

# 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.

<b>Property (coupon values)</b>	<b>ASTM Test</b>	<b>Units</b>	<b>1500/1525 Series</b>	<b>1625 Series</b>
<b>Full Section</b>				
Modulus of Elasticity (1/2" thick profiles)	Full Section <sup>2</sup>	10 <sup>6</sup> psi	3.9-4.0	3.9-4.0
(1/4" & 3/8" thick profiles)	Full Section <sup>2</sup>	10 <sup>6</sup> psi	3.9	3.9
Shear Modulus (Modulus of Rigidity)	Full Section <sup>2</sup>	10 <sup>6</sup> psi	4.0	4.0
Flexural Strength	Full Section <sup>2</sup>	psi	0.50	0.50
			33,000	33,000
<b>Flange Section - Mechanical</b>				
Tensile Strength (LW)	D638	psi	40,000	46,000
Tensile Modulus (LW)	D638	10 <sup>6</sup> 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 <sup>6</sup> psi	3.85	3.85
Compressive Modulus (CW)	D695	10 <sup>6</sup> psi	1.9	1.9
Flexural Strength (LW)	D790	psi	42,800	49,200
Flexural Modulus (LW)	D790	10 <sup>6</sup> psi	2.0	2.0
Interlaminar Shear (LW) <sup>5</sup>	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) <sup>3</sup>	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
<b>Web Section - Mechanical</b>				
Tensile Strength (LW)	D638	psi	30,300	35,000
Tensile Strength (CW)	D638	psi	10,500	12,000
Tensile Modulus (LW)	D638	10 <sup>6</sup> psi	3.1	3.1
Tensile Modulus (CW)	D638	10 <sup>6</sup> 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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# MATERIAL PROPERTIES

## Pultex<sup>®</sup> Fiber Reinforced Polymer **SuperStructural** Profiles *Wide Flange Sections and I-Sections* (cont'd)

<u>Property</u> (coupon values)	ASTM Test	Units	1500/1525 Series	1625 Series
<b>Web Section - Mechanical</b>				
Compressive Modulus (LW)	D695	10 <sup>6</sup> psi	2.8	2.8
Compressive Modulus (CW)	D695	10 <sup>6</sup> 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 <sup>6</sup> psi	1.9	1.9
Flexural Modulus (CW)	D790	10 <sup>6</sup> psi	1.75	1.75
Interlaminar Shear (LW) <sup>5</sup>	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) <sup>3</sup>	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 <sup>4</sup>	psi	7,000	7,000
<b>Physical</b>				
Barcol Hardness <sup>1</sup>	D2583		33	39
Water Absorption	D570	% Max	0.6	0.6
Density	D792	lbs/in <sup>3</sup>	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 <sup>-6</sup> in/in/°F	4.4	4.4
Thermal Conductivity (PF)	C177	BTU-in/ft <sup>2</sup> /hr/°F	4	4
<b>Electrical</b>				
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

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

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

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

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

<sup>5</sup>Tested 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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