

## TUFFAK OP POLYCARBONATE SHEET

### OPTICAL QUALITY

TUFFAK OP sheet is a polished surface, UV stabilized, transparent polycarbonate product. Designed for use in applications requiring improved optical quality, it features outstanding impact strength, superior dimensional stability, high temperature resistance, and high clarity. This lightweight thermoflexible sheet is also easy to fabricate and decorate. TUFFAK OP sheet is offered with a five (5) year Limited Product Warranty against breakage. The terms of the warranty are available upon request.

### APPLICATIONS

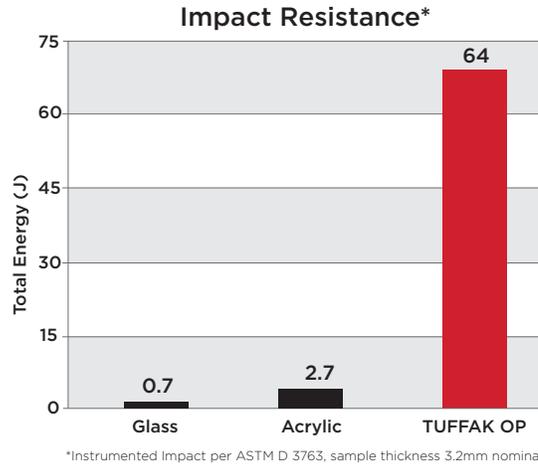
Recreational vehicle windscreens, face shields, laminates

### TYPICAL PROPERTIES\*

Property	Test Method	Units	Values
<b>PHYSICAL</b>			
Specific Gravity	ASTM D792	-	1.2
Refractive Index	ASTM D542	-	1.586
Light Transmission, Clear @ 0.118"	ASTM D1003	%	88
Light Transmission, I30 Gray @ 0.118"	ASTM D1003	%	50
Light Transmission, K09 Bronze @ 0.118"	ASTM D1003	%	50
Light Transmission, I35 Dark Gray @ 0.118"	ASTM D1003	%	18
Water Absorption, 24 hours @ 73°F	ASTM D570	%	0.15
Poisson's Ratio	ASTM E132	-	0.38
<b>MECHANICAL</b>			
Tensile Strength, Break	ASTM D638	psi	9,500
Tensile Strength, Yield	ASTM D638	psi	9,000
Tensile Modulus	ASTM D638	psi	340,000
Elongation	ASTM D638	%	110
Flexural Strength	ASTM D790	psi	13,500
Flexural Modulus	ASTM D790	psi	345,000
Compressive Strength	ASTM D695	psi	12,500
Compressive Modulus	ASTM D695	psi	345,000
Izod Impact Strength, Notched @ 0.125"	ASTM D256	ft-lbs/in	18
Izod Impact Strength, Unnotched @ 0.125"	ASTM D256	ft-lbs/in	60 (no break)
Instrumented Impact @ 0.125"	ASTM D3763	ft-lbs	47
Shear Strength, Break	ASTM D732	psi	10,000
Shear Strength, Yield	ASTM D732	psi	6,000
Shear Modulus	ASTM D732	psi	114,000
Rockwell Hardness	ASTM D785	-	M70 / R118
<b>THERMAL</b>			
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	3.75 x 10 <sup>-5</sup>
Coefficient of Thermal Conductivity	ASTM C177	BTU-in/hr-ft <sup>2</sup> -°F	1.35
Heat Deflection Temperature @ 264 psi	ASTM D648	°F	270
Heat Deflection Temperature @ 66 psi	ASTM D648	°F	280
Brittleness Temperature	ASTM D746	°F	-200
Shading Coefficient, Clear @ 0.236"	NFRC 100-2010	-	0.97
Shading Coefficient, Gray or Bronze @ 0.236"	NFRC 100-2010	-	0.77
U factor @ 0.236" (summer, winter)	NFRC 100-2010	BTU/hr-ft <sup>2</sup> -°F	0.85, 0.92
U factor @ 0.375" (summer, winter)	NFRC 100-2010	BTU/hr-ft <sup>2</sup> -°F	0.78, 0.85
<b>FLAMMABILITY</b>			
Ignition Temperature, Self	ASTM D1929	°F	1022
Ignition Temperature, Flash	ASTM D1929	°F	824
Flame Class @ 0.060"	UL 94	-	HB
Flame Class @ 0.394"	UL 94	-	V-0

\*Typical properties are not intended for specification purposes

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## Regulatory code compliance and certifications

Architectural Flat Glass Clad polycarbonate	ASTM C 1349	Appendix X1 Type 1
Polycarbonate sheet classification	A-A-59502	Type 1 Class 1
Polycarbonate resin classification	ATSM D 3935	PC0136
Flammability - Plastic component	UL 94	UL File #E87887
Suitability - Plastic component	UL 746C	UL File #E87887



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These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use are beyond our control. We recommend that the prospective user determines the suitability of our materials and suggestions before adopting them on a commercial scale.

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