

Properties

	ASTM TEST METHOD	UNITS/VALUE	SERIES 500/525 SHAPES	SERIES 625 SHAPES	SERIES 500/525 PLATE ^⑤			SERIES 625 PLATE ^⑤		
					1/8" 3.175mm	3/16" - 1/4" 4.76-6.35mm	3/8" - 1" 9.5-25.4mm	1/8" 3.175mm	3/16" - 1/4" 4.76-6.35mm	3/8" - 1" 9.5-25.4mm
MECHANICAL										
Tensile Stress, LW	D638	psi N/mm ²	30,000 207	30,000 207	20,000 138	20,000 138	20,000 138	20,000 138	20,000 138	20,000 138
Tensile Stress, CW	D638	psi N/mm ²	7,000 48.3	7,000 48.3	7,500 51.7	10,000 68.9	10,000 68.9	7,500 51.7	10,000 68.9	10,000 68.9
Tensile Modulus, LW	D638	10 ⁶ psi 10 ³ N/mm ²	2.5 17.2	2.6 17.9	1.8 12.4	1.8 12.4	1.8 12.4	1.8 12.4	1.8 12.4	1.8 12.4
Tensile Modulus, CW	D638	10 ⁶ psi 10 ³ N/mm ²	0.8 5.52	0.8 5.52	0.7 4.83	0.9 6.21	1.4 9.65	1.0 6.89	1.0 6.89	1.4 9.65
Compressive Stress, LW	D695	psi N/mm ²	30,000 207	30,000 207	24,000 165	24,000 165	24,000 165	24,000 165	24,000 165	24,000 165
Compressive Stress, CW	D695	psi N/mm ²	15,000 103	16,000 110	15,500 107	16,500 114	20,000 138	16,500 114	17,500 121	17,500 121
Compressive Modulus, LW	D695	10 ⁶ psi 10 ³ N/mm ²	2.5 17.2	2.6 17.9	1.8 12.4	1.8 12.4	1.8 12.4	1.8 12.4	1.8 12.4	1.8 12.4
Compressive Modulus CW	D695	10 ⁶ psi 10 ³ N/mm ²	1.0 6.89	1.0 6.89	1.0 6.89	1.0 6.89	1.0 6.89	1.0 6.89	1.0 6.89	1.0 6.89
Flexural Stress, LW	D790	psi N/mm ²	30,000 207	30,000 207	35,000 241	35,000 241	30,000 207	35,000 241	35,000 241	30,000 207
Flexural Stress, CW	D790	psi N/mm ²	10,000 68.9	10,000 68.9	13,000 89.6	15,000 103	18,000 124	13,000 89.6	15,000 103	18,000 124
Flexural Modulus, LW	D790	10 ⁶ psi 10 ³ N/mm ²	1.6 11.0	1.6 11.0	1.8 12.4	2 13.8	2 13.8	1.8 12.4	2 13.8	2 13.8
Flexural Modulus, CW	D790	10 ⁶ psi 10 ³ N/mm ²	0.8 5.52	0.8 5.52	0.9 6.21	1.1 7.58	1.4 9.65	1.0 6.89	1.1 7.58	1.4 9.65
Modulus of Elasticity ^①	full section	10 ⁶ psi 10 ³ N/mm ²	2.6 17.9	2.8 19.3						
Modulus of Elasticity: W & I shapes > 4" W & I shapes > 102mm	full section	10 ⁶ psi 10 ³ N/mm ²	2.5 17.2	2.5 17.2						
Parallel Compressive Shear Stress, LW ^②	D3846	psi N/mm ²	3,000 20.7	3,000 20.7						
Shear Modulus, LW ^③	—	10 ⁶ psi 10 ³ N/mm ²	0.425 2.93	0.425 2.93						
Short Beam Shear, LW ^④	D2344	psi N/mm ²	4,500 31.0	4,500 31.0						
Bearing Stress, LW	D953	psi N/mm ²	30,000 207	30,000 207	32,000 220.6	32,000 221	32,000 221	32,000 221	32,000 221	32,000 221
Poisson's Ratio, LW ^⑤	D3039	in/in mm/mm	0.33 .330	0.33 .330	0.31 .310	0.31 .310	0.31 .310	0.32 .320	0.32 .320	0.32 .320
Notched Izod Impact, LW	D256	ft-lbs/in J/mm	25 1.33	25 1.33	18.5 .988	20 1.07	20 1.07	18.5 .988	20 1.07	20 1.07
Notched Izod Impact, CW	D256	ft-lbs/in J/mm	4 .214	4 .214	5 .267	5 .267	5 .267	5 .267	5 .267	5 .267
PHYSICAL										
Barcol Hardness	D2583	—	45 ^⑥	45 ^⑥	40	40	40	40	40	40
24 hr Water Absorption ^⑦	D570	% Max	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Density	D792	lbs/in ³ 10 ⁻³ g/mm ³	.062-.070 1.72-1.94	.062-.070 1.72-1.94	.060-.068 1.66-1.88	.060-.068 1.66-1.88	.060-.068 1.66-1.88	.060-.068 1.66-1.88	.060-.068 1.66-1.88	.060-.068 1.66-1.88
Coefficient of Thermal Expansion, LW ^⑧	D696	10 ⁻⁶ in/in/°F 10 ⁻⁶ in/in/°C	4.4 8.0	4.4 8.0	4.4 8.0	4.4 8.0	4.4 8.0	4.4 8.0	4.4 8.0	4.4 8.0
Thermal Conductivity ^⑨	C177	BTU-in/ft ² Hr/°F W-m/m ² /C°	4 83.1	4 83.1						

All values are minimum ultimate properties from coupon tests except as noted.

- ① This value is determined from full section simple beam bending of EXTREN® structural shapes.
- ② The shear stress test results will change radically if the notched orientation is altered. The value in this chart represents the test configuration where the notches are machined parallel to the reinforcing mat. For notches machined perpendicular to the reinforcing mat, this value would be two to three times larger.
- ③ The Shear Modulus value has been determined from tests with full sections of EXTREN® structural shapes. (See Strongwell's EXTREN® Design Manual for further information.)
- ④ Value would be 50 if the surfacing veil were not there.
- ⑤ Plate compressive stress/modulus measured edgewise and flexural stress/modulus measured flatwise.
- ⑥ Values apply to Series 525 and 625.
- ⑦ Measured as a percentage maximum by weight.
- ⑧ Span to depth ratio of 3:1; EXTREN® angles will have a minimum value of 4000 psi and the I/W shapes are tested in the web.
- ⑨ Typical values because these are shape and composite dependent tests.

LW = Lengthwise
CW = Crosswise

PF = Perpendicular to laminate face
N.T. = Not Tested