

MATERIAL PROPERTIES

Pultex® Fiber Reinforced Polymer **SuperStructural** Profiles *Wide Flange Sections and I-Sections*

1500 Series - Thermoset Polyester – Olive Green
1525 Series - Thermoset Polyester Class 1 FR – Slate Gray (Dark Gray)
1625 Series - Thermoset Vinyl Ester Class 1 FR – Beige

Pultex® **SuperStructural** Profiles are identified with imprinted veil.

The following data was derived from ASTM coupon and full section testing. The results are average values based on random sampling and testing of production lots. Composite materials are not homogeneous; and therefore, the location of the coupon extraction can cause variances in the coupon test results. Creative Pultrusions publishes an average value of random samples from production lots.

<u>Property</u> (coupon values)	ASTM Test	Units	1500/1525 Series	1625 Series
Full Section				
Modulus of Elasticity (1/2" thick profiles)	Full Section ²	10 ⁶ psi	3.9-4.0	3.9-4.0
(1/4" & 3/8" thick profiles)	Full Section ²	10 ⁶ psi	3.9	3.9
Shear Modulus (Modulus of Rigidity)	Full Section ²	10 ⁶ psi	4.0	4.0
Flexural Strength	Full Section ²	psi	0.50	0.50
			33,000	33,000
Flange Section - Mechanical				
Tensile Strength (LW)	D638	psi	40,000	46,000
Tensile Modulus (LW)	D638	10 ⁶ psi	4.16	4.16
Compressive Strength (LW)	D695	psi	45,770	52,500
Compressive Strength (CW)	D695	psi	17,800	20,400
Compressive Modulus (LW)	D695	10 ⁶ psi	3.85	3.85
Compressive Modulus (CW)	D695	10 ⁶ psi	1.9	1.9
Flexural Strength (LW)	D790	psi	42,800	49,200
Flexural Modulus (LW)	D790	10 ⁶ psi	2.0	2.0
Interlaminar Shear (LW) ⁵	D2344	psi	4,000	4,500
Shear Strength By Punch (PF)	D732	psi	5,500	6,000
Notched Izod Impact (LW)	D256	ft-lbs/in	28	32
Notched Izod Impact (CW)	D256	ft-lbs/in	21	24
Maximum Bearing Strength (LW)	D953	psi	33,000	38,000
Maximum Bearing Strength (CW) ³	D953	psi	23,000	26,500
Poisson's Ratio (LW)	D3039	in/in	0.35	0.35
Poisson's Ratio (CW)	D3039	in/in	0.12	0.12
Web Section - Mechanical				
Tensile Strength (LW)	D638	psi	30,300	35,000
Tensile Strength (CW)	D638	psi	10,500	12,000
Tensile Modulus (LW)	D638	10 ⁶ psi	3.1	3.1
Tensile Modulus (CW)	D638	10 ⁶ psi	1.4	1.4
Compressive Strength (LW)	D695	psi	37,500	43,125
Compressive Strength (CW)	D695	psi	14,200	16,330

Additional Properties located on back



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Pultex® Fiber Reinforced Polymer **SuperStructural** Profiles Wide Flange Sections and I-Sections (cont'd)

Property (coupon values)	ASTM Test	Units	1500/1525 Series	1625 Series
Web Section - Mechanical				
Compressive Modulus (LW)	D695	10 ⁶ psi	2.8	2.8
Compressive Modulus (CW)	D695	10 ⁶ psi	1.9	1.9
Flexural Strength (LW)	D790	psi	43,320	49,800
Flexural Strength (CW)	D790	psi	17,360	19,900
Flexural Modulus (LW)	D790	10 ⁶ psi	1.9	1.9
Flexural Modulus (CW)	D790	10 ⁶ psi	1.75	1.75
Interlaminar Shear (LW) ⁵	D2344	psi	3,400	3,900
Shear Strength By Punch (PF)	D732	psi	5,500	6,000
Notched Izod Impact (LW)	D256	ft-lbs/in	38	43
Notched Izod Impact (CW)	D256	ft-lbs/in	19	22
Maximum Bearing Strength (LW)	D953	psi	33,980	39,000
Maximum Bearing Strength (CW) ³	D953	psi	30,000	34,500
Poisson's Ratio (LW)	D3039	in/in	0.35	0.35
Poisson's Ratio (CW)	D3039	in/in	0.12	0.12
In-plane Shear (LW)	Modified D2344 ⁴	psi	7,000	7,000
Physical				
Barcol Hardness ¹	D2583		33	39
Water Absorption	D570	% Max	0.6	0.6
Density	D792	lbs/in ³	0.060-0.070	0.060-0.070
Specific Gravity	D792		1.66-1.93	1.66-1.93
Coefficient of Thermal Expansion (LW)	D696	10 ⁻⁶ in/in/°F	4.4	4.4
Thermal Conductivity (PF)	C177	BTU-in/ft ² /hr/°F	4	4
Electrical				
Arc Resistance (LW)	D495	seconds	120	120
Dielectric Strength (LW)	D149	KV/in	40	40
Dielectric Strength (PF)	D149	volts/mil	200	200
Dielectric Constant (PF)	D150	@60Hz	5.2	5.2

LW = lengthwise

CW = crosswise

PF = perpendicular to laminate face

¹Pultex® uses a synthetic veil that reduces the Barcol Hardness, but does not reflect lack of cure.

²Full section testing is based on a 3-point bend with simply supported end conditions (Reference *The New and Improved Pultex® Pultrusion Global Design Manual* Appendix for details).

³Crosswise bearing strength of the Web sections of 1/4" profiles = 20,500 psi.

⁴Follow ASTM D2344, but rotate coupon 90° (cut section of coupon length faces up).

⁵Tested on a 3:1, span to depth ratio.

Property	ASTM Test	Value	
		1525	1625
Flammability Classification	UL94	(VO)	(VO)
Tunnel Test	ASTM E-84	25 Max	25 Max
Flammability Extinguishing	ASTM D635	Self extinguishing	Self extinguishing
NBS Smoke Chamber	ASTM E662	650	650

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