 2.0M | 2,400-3[g] | DF-L | 34.7 | 13,800 | 21.6 | 21.1 | 1.9 | 0.63 | 7.0 | 9,000 | 3.2 | 9.0 | 1.5 | 0.50 |
| | 2,400-2[g] | | 34.7 | 13,800 | 21.6 | 21.1 | 1.9 | 0.63 | 11.8 | 9,500 | 5.5 | 11.5 | 1.5 | 0.50 |
| | 2,400-H[g] | | 34.7 | 13,800 | 21.6 | 21.1 | 1.9 | 0.63 | 34.7 | 13,800 | 21.6 | 21.1 | 1.9 | 0.63 |

For Imperial System: 1 MPa = 145 psi

(a) Tabulated values are limit state design values and are not permitted to be increased for the lumber size adjustment factor in accordance with the CSA O86. The design values shall be used in conjunction with the section properties provided by the CLT manufacturer based on the actual layup used in manufacturing the CLT panel (see Tables 4 and 6).

(b) The last digit or letter of the strength class (i.e., -2, -3, or -H) identifies the grade of the lumber used in the transverse laminations, where -2 and -3 correspond to visual grades and -H means that the lay-up is homogeneous and the transverse lumber grade is the same as the lumber grade of the longitudinal layers.

(c) 1.4V-875 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be visually and/or electronically graded materials with design values that equal or exceed the 1.4V-875 design values in Table 2.

(d) 1.2M-1,200 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.2M-1,200 design values in Table 2.

(e) 1.5M-1,650 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.5M-1,650 design values in Table 2.

(f) 1.8M-2,100 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.8M-2,100 design values in Table 2.

(g) 2.0M-2,400 grade design values are approved for DF-L laminations. Laminations shall be electronically graded materials with design values that equal or exceed the 2.0M-2,400 design values in Table 2.

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.4V | 875-3[d] SPF, DF-L | CLT3-082 | 3.24 | 1.08 | 1.08 | 1.08 | | | | | | | 1,250 | 46 | 0.36 | 1,170 | 95 | 1.5 | 0.41 | 390 |
| | | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 1,450 | 56 | 0.48 | 1,230 | 35 | 0.4 | 0.30 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 1,500 | 60 | 0.39 | 1,270 | 115 | 2.0 | 0.44 | 425 |
| | | CLT3-090T | 3.54 | 1.08 | 1.38 | 1.08 | | | | | | | 1,460 | 59 | 0.37 | 1,270 | 160 | 3.2 | 0.51 | 495 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 1,790 | 78 | 0.45 | 1,380 | 95 | 1.5 | 0.42 | 390 |
| | | CLT3-100 | 3.94 | 1.38 | 1.18 | 1.38 | | | | | | | 1,870 | 83 | 0.45 | 1,420 | 115 | 2.0 | 0.45 | 425 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 2,050 | 96 | 0.46 | 1,490 | 160 | 3.2 | 0.52 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 2,875 | 176 | 0.72 | 1,940 | 845 | 39 | 0.81 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 3,325 | 206 | 0.96 | 1,970 | 540 | 21 | 0.60 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 3,450 | 229 | 0.78 | 2,120 | 1,010 | 51 | 0.89 | 1,270 |
| | | CLT5-152T | 6.00 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | | | | | 3,350 | 227 | 0.74 | 2,160 | 1,200 | 66 | 1.0 | 1,380 |
| | | CLT5-160 | 6.30 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | | | 4,125 | 293 | 0.91 | 2,270 | 985 | 50 | 0.84 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 4,700 | 367 | 0.92 | 2,480 | 1,380 | 82 | 1.0 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38 x2 | 1.38 | 1.38 x2 | | | | | | | 5,850 | 456 | 0.95 | 2,480 | 160 | 3.2 | 0.62 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 5,925 | 505 | 1.4 | 2,700 | 1,220 | 84 | 0.91 | 1,720 |
| | | CLT7-222 | 8.76 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | 7,300 | 723 | 1.4 | 3,150 | 2,260 | 195 | 1.3 | 2,160 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 8,325 | 908 | 1.4 | 3,475 | 3,175 | 315 | 1.6 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38 x2 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | | | 10,725 | 1,169 | 1.4 | 3,475 | 1,380 | 82 | 1.1 | 1,490 |
| | | CLT9-285 | 11.22 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 11,350 | 1,437 | 1.8 | 4,050 | 4,000 | 486 | 1.7 | 3,050 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 12,900 | 1,810 | 1.8 | 4,475 | 5,625 | 782 | 2.1 | 3,475 |
| | | CLT9-315XL | 12.42 | 1.38 x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | 16,600 | 2,328 | 1.8 | 4,475 | 3,175 | 315 | 1.6 | 2,480 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.4V | 875-2[d] SPF, DF-L | CLT3-082 | 3.24 | 1.08 | 1.08 | 1.08 | | | | | | | 1,250 | 46 | 0.41 | 1,170 | 170 | 1.8 | 0.41 | 390 |
| | | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 1,450 | 56 | 0.55 | 1,230 | 65 | 0.4 | 0.30 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 1,500 | 60 | 0.45 | 1,270 | 205 | 2.3 | 0.45 | 425 |
| | | CLT3-090T | 3.54 | 1.08 | 1.38 | 1.08 | | | | | | | 1,460 | 59 | 0.43 | 1,270 | 280 | 3.7 | 0.52 | 495 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 1,790 | 78 | 0.52 | 1,380 | 170 | 1.8 | 0.43 | 390 |
| | | CLT3-100 | 3.94 | 1.38 | 1.18 | 1.38 | | | | | | | 1,870 | 83 | 0.52 | 1,420 | 205 | 2.3 | 0.46 | 425 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 2,050 | 96 | 0.53 | 1,490 | 280 | 3.7 | 0.53 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 2,900 | 176 | 0.82 | 1,940 | 1,480 | 46 | 0.82 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 3,350 | 207 | 1.1 | 1,970 | 945 | 25 | 0.61 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 3,450 | 230 | 0.9 | 2,120 | 1,760 | 60 | 0.90 | 1,270 |
| | | CLT5-152T | 6.00 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | | | | | 3,350 | 227 | 0.9 | 2,160 | 2,100 | 78 | 1.0 | 1,380 |
| | | CLT5-160 | 6.30 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | | | 4,125 | 294 | 1.0 | 2,270 | 1,720 | 59 | 0.9 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 4,725 | 367 | 1.1 | 2,480 | 2,410 | 96 | 1.1 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38 x2 | 1.38 | 1.38 x2 | | | | | | | 5,850 | 456 | 1.1 | 2,480 | 280 | 3.7 | 0.62 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 5,950 | 505 | 1.6 | 2,700 | 2,130 | 98 | 0.91 | 1,720 |
| | | CLT7-222 | 8.76 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | 7,325 | 724 | 1.6 | 3,150 | 3,950 | 228 | 1.3 | 2,160 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 8,350 | 910 | 1.6 | 3,475 | 5,550 | 367 | 1.6 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38 x2 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | | | 10,725 | 1,170 | 1.6 | 3,475 | 2,410 | 96 | 1.1 | 1,490 |
| | | CLT9-285 | 11.22 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 11,375 | 1,440 | 2.1 | 4,050 | 6,975 | 566 | 1.7 | 3,050 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 12,925 | 1,814 | 2.1 | 4,475 | 9,800 | 910 | 2.1 | 3,475 |
| | | CLT9-315XL | 12.42 | 1.38 x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | 16,600 | 2,330 | 2.1 | 4,475 | 5,550 | 367 | 1.7 | 2,480 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.4V | 750-2[e] SYP | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 1,760 | 96 | 0.53 | 1,820 | 240 | 3.7 | 0.53 | 605 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 2,480 | 176 | 0.82 | 2,380 | 1,270 | 46 | 0.82 | 1,430 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 2,875 | 207 | 1.1 | 2,410 | 810 | 25 | 0.61 | 1,200 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 2,950 | 230 | 0.90 | 2,600 | 1,510 | 60 | 0.90 | 1,560 |
| | | CLT5-152T | 6.00 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | | | | | 2,875 | 227 | 0.85 | 2,650 | 1,800 | 78 | 1.0 | 1,690 |
| | | CLT5-160 | 6.30 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | | | 3,525 | 294 | 1.0 | 2,775 | 1,480 | 59 | 0.85 | 1,560 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 4,050 | 367 | 1.1 | 3,025 | 2,070 | 96 | 1.1 | 1,820 |
| | | CLT5-175XL | 6.90 | 1.38 x2 | 1.38 | 1.38 x2 | | | | | | | 5,025 | 456 | 1.1 | 3,025 | 240 | 3.7 | 0.62 | 605 |
| | | CLT7-222 | 8.76 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | 6,275 | 724 | 1.6 | 3,850 | 3,375 | 227 | 1.3 | 2,650 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 7,150 | 910 | 1.6 | 4,250 | 4,750 | 367 | 1.6 | 3,025 |
| | | CLT7-245XL | 9.66 | 1.38 x2 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | | | 9,200 | 1,170 | 1.6 | 4,250 | 2,070 | 956 | 1.1 | 1,820 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 11,075 | 1,814 | 2.1 | 5,475 | 8,400 | 910 | 2.1 | 4,250 |
| | | CLT9-315XL | 12.42 | 1.38 x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | 14,250 | 2,330 | 2.1 | 5,475 | 4,750 | 367 | 1.7 | 3,025 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.2M | 1,200-3[f] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 1,990 | 48 | 0.47 | 1,230 | 35 | 0.4 | 0.26 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 2,050 | 51 | 0.39 | 1,270 | 115 | 2.0 | 0.39 | 425 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 2,450 | 66 | 0.45 | 1,380 | 95 | 1.5 | 0.37 | 390 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 2,800 | 82 | 0.45 | 1,490 | 160 | 3.2 | 0.45 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 3,950 | 151 | 0.71 | 1,940 | 845 | 39 | 0.71 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 4,575 | 177 | 0.94 | 1,970 | 540 | 21 | 0.52 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 4,725 | 197 | 0.77 | 2,120 | 1,010 | 51 | 0.77 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 6,475 | 315 | 0.9 | 2,480 | 1,380 | 82 | 0.90 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 8,025 | 391 | 0.93 | 2,480 | 160 | 3.2 | 0.53 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 8,150 | 433 | 1.4 | 2,700 | 1,220 | 84 | 0.78 | 1,720 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 11,450 | 780 | 1.4 | 3,475 | 3,175 | 315 | 1.4 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 14,700 | 1,002 | 1.4 | 3,475 | 1,380 | 82 | 0.97 | 1,490 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 17,750 | 1,555 | 1.8 | 4,475 | 5,600 | 780 | 1.8 | 3,475 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 12,675 | 858 | 1.9 | 3,450 | 2,140 | 210 | 1.1 | 2,460 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 22,775 | 1,997 | 1.8 | 4,475 | 3,175 | 315 | 1.4 | 2,480 |
| | 1,200-H[f] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 1,990 | 48 | 0.47 | 1,230 | 90 | 0.4 | 0.26 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 2,050 | 51 | 0.39 | 1,270 | 280 | 2.0 | 0.39 | 425 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 2,450 | 66 | 0.45 | 1,380 | 235 | 1.5 | 0.37 | 390 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 2,800 | 82 | 0.45 | 1,490 | 380 | 3.2 | 0.45 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 3,950 | 151 | 0.71 | 1,940 | 2,020 | 39 | 0.71 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 4,575 | 177 | 0.94 | 1,970 | 1,290 | 21 | 0.52 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 4,725 | 197 | 0.77 | 2,120 | 2,420 | 51 | 0.77 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 6,475 | 315 | 0.90 | 2,480 | 3,300 | 82 | 0.90 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 8,025 | 391 | 0.93 | 2,480 | 380 | 3.2 | 0.53 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 8,150 | 433 | 1.4 | 2,700 | 2,925 | 84 | 0.78 | 1,720 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 11,450 | 780 | 1.4 | 3,475 | 7,600 | 315 | 1.4 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 14,700 | 1,002 | 1.4 | 3,475 | 3,300 | 82 | 0.97 | 1,490 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 17,750 | 1,555 | 1.8 | 4,475 | 13,450 | 780 | 1.8 | 3,475 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 12,675 | 858 | 1.9 | 3,450 | 5,125 | 210 | 1.1 | 2,460 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 22,775 | 1,997 | 1.8 | 4,475 | 7,600 | 315 | 1.4 | 2,480 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.5M | 1,650-3[g] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 2,725 | 60 | 0.48 | 1,230 | 35 | 0.4 | 0.32 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 2,825 | 64 | 0.39 | 1,270 | 115 | 2.0 | 0.47 | 425 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 3,375 | 83 | 0.46 | 1,380 | 95 | 1.5 | 0.45 | 390 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 3,850 | 103 | 0.46 | 1,490 | 160 | 3.2 | 0.55 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 5,425 | 188 | 0.72 | 1,940 | 845 | 39 | 0.86 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 6,300 | 221 | 0.97 | 1,970 | 540 | 21 | 0.65 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 6,500 | 246 | 0.79 | 2,120 | 1,010 | 51 | 0.94 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 8,875 | 393 | 0.90 | 2,480 | 1,380 | 82 | 1.1 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 11,050 | 489 | 0.96 | 2,480 | 160 | 3.2 | 0.66 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 11,175 | 540 | 1.5 | 2,700 | 1,230 | 84 | 0.97 | 1,720 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 15,675 | 972 | 1.4 | 3,475 | 3,175 | 316 | 1.7 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 20,200 | 1,252 | 1.4 | 3,475 | 1,380 | 82 | 1.2 | 1,490 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 17,400 | 1,070 | 1.9 | 3,450 | 2,150 | 212 | 1.3 | 2,460 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 24,300 | 1,938 | 1.8 | 4,475 | 5,625 | 783 | 2.2 | 3,475 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 31,300 | 2,494 | 1.8 | 4,475 | 3,175 | 316 | 1.7 | 2,480 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.5M | 1,650-2[g] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 2,725 | 60 | 0.55 | 1,230 | 65 | 0.4 | 0.33 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 2,825 | 64 | 0.45 | 1,270 | 205 | 2.3 | 0.48 | 425 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 3,375 | 83 | 0.53 | 1,380 | 170 | 1.8 | 0.46 | 390 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 3,875 | 103 | 0.53 | 1,490 | 280 | 3.7 | 0.56 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 5,450 | 189 | 0.83 | 1,940 | 1,480 | 46 | 0.88 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 6,300 | 221 | 1.1 | 1,970 | 945 | 25 | 0.65 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 6,500 | 246 | 0.91 | 2,120 | 1,760 | 60 | 0.96 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 8,875 | 393 | 1.1 | 2,480 | 2,410 | 96 | 1.1 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 11,050 | 489 | 1.1 | 2,480 | 280 | 3.7 | 0.66 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 11,200 | 541 | 1.7 | 2,700 | 2,140 | 98 | 0.98 | 1,720 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 15,725 | 974 | 1.6 | 3,475 | 5,550 | 368 | 1.7 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 20,200 | 1,253 | 1.6 | 3,475 | 2,410 | 96 | 1.2 | 1,490 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 17,425 | 1,072 | 2.2 | 3,450 | 3,750 | 246 | 1.3 | 2,460 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 24,375 | 1,942 | 2.1 | 4,475 | 9,825 | 911 | 2.2 | 3,475 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 x2 | | | 31,325 | 2,496 | 2.1 | 4,475 | 5,550 | 368 | 1.8 | 2,480 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.5M | 1,650-H[g] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 2,725 | 60 | 0.59 | 1,230 | 125 | 0.5 | 0.33 | 240 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 2,825 | 64 | 0.48 | 1,270 | 385 | 2.5 | 0.48 | 425 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 3,375 | 83 | 0.56 | 1,380 | 320 | 1.9 | 0.46 | 390 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 3,875 | 103 | 0.56 | 1,490 | 525 | 3.9 | 0.56 | 495 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 5,450 | 189 | 0.88 | 1,940 | 2,775 | 49 | 0.88 | 1,170 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 6,300 | 221 | 1.2 | 1,970 | 1,780 | 26 | 0.65 | 980 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 6,500 | 246 | 0.97 | 2,120 | 3,325 | 64 | 0.97 | 1,270 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 8,900 | 394 | 1.1 | 2,480 | 4,550 | 103 | 1.1 | 1,490 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 11,050 | 489 | 1.2 | 2,480 | 525 | 3.9 | 0.67 | 495 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 11,200 | 541 | 1.8 | 2,700 | 4,025 | 105 | 0.98 | 1,720 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 15,725 | 975 | 1.7 | 3,475 | 10,450 | 394 | 1.7 | 2,480 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 20,225 | 1,253 | 1.7 | 3,475 | 4,550 | 103 | 1.2 | 1,490 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 17,450 | 1,072 | 2.3 | 3,450 | 7,050 | 263 | 1.3 | 2,460 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 24,400 | 1,944 | 2.3 | 4,475 | 18,500 | 975 | 2.3 | 3,475 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 31,325 | 2,497 | 2.2 | 4,475 | 10,450 | 394 | 1.8 | 2,480 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.8M | 2,100-3[h] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 3,475 | 72 | 0.50 | 1,230 | 35 | 0.4 | 0.38 | 285 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 3,600 | 77 | 0.40 | 1,270 | 115 | 2.0 | 0.55 | 505 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 4,300 | 100 | 0.46 | 1,380 | 95 | 1.5 | 0.53 | 430 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 4,925 | 123 | 0.47 | 1,490 | 160 | 3.2 | 0.65 | 550 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 6,900 | 226 | 0.73 | 1,940 | 845 | 39 | 1.0 | 1,380 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 8,000 | 265 | 0.99 | 1,970 | 540 | 21 | 0.77 | 1090 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 8,250 | 294 | 0.80 | 2,120 | 1,010 | 51 | 1.1 | 1,510 |
| | | CLT5-160 | 6.30 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | | | 9,875 | 377 | 0.93 | 2,270 | 985 | 50 | 1.1 | 1,420 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 11,275 | 471 | 0.93 | 2,480 | 1,380 | 82 | 1.3 | 1,660 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 14,050 | 587 | 0.99 | 2,480 | 160 | 3.2 | 0.78 | 590 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 14,225 | 648 | 1.5 | 2,700 | 1,230 | 85 | 1.2 | 2,040 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 19,925 | 1,165 | 1.4 | 3,475 | 3,175 | 316 | 1.9 | 2,950 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 25,700 | 1,502 | 1.4 | 3,475 | 1,380 | 82 | 1.4 | 1,770 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 22,125 | 1,283 | 2.0 | 3,450 | 2,170 | 213 | 1.5 | 2,900 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 30,875 | 2,320 | 1.9 | 4,475 | 5,650 | 785 | 2.6 | 4,125 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 39,800 | 2,991 | 1.9 | 4,475 | 3,175 | 316 | 2.1 | 2,950 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.8M | 2,100-2[h] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 3,475 | 72 | 0.57 | 1,230 | 65 | 0.4 | 0.39 | 285 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 3,600 | 77 | 0.46 | 1,270 | 205 | 2.3 | 0.56 | 505 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 4,300 | 100 | 0.54 | 1,380 | 170 | 1.8 | 0.54 | 460 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 4,925 | 123 | 0.54 | 1,490 | 280 | 3.7 | 0.66 | 590 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 6,925 | 226 | 0.84 | 1,940 | 1,480 | 46 | 1.0 | 1,380 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 8,000 | 266 | 1.1 | 1,970 | 945 | 25 | 0.77 | 1,160 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 8,250 | 295 | 0.92 | 2,120 | 1,760 | 60 | 1.1 | 1,510 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 11,300 | 472 | 1.1 | 2,480 | 2,410 | 96 | 1.3 | 1,770 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 14,050 | 587 | 1.1 | 2,480 | 280 | 3.7 | 0.79 | 590 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 14,225 | 648 | 1.7 | 2,700 | 2,150 | 98 | 1.2 | 2,040 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 19,950 | 1,166 | 1.6 | 3,475 | 5,550 | 368 | 2.0 | 2,950 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 25,700 | 1,503 | 1.6 | 3,475 | 2,410 | 96 | 1.4 | 1,770 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 22,150 | 1,284 | 2.3 | 3,450 | 3,775 | 247 | 1.6 | 2,900 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 30,925 | 2,324 | 2.2 | 4,475 | 9,850 | 913 | 2.6 | 4,125 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 39,825 | 2,992 | 2.1 | 4,475 | 5,550 | 368 | 2.1 | 2,950 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 1.8M | 2,100-H[h] SPF, DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 3,475 | 72 | 0.70 | 1,460 | 155 | 0.5 | 0.39 | 285 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 3,600 | 77 | 0.58 | 1,510 | 485 | 3.0 | 0.58 | 505 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 4,300 | 100 | 0.67 | 1,640 | 410 | 2.3 | 0.55 | 460 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 4,925 | 123 | 0.68 | 1,770 | 665 | 4.7 | 0.68 | 590 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 6,925 | 226 | 1.1 | 2,300 | 3,550 | 59 | 1.1 | 1,380 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 8,025 | 266 | 1.4 | 2,340 | 2,260 | 32 | 0.78 | 1,160 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 8,275 | 295 | 1.2 | 2,525 | 4,225 | 77 | 1.2 | 1,510 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 11,325 | 472 | 1.4 | 2,950 | 5,775 | 123 | 1.4 | 1,770 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 14,050 | 587 | 1.4 | 2,950 | 665 | 4.7 | 0.80 | 590 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 14,250 | 649 | 2.1 | 3,225 | 5,125 | 126 | 1.2 | 2,040 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 20,025 | 1,170 | 2.0 | 4,125 | 13,325 | 472 | 2.0 | 2,950 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 25,725 | 1,504 | 2.0 | 4,125 | 5,775 | 123 | 1.5 | 1,770 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 22,200 | 1,287 | 2.8 | 4,075 | 8,975 | 315 | 1.6 | 2,900 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 31,050 | 2,333 | 2.7 | 5,300 | 23,550 | 1,170 | 2.7 | 4,125 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 39,875 | 2,996 | 2.7 | 5,300 | 13,325 | 472 | 2.1 | 2,950 |
| | 2,100-2[i] SYP | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 4,925 | 123 | 0.54 | 1,820 | 240 | 3.7 | 0.66 | 695 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 6,925 | 226 | 0.84 | 2,380 | 1270 | 46 | 1.0 | 1,630 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 8,250 | 295 | 0.92 | 2,600 | 1510 | 60 | 1.1 | 1,780 |
| | | CLT5-152T | 6.00 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | | | | | 8,025 | 292 | 0.87 | 2,650 | 1800 | 78 | 1.3 | 1,940 |
| | | CLT5-160 | 6.30 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | | | 9,900 | 377 | 1.1 | 2,775 | 1480 | 59 | 1.1 | 1,780 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 11,300 | 472 | 1.1 | 3,025 | 2070 | 96 | 1.3 | 2,090 |
| | | CLT7-222 | 8.76 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | 1.08 | 1.38 | | | 17,525 | 928 | 1.6 | 3,850 | 3,400 | 228 | 1.6 | 3,025 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 19,950 | 1,166 | 1.6 | 4,250 | 4,775 | 368 | 2.0 | 3.475 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 2.0M | 2,400-3[j] DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 3,975 | 80 | 0.58 | 1,650 | 40 | 0.4 | 0.43 | 320 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 4,100 | 86 | 0.46 | 1,700 | 120 | 2.3 | 0.62 | 565 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 4,900 | 111 | 0.54 | 1,840 | 100 | 1.8 | 0.59 | 520 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 5,625 | 137 | 0.54 | 1,990 | 165 | 3.7 | 0.72 | 660 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 7,900 | 251 | 0.85 | 2,600 | 885 | 46 | 1.1 | 1,560 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 9,150 | 295 | 1.2 | 2,625 | 565 | 25 | 0.85 | 1,310 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 9,425 | 327 | 0.93 | 2,825 | 1,060 | 60 | 1.2 | 1,700 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 12,900 | 524 | 1.1 | 3,300 | 1,450 | 96 | 1.4 | 1,990 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 16,050 | 652 | 1.0 | 2,480 | 160 | 3.2 | 0.86 | 660 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 16,250 | 720 | 1.7 | 3,625 | 1,290 | 99 | 1.3 | 2,290 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 22,775 | 1,295 | 1.6 | 4,625 | 3,350 | 369 | 2.2 | 3,300 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 29,375 | 1,669 | 1.6 | 4,625 | 1,450 | 96 | 1.6 | 1,990 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 25,300 | 1,426 | 2.3 | 4,600 | 2,270 | 248 | 1.7 | 3,275 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 35,300 | 2,579 | 2.2 | 5,950 | 5,925 | 915 | 2.9 | 4,625 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 45,500 | 3,324 | 2.2 | 5,950 | 3,350 | 369 | 2.3 | 3,300 |
| 2.0M | 2,400-2[j] DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 3,975 | 80 | 0.65 | 1,650 | 65 | 0.5 | 0.43 | 320 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 4,100 | 86 | 0.52 | 1,700 | 210 | 2.6 | 0.63 | 565 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 4,900 | 111 | 0.61 | 1,840 | 175 | 2.0 | 0.60 | 520 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 5,625 | 137 | 0.61 | 1,990 | 285 | 4.2 | 0.74 | 660 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 7,900 | 251 | 0.96 | 2,600 | 1,520 | 53 | 1.2 | 1,560 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 9,150 | 295 | 1.3 | 2,625 | 970 | 28 | 0.86 | 1,310 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 9,450 | 328 | 1.1 | 2,825 | 1,810 | 68 | 1.3 | 1,700 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 12,900 | 524 | 1.2 | 3,300 | 2,480 | 110 | 1.5 | 1,990 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 16,050 | 652 | 1.1 | 2,480 | 280 | 3.7 | 0.87 | 660 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 16,275 | 721 | 1.9 | 3,625 | 2,210 | 112 | 1.3 | 2,290 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 22,825 | 1,296 | 1.8 | 4,625 | 5,725 | 421 | 2.2 | 3,300 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 29,375 | 1,670 | 1.9 | 4,625 | 2,480 | 110 | 1.6 | 1,990 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 25,325 | 1,427 | 2.6 | 4,600 | 3,875 | 282 | 1.7 | 3,275 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 35,350 | 2,583 | 2.5 | 5,950 | 10,125 | 1,043 | 2.9 | 4,625 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 45,525 | 3,325 | 2.4 | 5,950 | 5,725 | 421 | 2.3 | 3,300 |

**Table 3. ASD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (in.) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ (lbf-ft/ft) | $EI_{eff,0}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,0}$ ($10^6$ lbf/ft) | $V_{s,0}$ (lbf/ft) | $F_bS_{eff,90}$ (lbf-ft/ft) | $EI_{eff,90}$ ($10^6$ lbf-in.$^2$/ft) | $GA_{eff,90}$ ($10^6$ lbf/ft) | $V_{s,90}$ (lbf/ft) |
| 2.0M | 2,400-H[j] DF-L | CLT3-087 | 3.43 | 1.38 | 0.67 | 1.38 | | | | | | | 3,975 | 80 | 0.78 | 1,650 | 180 | 0.6 | 0.44 | 320 |
| | | CLT3-090 | 3.54 | 1.18 | 1.18 | 1.18 | | | | | | | 4,100 | 86 | 0.64 | 1,700 | 555 | 3.3 | 0.64 | 565 |
| | | CLT3-097 | 3.84 | 1.38 | 1.08 | 1.38 | | | | | | | 4,900 | 111 | 0.75 | 1,840 | 465 | 2.5 | 0.61 | 520 |
| | | CLT3-105 | 4.14 | 1.38 | 1.38 | 1.38 | | | | | | | 5,625 | 137 | 0.75 | 1,990 | 760 | 5.3 | 0.75 | 660 |
| | | CLT5-137 | 5.40 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | | | | | 7,925 | 252 | 1.2 | 2,600 | 4,050 | 66 | 1.2 | 1,560 |
| | | CLT5-139 | 5.47 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | | | 9,150 | 295 | 1.6 | 2,625 | 2,575 | 35 | 0.87 | 1,310 |
| | | CLT5-150 | 5.90 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | | | | | 9,450 | 328 | 1.3 | 2,825 | 4,825 | 86 | 1.3 | 1,700 |
| | | CLT5-175 | 6.90 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | | | 12,925 | 525 | 1.5 | 3,300 | 6,600 | 137 | 1.5 | 1,990 |
| | | CLT5-175XL | 6.90 | 1.38x2 | 1.38 | 1.38x2 | | | | | | | 16,050 | 652 | 1.6 | 3,300 | 760 | 5.3 | 0.89 | 660 |
| | | CLT7-191 | 7.52 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | | | 16,300 | 722 | 2.3 | 3,625 | 5,850 | 140 | 1.3 | 2,290 |
| | | CLT7-245 | 9.66 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | | | 22,875 | 1,300 | 2.3 | 4,625 | 15,225 | 525 | 2.3 | 3,300 |
| | | CLT7-245XL | 9.66 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | | | 29,400 | 1,671 | 2.3 | 4,625 | 6,600 | 137 | 1.6 | 1,990 |
| | | CLT9-243 | 9.57 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 0.67 | 1.38 | 25,375 | 1,429 | 3.1 | 4,600 | 10,275 | 350 | 1.7 | 3,275 |
| | | CLT9-315 | 12.42 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 35,475 | 2,592 | 3.0 | 5,950 | 26,900 | 1,300 | 3.0 | 4,625 |
| | | CLT9-315XL | 12.42 | 1.38x2 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38 | 1.38x2 | | | 45,550 | 3,329 | 3.0 | 5,950 | 15,225 | 525 | 2.4 | 3,300 |

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

(a) Tabulated values are allowable design values and not permitted to be increased for the flat use or size adjustment factor in accordance with the NDS.

(b) Tabulated values are based on the shear-analogy model as defined in PRG 320-2025 Appendix X3.

(c) The last digit or letter of the strength class (i.e., -2, -3, or -H) identifies the grade of the lumber used in the transverse laminations, where -2 and -3 correspond to visual grades and -H means that the lay-up is homogeneous and the transverse lumber grade is the same as the lumber grade of the longitudinal layers.

(d) 1.4V-875 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be visually and/or electronically graded materials with design values that equal or exceed the 1.4V-875 design values in Table 1.

(e) 1.4V-750 grade design values are approved for Southern Yellow Pine laminations. Laminations for the species group shall be visually and/or electronically graded materials with design values that equal or exceed the 1.4V-750 lamination design values in Table 1.

(f) 1.2M-1,200 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.2M-1,200 design values in Table 1.

(g) 1.5M-1,650 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.5M-1,650 design values in Table 1.

(h) 1.8M-2,100 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.8M-2,100 design values in Table 1.

(i) 1.8M-2,100 grade design values are approved for SYP laminations. Laminations shall be electronically graded materials with design values that equal or exceed the 1.8M-2,100 SYP design values in Table 1.

(j) 2.0M-2,400 grade design values are approved for DF-L laminations. Laminations shall be electronically graded materials with design values that equal or exceed the 2.0M-2,400 design values in Table 1.

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.4V | 875-3[d] SPF, DF-L | CLT3-082 | 82.5 | 27.5 | 27.5 | 27.5 | | | | | | | 11 | 429 | 5.7 | 28 | 0.88 | 16 | 5.9 | 9.2 |
| | | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 13 | 518 | 7.5 | 29 | 0.34 | 3.7 | 4.4 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 13 | 556 | 6.2 | 30 | 1.1 | 20 | 6.4 | 10 |
| | | CLT3-090T | 90.0 | 27.5 | 35.0 | 27.5 | | | | | | | 13 | 544 | 5.8 | 30 | 1.4 | 32 | 7.4 | 12 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 16 | 718 | 7.1 | 33 | 0.88 | 16 | 6.1 | 9.2 |
| | | CLT3-100 | 100.0 | 35.0 | 30.0 | 35.0 | | | | | | | 16 | 771 | 7.1 | 33 | 1.1 | 20 | 6.6 | 10 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 18 | 884 | 7.2 | 35 | 1.4 | 32 | 7.5 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 25 | 1,643 | 11 | 46 | 7.7 | 406 | 12 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 29 | 1,907 | 15 | 46 | 4.9 | 215 | 8.7 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 30 | 2,134 | 12 | 50 | 9.1 | 527 | 13 | 30 |
| | | CLT5-152T | 152.5 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | | | | | 29 | 2,113 | 12 | 51 | 11 | 680 | 15 | 33 |
| | | CLT5-160 | 160.0 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | | | | | 36 | 2,717 | 14 | 53 | 8.9 | 516 | 12 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 41 | 3,388 | 14 | 58 | 12 | 837 | 15 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 51 | 4,210 | 15 | 58 | 1.4 | 32.2 | 8.9 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 52 | 4,659 | 22 | 64 | 11 | 856 | 13 | 40 |
| | | CLT7-222 | 222.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | | | 64 | 6,696 | 21 | 74 | 20 | 2,004 | 18 | 51 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 72 | 8,388 | 22 | 82 | 29 | 3,213 | 23 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 93 | 10,788 | 22 | 82 | 12 | 837 | 16 | 35 |
| | | CLT9-285 | 285.0 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 99 | 13,321 | 29 | 95 | 36 | 4,986 | 24 | 72 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 112 | 16,724 | 29 | 105 | 51 | 7,958 | 30 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | 144 | 21,490 | 29 | 105 | 29 | 3,213 | 24 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.4V | 875-2[d] SPF, DF-L | CLT3-082 | 82.5 | 27.5 | 27.5 | 27.5 | | | | | | | 11 | 429 | 5.9 | 28 | 1.5 | 16.5 | 5.9 | 9 |
| | | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 13 | 518 | 7.8 | 29 | 0.57 | 4 | 4.4 | 6 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 13 | 556 | 6.5 | 30 | 1.8 | 21 | 6.5 | 10 |
| | | CLT3-090T | 90.0 | 27.5 | 35.0 | 27.5 | | | | | | | 13 | 544 | 6.1 | 30 | 2.4 | 34 | 7.5 | 12 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 16 | 718 | 7.5 | 33 | 1.5 | 16 | 6.1 | 9 |
| | | CLT3-100 | 100.0 | 35.0 | 30.0 | 35.0 | | | | | | | 16 | 771 | 7.5 | 33 | 1.8 | 21 | 6.6 | 10 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 18 | 884 | 7.6 | 35 | 2.4 | 34 | 7.6 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 25 | 1,644 | 12 | 46 | 13 | 429 | 12 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 29 | 1,908 | 16 | 46 | 8 | 227 | 8.8 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 30 | 2,135 | 13 | 50 | 15 | 556 | 13 | 30 |
| | | CLT5-152T | 152.5 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | | | | | 29 | 2,114 | 12 | 51 | 18 | 718 | 15 | 33 |
| | | CLT5-160 | 160.0 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | | | | | 36 | 2,718 | 15 | 53 | 15 | 544 | 12 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 41 | 3,390 | 15 | 58 | 21 | 884 | 15 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 51 | 4,210 | 16 | 58 | 2.4 | 34 | 8.9 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 52 | 4,661 | 24 | 64 | 19 | 902 | 13 | 40 |
| | | CLT7-222 | 222.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | | | 64 | 6,700 | 22 | 74 | 34 | 2,114 | 18 | 51 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 72 | 8,394 | 23 | 82 | 48 | 3,390 | 23 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 93 | 10,789 | 23 | 82 | 21 | 884 | 16 | 35 |
| | | CLT9-285 | 285.0 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | 99 | 13,330 | 30 | 95 | 61 | 5,258 | 25 | 72 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 112 | 16,738 | 30 | 105 | 85 | 8,394 | 30 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 144 | 21,496 | 30 | 105 | 48 | 3,390 | 24 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.2M | 1,200-3[e] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 19 | 452 | 7.3 | 29 | 0.34 | 3.7 | 3.8 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 19 | 486 | 6.1 | 30 | 1.1 | 20 | 5.7 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 23 | 627 | 7.0 | 33 | 0.9 | 16 | 5.4 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 26 | 772 | 7.1 | 35 | 1.4 | 32 | 6.6 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 37 | 1,438 | 11 | 46 | 8 | 406 | 10 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 43 | 1,667 | 15 | 46 | 5 | 215 | 7.7 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 44 | 1,866 | 12 | 50 | 9 | 527 | 11 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 60 | 2,964 | 14 | 58 | 12 | 837 | 13 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 75 | 3,678 | 15 | 58 | 1.4 | 32 | 7.8 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 76 | 4,074 | 22 | 64 | 11 | 854 | 12 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 107 | 7,342 | 21 | 82 | 29 | 3,209 | 20 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 137 | 9,429 | 21 | 82 | 12 | 837 | 14 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 118 | 8,073 | 29 | 81 | 19 | 2,139 | 15 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 166 | 14,644 | 28 | 105 | 50 | 7,944 | 27 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 213 | 18,789 | 28 | 105 | 29 | 3,209 | 21 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.2M | 1,200-H[e] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 19 | 452 | 6.8 | 29 | 0.84 | 3.4 | 3.8 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 19 | 486 | 5.7 | 30 | 2.6 | 19 | 5.7 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 23 | 627 | 6.5 | 33 | 2.2 | 14 | 5.4 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 26 | 772 | 6.6 | 35 | 3.6 | 30 | 6.6 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 37 | 1,437 | 10 | 46 | 19 | 375 | 10 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 43 | 1,667 | 14 | 46 | 12 | 199 | 7.6 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 44 | 1,865 | 11 | 50 | 23 | 486 | 11 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 60 | 2,962 | 13 | 58 | 31 | 772 | 13 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 75 | 3,678 | 14 | 58 | 3.6 | 30 | 7.8 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 76 | 4,072 | 21 | 64 | 27 | 788 | 11 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 107 | 7,334 | 20 | 82 | 71 | 2,962 | 20 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 137 | 9,426 | 20 | 82 | 31 | 772 | 14 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 118 | 8,067 | 27 | 81 | 48 | 1,977 | 15 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 165 | 14,624 | 26 | 105 | 126 | 7,334 | 26 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 212 | 18,781 | 26 | 105 | 71 | 2,962 | 21 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.5M | 1,650-3[f] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 25 | 561 | 7.6 | 29 | 0.34 | 3.7 | 4.7 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 26 | 603 | 6.2 | 30 | 1.1 | 20 | 6.9 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 31 | 778 | 7.2 | 33 | 0.9 | 16 | 6.6 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 36 | 958 | 7.2 | 35 | 1.4 | 32 | 8.1 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 51 | 1,781 | 11 | 46 | 8 | 406 | 13 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 59 | 2,067 | 15 | 46 | 5 | 215 | 9.4 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 61 | 2,312 | 12 | 50 | 9 | 527 | 14 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 83 | 3,671 | 15 | 58 | 12 | 837 | 16 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 103 | 4,564 | 15 | 58 | 1.4 | 32 | 9.6 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 104 | 5,049 | 23 | 64 | 11 | 857 | 14 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 146 | 9,086 | 22 | 82 | 29 | 3,215 | 24 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 188 | 11,694 | 22 | 82 | 12 | 837 | 17 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 162 | 10,001 | 30 | 81 | 19 | 2,152 | 19 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 227 | 18,110 | 29 | 105 | 51 | 7,968 | 32 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 292 | 23,291 | 29 | 105 | 29 | 3,215 | 25 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.5M | 1,650-2[f] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 25 | 561 | 7.9 | 29 | 0.57 | 3.9 | 4.7 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 26 | 603 | 6.5 | 30 | 1.8 | 21 | 7.0 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 31 | 778 | 7.5 | 33 | 1.5 | 16 | 6.6 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 36 | 958 | 7.6 | 35 | 2.4 | 33 | 8.1 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 51 | 1,781 | 12 | 46 | 13 | 429 | 13 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 59 | 2,068 | 16 | 46 | 8 | 227 | 9.5 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 61 | 2,313 | 13 | 50 | 15 | 557 | 14 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 83 | 3,673 | 15 | 58 | 21 | 884 | 16 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 103 | 4,564 | 16 | 58 | 2.4 | 34 | 9.6 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 104 | 5,051 | 24 | 64 | 19 | 904 | 14 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 146 | 9,091 | 23 | 82 | 48 | 3,392 | 24 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 188 | 11,695 | 23 | 82 | 21 | 884 | 18 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 162 | 10,005 | 32 | 81 | 33 | 2,268 | 19 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 227 | 18,125 | 30 | 105 | 85 | 8,403 | 33 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 292 | 23,297 | 30 | 105 | 48 | 3,392 | 26 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.5M | 1,650-H[f] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 25 | 561 | 8.5 | 29 | 1.2 | 4.2 | 4.7 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 26 | 603 | 7.0 | 30 | 3.6 | 23 | 7.0 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 31 | 778 | 8.1 | 33 | 3.0 | 18 | 6.7 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 36 | 958 | 8.2 | 35 | 4.9 | 37 | 8.2 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 51 | 1,783 | 13 | 46 | 26 | 465 | 13 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 59 | 2,068 | 17 | 46 | 17 | 246 | 9.5 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 61 | 2,314 | 14 | 50 | 31 | 603 | 14 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 83 | 3,675 | 16 | 58 | 42 | 958 | 16 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 103 | 4,565 | 17 | 58 | 4.9 | 37 | 9.7 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 104 | 5,053 | 25 | 64 | 38 | 978 | 14 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 147 | 9,101 | 25 | 82 | 97 | 3,675 | 25 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 188 | 11,698 | 24 | 82 | 42 | 958 | 18 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 163 | 10,011 | 34 | 81 | 66 | 2,453 | 19 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 227 | 18,148 | 33 | 105 | 172 | 9,101 | 33 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 292 | 23,306 | 32 | 105 | 97 | 3,675 | 26 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.8M | 2,100-3[g] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 32 | 675 | 7.8 | 29 | 0.34 | 3.7 | 5.6 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 34 | 726 | 6.3 | 30 | 1.1 | 20 | 8.2 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 40 | 937 | 7.3 | 33 | 0.88 | 16 | 7.8 | 9.2 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 46 | 1,153 | 7.3 | 35 | 1.4 | 32 | 10 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 65 | 2,141 | 12 | 46 | 8 | 406 | 15 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 75 | 2487 | 16 | 46 | 5 | 216 | 11 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 77 | 2,780 | 13 | 50 | 9 | 527 | 16 | 30 |
| | | CLT5-160 | 160.0 | 35.0 | 27.5 | 35.0 | 27.5 | 35.0 | | | | | 92 | 3,541 | 15 | 53 | 8.9 | 516 | 16 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 105 | 4,414 | 15 | 58 | 12 | 838 | 19 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 131 | 5,495 | 16 | 58 | 1.4 | 32 | 11 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 133 | 6,073 | 23 | 64 | 11 | 861 | 17 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 186 | 10,916 | 22 | 82 | 29 | 3,222 | 29 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 239 | 14,072 | 22 | 82 | 12 | 838 | 21 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 206 | 12,026 | 31 | 81 | 19 | 2,166 | 22 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 288 | 21,749 | 29 | 105 | 51 | 7,992 | 38 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 371 | 28,018 | 29 | 105 | 29 | 3,222 | 30 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.8M | 2,100-2[g] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 32 | 676 | 8.2 | 29 | 0.57 | 3.9 | 5.6 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 34 | 726 | 6.6 | 30 | 1.8 | 21 | 8.2 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 40 | 937 | 7.7 | 33 | 1.5 | 16 | 7.8 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 46 | 1,153 | 7.7 | 35 | 2.4 | 34 | 9.6 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 65 | 2,142 | 12 | 46 | 13 | 429 | 15 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 75 | 2,488 | 16 | 46 | 8 | 228 | 11 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 77 | 2,781 | 13 | 50 | 15 | 557 | 16 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 105 | 4,416 | 15 | 58 | 21 | 884 | 19 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 131 | 5,495 | 16 | 58 | 2.4 | 34 | 12 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 133 | 6,074 | 24 | 64 | 19 | 908 | 17 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 186 | 10,922 | 23 | 82 | 48 | 3,399 | 29 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 239 | 14,074 | 23 | 82 | 21 | 884 | 21 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 206 | 12,030 | 33 | 81 | 33 | 2,282 | 23 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 288 | 21,764 | 31 | 105 | 85 | 8,428 | 38 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 371 | 28,024 | 31 | 105 | 48 | 3,399 | 30 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 1.8M | 2,100-H[g] SPF, DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 32 | 676 | 10 | 29 | 1.5 | 5.1 | 5.7 | 5.7 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 34 | 726 | 8.5 | 30 | 4.6 | 28 | 8.5 | 10 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 40 | 937 | 9.8 | 33 | 3.8 | 21 | 8.0 | 9 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 46 | 1,153 | 9.9 | 35 | 6.2 | 44 | 9.9 | 12 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 65 | 2,146 | 16 | 46 | 33 | 560 | 16 | 28 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 75 | 2,490 | 20 | 46 | 21 | 297 | 11 | 23 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 77 | 2,786 | 17 | 50 | 40 | 726 | 17 | 30 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 105 | 4,425 | 20 | 58 | 54 | 1,153 | 20 | 35 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 131 | 5,495 | 20 | 58 | 6.2 | 44 | 12 | 12 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 133 | 6,083 | 31 | 64 | 48 | 1,178 | 17 | 40 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 186 | 10,956 | 30 | 82 | 124 | 4,425 | 30 | 58 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 240 | 14,083 | 29 | 82 | 54 | 1,153 | 21 | 35 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 207 | 12,053 | 41 | 81 | 84 | 2,953 | 23 | 58 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 289 | 21,848 | 39 | 105 | 219 | 10,956 | 39 | 82 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 371 | 28,058 | 39 | 105 | 124 | 4,425 | 31 | 58 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 2.0M | 2,400-3[h] DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 37 | 752 | 8.7 | 37 | 0.22 | 4.1 | 6.2 | 7.2 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 38 | 808 | 7.0 | 38 | 0.7 | 23 | 9.1 | 13 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 46 | 1,043 | 8.1 | 41 | 0.6 | 17 | 8.7 | 12 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 52 | 1,283 | 8.2 | 44 | 0.94 | 36 | 11 | 15 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 74 | 2,383 | 13 | 58 | 5 | 451 | 17 | 35 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 85 | 2,768 | 17 | 58 | 3 | 240 | 12 | 29 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 88 | 3,093 | 14 | 63 | 6 | 586 | 18 | 38 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 120 | 4,912 | 16 | 74 | 8 | 931 | 21 | 44 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 149 | 6,115 | 16 | 58 | 1.4 | 32 | 13 | 15 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 151 | 6,758 | 26 | 80 | 7 | 957 | 19 | 51 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 212 | 12,149 | 24 | 103 | 19 | 3,580 | 32 | 74 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 273 | 15,661 | 25 | 103 | 8 | 931 | 23 | 44 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 235 | 13,384 | 35 | 102 | 13 | 2,407 | 25 | 73 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 328 | 24,204 | 33 | 132 | 33 | 8,881 | 42 | 103 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 423 | 31,181 | 33 | 132 | 19 | 3,580 | 34 | 74 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 2.0M | 2,400-2[h] DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 37 | 752 | 9.4 | 37 | 0.48 | 4.5 | 6.3 | 7.2 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 38 | 808 | 7.6 | 38 | 1.5 | 25 | 9.2 | 13 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 46 | 1,043 | 8.9 | 41 | 1.3 | 19 | 8.8 | 12 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 52 | 1,283 | 8.9 | 44 | 2.0 | 39 | 11 | 15 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 74 | 2,384 | 14 | 58 | 11 | 497 | 17 | 35 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 85 | 2,769 | 19 | 58 | 7 | 263 | 13 | 29 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 88 | 3,095 | 15 | 63 | 13 | 645 | 18 | 38 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 120 | 4,915 | 18 | 74 | 18 | 1,023 | 22 | 44 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 149 | 6,115 | 16 | 58 | 2.4 | 34 | 13 | 15 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 151 | 6,762 | 28 | 80 | 16 | 1,050 | 19 | 51 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 212 | 12,160 | 27 | 103 | 41 | 3,934 | 32 | 74 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 273 | 15,664 | 27 | 103 | 18 | 1,024 | 23 | 44 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 236 | 13,392 | 38 | 102 | 28 | 2,638 | 25 | 73 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 329 | 24,233 | 36 | 132 | 72 | 9,752 | 43 | 103 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 423 | 31,193 | 36 | 132 | 41 | 3,934 | 34 | 74 |

**Table 4. LSD Reference Flatwise Design Values [a][b] for Mercer CLT (continued)**

| CLT Grade | Strength Class[c] & Species | CLT Layup Designation | Thickness, $t_p$ (mm) | Lamination Thickness in CLT Layup (in.) | | | | | | | | | Major Strength Direction | | | | Minor Strength Direction | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | = | ⊥ | = | ⊥ | = | ⊥ | = | ⊥ | = | $F_bS_{eff,0}$ ($10^6$ N-mm/m) | $EI_{eff,0}$ ($10^9$ N-mm²/m) | $GA_{eff,0}$ ($10^6$ N/m) | $V_{s,0}$ (kN/m) | $F_bS_{eff,90}$ ($10^6$ N-mm/m) | $EI_{eff,90}$ ($10^9$ N-mm²/m) | $GA_{eff,90}$ ($10^6$ N/m) | $V_{s,90}$ (kN/m) |
| 2.0M | 2,400-H[h] DF-L | CLT3-087 | 87.0 | 35.0 | 17.0 | 35.0 | | | | | | | 37 | 752 | 11 | 37 | 1.7 | 5.6 | 6.4 | 7.2 |
| | | CLT3-090 | 90.0 | 30.0 | 30.0 | 30.0 | | | | | | | 38 | 808 | 9.4 | 38 | 5.2 | 31 | 9.4 | 13 |
| | | CLT3-097 | 97.5 | 35.0 | 27.5 | 35.0 | | | | | | | 46 | 1,043 | 11 | 41 | 4.4 | 24 | 8.9 | 12 |
| | | CLT3-105 | 105.0 | 35.0 | 35.0 | 35.0 | | | | | | | 52 | 1,284 | 11 | 44 | 7.1 | 49 | 11 | 15 |
| | | CLT5-137 | 137.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | | | | | 74 | 2,388 | 17 | 58 | 38 | 623 | 17 | 35 |
| | | CLT5-139 | 139.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | | | 85 | 2,771 | 23 | 59 | 24 | 330 | 13 | 29 |
| | | CLT5-150 | 150.0 | 30.0 | 30.0 | 30.0 | 30.0 | 30.0 | | | | | 88 | 3,101 | 19 | 63 | 45 | 808 | 19 | 38 |
| | | CLT5-175 | 175.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | | | 120 | 4,924 | 22 | 74 | 61 | 1,284 | 22 | 44 |
| | | CLT5-175XL | 175.0 | 35.0x2 | 35.0 | 35.0x2 | | | | | | | 149 | 6,116 | 23 | 74 | 7.1 | 49 | 13 | 15 |
| | | CLT7-191 | 191.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | | | 152 | 6,770 | 34 | 81 | 54 | 1,311 | 19 | 51 |
| | | CLT7-245 | 245.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | | | 213 | 12,193 | 33 | 103 | 142 | 4,924 | 33 | 74 |
| | | CLT7-245XL | 245.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | | | 273 | 15,673 | 33 | 103 | 61 | 1,284 | 24 | 44 |
| | | CLT9-243 | 243.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 17.0 | 35.0 | 236 | 13,413 | 46 | 103 | 96 | 3,286 | 25 | 73 |
| | | CLT9-315 | 315.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 330 | 24,315 | 44 | 133 | 250 | 12,193 | 44 | 103 |
| | | CLT9-315XL | 315.0 | 35.0x2 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0 | 35.0x2 | | | 424 | 31,226 | 44 | 133 | 142 | 4,924 | 34 | 74 |

For Imperial System: 1 mm = 0.03937 in.; 1 m = 3.28 ft; 1 N = 0.2248 lbf

(a) Tabulated values are allowable design values and not permitted to be increased for the flat use or size adjustment factor in accordance with the CSA O86.

(b) Tabulated values are based on the shear-analogy model as defined in PRG 320-2025 Appendix X3.

(c) The last digit or letter of the strength class (i.e., -2, -3, or -H) identifies the grade of the lumber used in the transverse laminations, where -2 and -3 correspond to visual grades and -H means that the lay-up is homogeneous and the transverse lumber grade is the same as the lumber grade of the longitudinal layers.

(d) 1.4V-875 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be visually and/or electronically graded materials with design values that equal or exceed the 1.4V-875 design values in Table 2.

(e) 1.2M-1,200 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.2M-1,200 design values in Table 2.

(f) 1.5M-1,650 grade design values are approved for SPF or DF-L laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.5M-1,650 design values in Table 2.

(g) 1.8M-2,100 grade design values are approved for SPF or DF-L alternative laminations. Laminations for each species group shall be electronically graded materials with design values that equal or exceed the 1.8M-2,100 design values in Table 2.

(h) 2.0M-2,400 grade design values are approved for DF-L laminations. Laminations shall be electronically graded materials with design values that equal or exceed the 2.0M-2,400 design values in Table 2.

**Table 5. ASD Edgewise Design Values for Mercer CLT 1.4V Grade Panels**

| CLT Grade | No. of Layers | CLT Layup Designation | Thickness, $t_p$ (in.) | Edgewise Shear Stress [a][b] | |
|---|---|---|---|---|---|
| | | | | $F_{v,e,0}$ (psi) | $F_{v,e,90}$ (psi) |
| 1.4V | 3 | CLT3-082 | 3.24 | 190 | 215 |
| | | CLT3-090 | 3.54 | 190 [c] | 215 [c] |
| | | CLT3-090T | 3.54 | 190[c] | 215[c] |
| | | CLT3-097 | 3.84 | 190 [c] | 215 [c] |
| | | CLT3-100 | 3.94 | 190 [c] | 215 [c] |
| | | CLT3-105 | 4.14 | 190 [c] | 215 [c] |
| | 5 | CLT5-137 | 5.40 | 240 | 235 |
| | | CLT5-139 | 5.47 | 240 [d] | 235[d] |
| | | CLT5-150 | 5.91 | 240 [d] | 235 [d] |
| | | CLT5-152T | 6.00 | 240 [d] | 235 [d] |
| | | CLT5-160 | 6.30 | 240 [d] | 235 [d] |
| | | CLT5-175 | 6.90 | 240 [d] | 235 [d] |
| | 7 | CLT7-222 | 8.76 | 240 [d] | 235 [d] |
| | | CLT7-245 | 9.66 | 240 [d] | 235 [d] |
| | 9 | CLT9-285 | 11.22 | 240 [d] | 235 [d] |
| | | CLT9-315 | 12.42 | 240 [d] | 235 [d] |

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

(a) Tabulated values shall be multiplied by the gross cross section area ($in.^2$) of the CLT element under consideration to attain the ASD edgewise shear strength (lbf).
(b) Values are applicable for 1.4V and better CLT Grades.
(c) Based on test results for CLT3-082
(d) Based on test results for CLT5-137

**Table 6. LSD Edgewise Design Values for Mercer CLT 1.4V Grade Panels**

| CLT Grade | No. of Layers | CLT Layup Designation | Thickness, $t_p$ (mm) | Edgewise Shear Stress [a][b] | |
|---|---|---|---|---|---|
| | | | | $F_{v,e,0}$ (MPa) | $F_{v,e,90}$ (MPa) |
| 1.4V | 3 | CLT3-082 | 82.5 | 2.9 | 3.2 |
| | | CLT3-090 | 90.0 | 2.9 [c] | 3.2 [c] |
| | | CLT3-090T | 90.0 | 2.9 [c] | 3.2 [c] |
| | | CLT3-097 | 97.5 | 2.9 [c] | 3.2 [c] |
| | | CLT3-100 | 100.0 | 2.9 [c] | 3.2 [c] |
| | | CLT3-105 | 105.0 | 2.9 [c] | 3.2 [c] |
| | 5 | CLT5-137 | 137.5 | 3.6 | 3.5 |
| | | CLT5-139 | 139.0 | 3.6 [d] | 3.5 [d] |
| | | CLT5-150 | 150.0 | 3.6 [d] | 3.5 [d] |
| | | CLT5-152T | 152.5 | 3.6 [d] | 3.5 [d] |
| | | CLT5-160 | 160.0 | 3.6 [d] | 3.5 [d] |
| | | CLT5-175 | 175.0 | 3.6 [d] | 3.5 [d] |
| | 7 | CLT7-222 | 222.5 | 3.6 [d] | 3.5 [d] |
| | | CLT7-245 | 245.0 | 3.6 [d] | 3.5 [d] |
| | 9 | CLT9-285 | 285.0 | 3.6 [d] | 3.5 [d] |
| | | CLT9-315 | 315.0 | 3.6 [d] | 3.5 [d] |

For Imperial System: 1 mm = 0.03937 in.; 1 m = 3.28 ft.; 1 N = 0.2248 lbf

(a) Tabulated values shall be multiplied by the gross cross section area ($mm^2$) of the CLT element under consideration to attain the LSD edgewise shear strength (N).
(b) Values are applicable for 1.4V and better CLT Grades.
(c) Based on test results for CLT3-082.
(d) Based on test results for CLT5-137.