# Material Values of Hoover FRT Kerto® LVL S-beam

| | FLEXURAL STRESS | | TENSION PARALLEL TO GRAIN | COMPRESSION PARALLEL TO GRAIN | COMPRESSION PERPENDICULAR TO GRAIN | | HORIZONTAL SHEAR | | TRUE MOE[6] | | APPARENT MOE[7] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Beam | Plank | | | Beam | Plank | Beam | Plank | Beam | Plank | Beam | Plank |
| | $F_b$[2,4] psi | $F_b$ psi | $F_t$[5] psi | Fc psi | $Fc_\perp$[3] psi | | $F_v$ psi | | $10^6$ psi | | $10^6$ psi | |
| Hoover treated Kerto LVL S-beam | 2200 | 2400 | 1900 | 1600 | 260 | 120 | 220 | 150 | 1,54 | 1,48 | 1,45 | 1,40 |
| ESR-3633 Kerto LVL S-beam | 2900 | 3200 | 2300 | 2700 | 870 | 435 | 320 | 200 | 2,0 | 2,0 | 1,9 | 1,9 |
| Reduction | -24 % | -25 % | -17 % | -41 % | -70 % | -72 % | -31 % | -25 % | -23 % | -26 % | -24 % | -26 % |

[1] Allowable design stresses are based on covered dry conditions of use

[2] The tabulated flexural stresses are based on loads of a normal duration and a referenced depth of 12 inches. For other depths, the tabulated flexural stress must be adjusted by a depth factor adjustment of $(12/d)^{0.15}$. For depths less than 3½ inches, use the value for 3½ inches.

[3] The tabulated design stresses provided in this table are based on normal duration. Loads of longer or shorter duration must be adjusted in accordance with the 2012, 2009, 2006 *International Building Code®* , the 2012, 2009, 2006 *International Residential Building Code®* , as applicable.

[4] The allowable bending stress increase for repetitive members must not exceed 4 percent.

[5] The tabulated tension stress is based on a length of 55 inches (1397 mm). For lengths longer than 55 inches, the tabulated tension stress must be adjusted by a factor of $(55/L)^{0.125}$. The tabulated values for lengths shorter than 55 inches must not be increased.

[6] The values in this column reflect the true MOE which is the shear-free modulus of elasticity. When calculating deflection, both bending and shear deformations must be included. Equations for various span and load conditions are available in engineering references. For example, the equation for a simply-supported beam under uniform load is:

$$\Delta = 270wL^4/Ebd^3 + 28.8wL^2/Ebd$$

where D = Deflection in inches (in), w = Uniform load in pounds per linear foor (plf), L = Design span in feet (ft), b = Beam width in inches (in), d = Beam depth in inches (in) and E = Shear free modulus of elasticity in pounds per square inch (psi).

[7] The apparent MOE which includes the effect of shear deformation is 1.45 x $10^6$ psi for the beam direction and 1.40 x $10^6$ psi for the plank direction. When calculating deflection using the apparent MOE, standard engineering formulae for pure bending deflection are sufficient, and the second term in the footnote 6 equation may be ignored.

## *SPECIFICATIONS*
### *PYRO-GUARD® Interior Fire-Retardant-Treated Metsä Wood Kerto® LVL S-beam*

**PART 1 - General Product Information**

A. **Metsä Wood Kerto® (Laminated Veneer Lumber) LVL S-beam** bearing the **PYRO-GUARD®** mark has a flame spread rating of 25 or less (Class A) when tested in accordance with ASTM E84, "Standard Test Method for Surface Burning Characteristics of Building Materials." **Metsä Wood Kerto® LVL S-beam** pressure impregnated with **PYRO-GUARD®** exhibits no evidence of significant progressive combustion when the test is extended for an additional 20-minute period. In addition, the flame front does not progress more than 10½ feet beyond the centerline of the burners at any time during the test. The flame spread and smoke developed index for each species and product are classified by Underwriters Laboratories Inc. (UL).

B. **Metsä Wood Kerto® LVL S-beam** bearing the **PYRO-GUARD®** mark is manufactured under the independent third-party inspection of Underwriters Laboratories. Each piece shall bear the UL classified mark indicating the extended 30 minute ASTM E84 test.

C. **Metsä Wood Kerto® LVL S-beam** shall be kiln dried after treatment (KDAT). The kiln drying process is monitored by Underwriters Laboratories, Inc. (UL) and the UL mark shall appear on the label.

D. **Metsä Wood Kerto® LVL S-beam** meets the performance requirements of AWPA U1, Commodity Specification H for Use Category UCFA and AWPA C20/C27 (Type A, HT).

**PART 2 - Fire-Retardant Treatment**

A. Treatment shall be by pressure impregnation with **PYRO-GUARD®** as manufactured by Hoover Treated Wood Products, Inc.

B. **PYRO-GUARD®** is an interior "Type A" fire-retardant with individual surface burning characteristics for the species and products listed under UL Certifications.

C. Structural performance of **PYRO-GUARD treated Metsä Wood Kerto® LVL S-beam** has been tested in accordance with ASTM D5456-17 by Metsä Wood.

D. **Metsä Wood Kerto® LVL S-beam** fire-retardant-treated wood is kiln dried after treatment (KDAT) to maximum moisture content of 15%.

E. **PYRO-GUARD** does not contain VOC's, urea formaldehyde or formaldehyde, halogens, sulfates, chlorides, or ammonium phosphate.

**PART 3 - Execution**

A. **PYRO-GUARD®** fire-retardant-treated wood used in structural applications shall be installed in accordance with the conditions and limitations listed in UL ER7002-01.

B. **PYRO-GUARD treated Metsä Wood Kerto® LVL S-beam** shall be installed in compliance with the requirements of the applicable building codes and product recommendations.

C. **PYRO-GUARD treated Metsä Wood Kerto® LVL S-beam is** not to be installed in areas where, in service, it is exposed to precipitation, direct wetting, or condensation.

D. As with untreated wood, avoid exposure to precipitation during shipping, storage or installation. Apply a water resistive barrier over dry product as soon as practical to avoid precipitation. Beams that get wet should be allowed to dry before installation or be replaced.

***For additional information about Hoover Treated Wood Products : www.frtw.com or 1-800-TEC-WOOD (832-9663).***