

Technical Data for SHIELDS® SUPERCOAT™ Polycarbonate Windshield Material

	Criteria	Technical data	Value / Result
1	A) % Light transmission (clear material)	ASTM D 1003	88-89%
	B) Anti-glare	NA	NA
2	A) Impact strength at -30°F	Available only at 0°F	
	• Notched izod	ASTM D 256	18 ft-lbs. / IN
	• Dynatup/dropping dart	5lb. Ball dropped 40 Feet	>200 ft-lbs.
	B) Impact strength at +70°F	Available only at 32°F	
	• Notched izod	ASTM D 256	18 ft-lbs. / IN
	• Dynatup/dropping dart	5lb. Ball dropped 40 Feet	>200 ft-lbs.
	C) Impact strength at +160°F	Available only at 73°F	
	• Notched izod	ASTM D 256	18 ft-lbs. / IN
	• Dynatup/dropping dart	5lb. Ball dropped 40 Feet	>200 ft-lbs.
3	A) Tensile strength	ASTM D 638	9,500 psi
	B) % Elongation to break	ASTM D 638 – Modulus of Elasticity	110% + 340,000 psi
4	Resistance to		
	a) UV	UV Light Transmission	Essentially opaque at all wavelengths below 385 nanometers
		QUV-G53 Accelerated Weathering equiv. to approx. 10 years outdoor exposure	<5.0 index at 10 Years
	b) Scratch/abrasion	ASTM D 1004 Z26.1	< 3% Haze
5	ESCR to		
	a) Diesel		PASS
	b) Windshield washing fluid		PASS
	c) Soap & other cleaning agents		PASS
	d) Break fluid		PASS
	e) Sea/salt water		PASS
	f) Lubricants/mineral oil		PASS
6	Weight ≤ 0.9 than glass	Polycarbonate is 50-54% lighter than glass	When compared to like thickness
7	Flexural strength	ASTM D 790	13,500 psi
8	Expected life		10+ years* *with proper care
9	Ease of molding/fabrication	Fabrication – fairly easy	Molding – cannot be molded after being formed & coated by manufacturer (FORM/TEC Plastics)
10	Ease of repair/replacement	Replacement – easy	Repair – Limited

Polycarbonate Sheet ~ Typical Property Values

	Property	Test Method	Units	Value
P H Y S I C A L	Specific Gravity	ASTM D792	—	1.20
	Refractive Index @77°F	ASTM D 542A	—	1.586
	Light Transmission (Average), 1/8" disk	ASTM D1003	%	88
	Rockwell Hardness	ASTM D785	—	M70
	Water Absorption, Equilibrium, 24 hours @73°F @212°F	ASTM D570	%	.15 .35 .58
M E C H A N I C A L	Tensile Strength @ Yield Ultimate	ASTM D638	psi	9,000 9,500
	Tensile Modulus	ASTM D638	psi	345,000
	Flexural Strength	ASTM D790	psi	13,500
	Flexural Modulus	ASTM D790	psi	345,000
	Flexural Endurance @ 1,800 cycles/min, 73°F, 50% RH	ASTM D671	psi	1,000
	Compressive Strength	ASTM D695	psi	12,500
	Compressive Modulus	ASTM D695	psi	345,000
	Elongation	ASTM D638	%	110
	Poisson's Ratio	—	—	.37
	Izod Impact Strength Notched @ 1/8" Unnotched @ 1/8"	ASTM D 256A	ft-lb s/in	12—16 60 (no failure)
	Tensile Impact Strength, S-Type Specimen	ASTM 1822	ft-lb s/in ²	225—300
	Shear Strength @ Yield Ultimate	ASTM D732	psi	6,000 10,000
	Shear Modulus	ASTM D732	psi	114,000
	Deformation Under Load @ 4,000 psi @ 73°F @ 158°F	ASTM D621	%	.2 .3
	T H E R M A L	Coefficient of Thermal Expansion	ASTM D696	in/in°F
Coefficient of Thermal Conductivity		ASTM C177	Btu in/hr ft ² °F	1.35
Specific Heat @40°C			cal/gm °C	.30
Heat Deflection Temperature @264 psi @ 66 psi		ASTM D648	°F	270 280
Brittle Temperature		ASTM D746	°F	-211
FLAMMABILITY				
	Horizontal Burn (Flame Spread) AEB	ASTM D635	in	<1

