



Typical Coupon Properties

The following table shows test results for typical coupon properties of PROForms® and PROPlate® structural fiberglass profiles (Standard, Fire Retardant and Vinylester shapes). Properties are derived per the ASTM test method shown. Synthetic surfacing veil and ultraviolet inhibitors are standard.

	ASTM TEST METHOD	UNITS	POLY-ESTER SHAPES	VINYL-ESTER SHAPES	ROD & BAR	POLYESTER PLATE			VINYLESTER PLATE		
						1/8"	3/16"-1/4"	3/8"-1"	1/8"	3/16"-1/4"	3/8"-1"
MECHANICAL PROPERTIES (minimum ultimate)											
Tensile Stress, LW	D-638	psi	30,000	30,000	100,000	20,000	20,000	20,000	20,000	20,000	20,000
		N/mm ²	206.8	206.8	689	137.9	137.9	137.9	137.9	137.9	137.9
Tensile Stress, CW	D-638	psi	7,000	7,000		7,500	10,000	10,000	7,500	10,000	10,000
		N/mm ²	48.2	48.2		51.7	68.9	68.9	51.7	68.9	68.9
Tensile Modulus, LW	D-638	10 ⁶ psi	2.5	2.6	6.0	1.8	1.8	1.8	1.8	1.8	1.8
		KN/mm ²	17.2	17.9	41.3	12.4	12.4	12.4	12.4	12.4	12.4
Tensile Modulus, CW	D-638	10 ⁶ psi	0.8	0.8		0.7	0.9	1.4	1.0	1.0	1.4
		KN/mm ²	5.5	5.5		4.8	6.2	9.6	6.9	6.9	9.6
Compressive Stress, LW	D-695	psi	30,000	30,000	60,000	24,000	24,000	24,000	24,000	24,000	24,000
		N/mm ²	206.8	206.8	413.6	165.4	165.4	165.4	165.4	165.4	165.4
Compressive Stress, CW	D-695	psi	15,000	16,000		15,500	16,500	20,000	16,500	17,500	20,000
		N/mm ²	103.4	110.3		106.8	113.7	137.9	113.79	120.6	137.9
Compressive Modulus, LW	D-695	10 ⁶ psi	2.5	2.6		1.8	1.8	1.8	1.8	1.8	1.8
		KN/mm ²	17.2	17.9		12.4	12.4	12.4	12.4	12.4	12.4
Compressive Modulus, CW	D-695	10 ⁶ psi	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
		KN/mm ²	6.9	6.9		6.9	6.9	6.9	6.9	6.9	6.9
Flexural Stress, LW	D-790	psi	30,000	30,000	100,000	35,000	35,000	30,000	35,000	35,000	30,000
		N/mm ²	206.8	206.8	689	241.3	241.3	206.8	241.3	241.3	206.8
Flexural Stress, CW	D-790	psi	10,000	10,000		13,000	15,000	18,000	13,000	15,000	18,000
		N/mm ²	68.9	68.9		89.6	103.4	124.1	89.6	103.4	124.1
Flexural Modulus, LW	D-790	10 ⁶ psi	1.8	2.2	6.0	1.8	2.0	2.0	1.8	2.0	2.0
		KN/mm ²	11.0	11.0	41.9	12.4	13.8	13.8	12.4	13.8	13.8
Flexural Modulus, CW	D-790	10 ⁶ psi	0.8	0.8		0.9	1.1	1.4	1.0	1.1	1.4
		KN/mm ²	5.5	5.5		6.2	7.6	9.6	6.2	7.6	9.6
Modulus of Elasticity, E	Full Section	10 ⁶ psi	2.6	2.8							
		KN/mm ²	17.9	19.3							
Modulus of Elasticity, E (W & I Shapes > 4")	Full Section	10 ⁶ psi	2.5	2.5							
		KN/mm ²	17.2	17.2							
Shear Modulus, LW	Full Section	10 ⁶ psi	0.425	0.425							
		KN/mm ²	2.9	2.9							
Short Beam Shear, LW	D-2344	psi	4,500	4,500	8,000						
		N/mm ²	31.0	31.0	55.2						
Ultimate Bearing Stress, LW & CW	D-953	psi	30,000	30,000		32,000	32,000	32,000	32,000	32,000	32,000
		N/mm ²	206.8	206.8		220.6	220.6	220.6	220.6	220.6	220.6
Poisson's Ratio, LW	D-3039	in./in.	0.33	0.33		0.31	0.31	0.31	0.31	0.31	0.31
		mm/mm	0.33	0.33		0.31	0.31	0.31	0.31	0.31	0.31
Notched Izod Impact, LW	D-256	ft.-lbs./in.	25	25	40	18.5	20	20	18.5	20	20
		J/mm	1.28	1.28	2.04	0.94	1.02	1.02	0.94	1.02	1.02
Notched Izod Impact, CW	D-256	ft.-lbs./in.	4	4		5	5	5	5	5	5
		J/mm	0.2	0.2		0.26	0.26	0.26	0.26	0.26	0.26

	ASTM TEST METHOD	UNITS	POLY-ESTER SHAPES	VINYL-ESTER SHAPES	ROD & BAR	POLYESTER PLATE			VINYLESTER PLATE		
						1/8"	3/16"-1/4"	3/8"-1"	1/8"	3/16"-1/4"	3/8"-1"
PHYSICAL PROPERTIES											
Barcol Hardness	D-2583	—	45	45	50	40	40	40	40	40	40
24-Hour Water Absorption	D-570	% max., by wt.	0.60	0.60	0.25	0.60	0.60	0.60	0.60	0.60	0.60
Density	D-792	lbs./in. ³	.062-.070	.062-.070	.072-.076	0.60-0.68	0.60-0.68	0.60-0.68	0.60-0.68	0.60-0.68	0.60-0.68
		10 ⁻³ g/mm ³	1.72-1.94	1.72-1.94	1.99-2.10	1.66-1.88	1.66-1.88	1.66-1.88	1.66-1.88	1.66-1.88	1.66-1.88
Coefficient of Thermal Expansion (Typical), LW	D-696	10 ⁻⁶ in./in./°F	7.0	7.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0
		10 ⁻⁶ mm/mm/°C	1.2	1.2	5.45	14.5	14.5	14.5	14.5	14.5	14.5
Thermal Conductivity	C-177	BTU/sf/hr/°F/in.	4	4	4	4	4	4	4	4	4
		W-m/m ² /°C	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
ELECTRICAL PROPERTIES (based on polyester and vinylester resin systems)											
Arc Resistance, LW	D-495	seconds	120								
Dielectric Strength, LW	D-149	kv/in.	35								
Dielectric Strength, PF	D-149	volts/mil.	200								
Dielectric Strength, PF	D-150	@60hz	5								
FLAMMABILITY PROPERTIES (based on fire retardant polyester and fire retardant vinylester resin systems)											
Flammability Classification (1/8")	UL 94	V0									
Tunnel Test	E-84	25 max.									
NBS Smoke Chamber E-662	E-662	600-700									
Flammability	D-635	Self Extinguishing									

LW=Lengthwise CW=Crosswise PF=Perpendicular to Laminate Face

