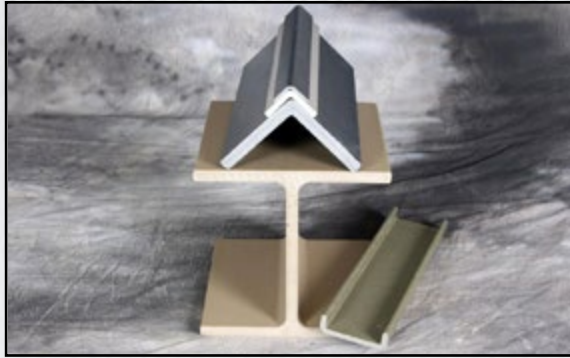


Pultex® vs. Traditional Materials



Sampling of Pultex® Standard Structural Profiles

Pultex® pultruded fiber reinforced polymer structural profiles are designed and manufactured to provide lasting performance in areas where other materials corrode or decay.

COMPARISON CHART PROPERTIES

	Pultex® 1500/1525	Pultex® 1625	Pultex® Solid Rod & Bar	Carbon Steel (M1020)	316 Stainless Steel	Aluminum 6061-T6 T651	Ponderosa Pine	Rigid PVC	Rigid PVC 10% Glass	Fiberglass Compression Molding (SMC)	Fiberglass Spray-Up (30%-50% Glass)
MECHANICAL											
Tensile Strength (psi x 10³)											
LW	30	30	100	35	30-35	45	8.4	6.2	7.8	8-20	9-18
CW	7	7	-	35	30-35	45	-	6.2	7.8	8-20	9-18
Tensile Modulus (psi x 10⁶)											
LW	2.5	2.6	6	30	28	10	-	0.39	0.47	1.6-2.5	.8-1.8
CW	0.8	1	-	30	28	10	-	0.39	0.47	1.6-2.5	.8-1.8
Flexural Strength (psi x 10³)											
LW	30	30	100	35	30-35	45	15.4	11	11.7	18-30	16-28
CW	10	10	-	35	30-35	45	9.4	11	11.7	18-30	16-28
Flexural Modulus (psi x 10⁶)											
LW	2	2.2	6	30	28	10	1	0.35	0.45	1.3-1.8	1-1.2
CW	0.8	0.8	-	30	28	10	-	0.35	0.45	1.3-1.8	1-1.2
Izod Impact (Ft.-Lbs./in.)											
LW	25	25	40	N/A	8.5-11	-	-	1.6	1.6	10-20	4-12
CW	4	4	-	N/A	-	-	-	1.6	1.6	10-20	4-12
Specific Gravity	1.7	1.7	2	7.8	7.92	2.5	0.52	1.38	1.39	1.5-1.7	1.4-1.6
PHYSICAL											
Density (lbs./in.³)	.062-.07	.062-.07	.072-.076	0.284	0.29	0.092	0.019	0.052	0.052	.054-.061	.05-.059
Coefficient of Thermal Expansion (10⁻⁶in./in.°F)	5.2	5.2	3	6-8	9-10	13.5	1.7	37	23	10-18	12-20
Thermal Conditions (BTU-in./Ft.²/HR/°F)	4	4	5	260-460	96-185	1200	.08	1.3	-	1.3-1.7	1.2-1.6

LW = Longitudinal CW = Transverse

Pultex® 1500, 1525 and 1625 standard 40% to 45% glass

Values are minimum ultimate properties from coupons

Specific Heat (cal./°C/gm) = .25

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214 Industrial Lane, Alum Bank, PA 15521
839.4186 • Fax 814.839.4276 • Toll Free 888.CPI.PULL
www.creativepultrusions.com

Characteristic Comparison on Back ➔

Characteristic	Pultex® Standard Structural Profiles	Steel A-36 Carbon
Corrosion Resistance	Various resin systems to meet corrosion requirements. Painting suggested when exposed to UV rays.	Subject to oxidation and corrosion. Painting or galvanizing required.
Weight	Lightweight: 75% lighter than steel - zero to minimal lifting equipment.	Reduced installation and shipping cost
Electrical Conductivity	Non-conductive. Low Thermal Conductivity 4 (BTU/SF/HR/°F/IN)	Conducts electricity; grounding potential. Thermal Conductivity 260-460 (BTU/SF/HR/°F/IN)
Strength	High strength-to-weight ratio; stronger than some steels in lengthwise direction. Ultimate flexural strength LW = 30×10^3 psi, CW = 10×10^3 psi	Homogeneous material.
Stiffness	Flexural modulus LW = 2.5×10^6 psi, CW = $.8 \times 10^6$ psi No permanent deformity under working load.	Yield strength (Fu) 36,000 psi Flexural modulus 20×10^6 psi
Impact Resistance	Glass mat distributes impact load to prevent surface damage. No permanent deformity under working impact.	Can permanently deform under impact.
EMI/RFI Transparency	Transparent to EMI/RFI transmissions.	Can interfere with EMI/RFI transmissions.
Versatility	Pigments provide inherent color; special colors available.	Must be painted for color. To maintain color and corrosion resistance, repainting may be required.
Ease of Fabrication	Field fabricated with simple hand tools. Lightweight for easier erection and installation.	Requires welding and cutting torches. Heavier material requires special handling equipment to erect and install.
Cost	Lower installation and maintenance costs equals lower life cycle costs.	Expensive to install and maintain.
Characteristic	Pultex® Standard Structural Profiles	Aluminum
Corrosion Resistance	Superior resistance to broad range of chemicals. Surfacing veil and UV additives improve weatherability.	Causes galvanic corrosion. Increase resistance through anodizing or other coatings.
Weight	Lightweight - 30% lighter than aluminum.	Lightweight - about 1/3 the weight of copper or steel.
Electrical Conductivity	Non-conductive; high dielectric capability (i.e. ASTM standard)	Conducts electricity; grounding potential.
Thermal Properties	Low Thermal Conductivity 4 (BTU/SF/HR/°F/IN) Low Thermal Coefficient of Expansion 4.4 (in/in/°F) 10^{-6}	Heat conductor - high thermal conductivity 150 (BTU/SF/HR/°F/IN) Thermal Coefficient of Expansion 11 - 13 (in/in/°F) 10^{-6}
Strength	Ultimate Flexural Strength LW = 30×10^3 psi, CW = 10×10^3 psi 86% of the yield strength of aluminum and stronger than aluminum in the lengthwise direction.	Flexural Strength (Fu) 35×10^3 psi Homogeneous material.
Finishing and Color	Pigments provide inherent color; special colors available.	Silver color; other colors may require prefinishes, anodic coatings and paints; Mechanical, chemical and electroplated finishes can be applied.
EMI/RFI Transparency	Electromagnetically transparent; used for radar and antennae enclosures and supports.	Highly reflective.
Fabrication	Field fabricated with simple hand tools; adhesive bonding and/or mechanical joining. No torches or welding required.	Good machinability - welding, brazing, soldering or mechanical joining required.
Cost	Slightly higher tooling costs; price per lineal foot marginally higher.	Inexpensive tooling; part price comparable or slightly lower.
Impact Resistance	Glass mat distributes impact load to prevent surface damage. No permanent deformity under impact.	Easily deforms under impact.
Characteristic	Pultex® Standard Structural Profiles	Structural Timber-Douglas Fir
Corrosion Resistance	Superior resistance to broad chemical range. Unaffected by moisture or immersion in water with sealed ends. Surfacing veil and UV additives create excellent weatherability.	Warp, rot and decay potential from moisture, water and chemicals; coatings or preservatives required to increase corrosion or rot resistance can create hazardous waste and/or high maintenance.
Insect Resistance	Resists damage by insects.	Susceptible to insect attack (marine borers, termites); coatings increase resistance to insects and are environmentally hazardous.
Strength	Greater flexural strength than timber; Ultimate Flexural Strength LW = 30×10^3 psi, CW = 10×10^3 psi Compression Strength is 30,000 psi	Extreme fiber bending = 2,800 psi Compression parallel to grain = up to 1,800 psi*
Stiffness	1.5 - 3.3 times as rigid as wood; Modulus of Elasticity LW = 2.5×10^6 psi, CW = $.8 \times 10^6$ psi	Modulus of Elasticity = up to 1.8×10^6 psi
Electrical Conductivity	High dielectric capability.	Conductive when wet.
Weight	Specific gravity = 1.7 with significantly higher strength-to-weight ratio.	Specific gravity = .51 (oven dried).*
Finishing and Color	Pigments provide inherent color; special colors available.	Must be primed and painted for color; painting may be required.
Cost	Lower maintenance; longer product life equals lower life cycle cost.	Lower initial cost replacements necessary.

Note (LW = Lengthwise; CW = Crosswise)

*Surface dry at 19% max moisture content [Design Values for Wood Construction](#), National Design Specification for Wood Construction.