

**Metsä Wood**

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## Material values of Hoover fire retardant treated Kerto LVL<sup>®</sup> S-beam

Metsäliitto Cooperative, Metsä Wood hereby declares material values for Kerto LVL S-beam treated with Pyro-Guard<sup>®</sup> interior fire retardant treatment by Hoover Treated Wood Products, Inc. Fire rating of Pyro-Guard treated Kerto LVL S-beam can be found in Underwriters Laboratories, Inc. UL Online Certifications Directory website (BUGV.R7003). Pyro-Guard specifications and technical notes are available at Hoover Treated Wood Products website [www.frtw.com](http://www.frtw.com).

Treatment reduces material values of untreated Kerto LVL S-beam presented in product approval ICC-ES ESR-3633. Material values have been determined according to ASTM D5456-17.

	FLEXURAL STRESS		TENSION PARALLEL TO GRAIN	COMPRESSION PARALLEL TO GRAIN	COMPRESSION PERPENDICULAR TO GRAIN		HORIZONTAL SHEAR		TRUE MOE <sup>6</sup>		APPARENT MOE <sup>7</sup>	
	Beam	Plank			Beam	Plank	Beam	Plank	Beam	Plank	Beam	Plank
	F <sub>b</sub> <sup>2,4</sup>	F <sub>b</sub>	F <sub>t</sub> <sup>5</sup>	F <sub>c</sub>	F <sub>c⊥</sub> <sup>3</sup>		F <sub>v</sub>		10 <sup>6</sup> psi		10 <sup>6</sup> psi	
	psi	psi	psi	psi	psi		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 %

<sup>1</sup> Allowable design stresses are based on covered dry conditions of use

<sup>2</sup> 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.

<sup>3</sup> 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*<sup>®</sup>, the 2012, 2009, 2006 *International Residential Building Code*<sup>®</sup>, as applicable.

<sup>4</sup> The allowable bending stress increase for repetitive members must not exceed 4 percent.

<sup>5</sup> 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.

<sup>6</sup> 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 foot (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).

<sup>7</sup> The apparent MOE which includes the effect of shear deformation is  $1.45 \times 10^6$  psi for the beam direction and  $1.40 \times 10^6$  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.



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