

TUFFAK FP polycarbonate sheet

FRIT POLYCARBONATE

TUFFAK Frit polycarbonate is a hard coated polycarbonate product that includes a customizable black-out border to allow for innovative installation methods, eliminating the common threaded hardware, clips and glazing channels. The material can be configured to provide a direct replacement for fritted glass. State-of-the-art manufacturing and inspection processes deliver low optical distortion. The advanced hard coat technology offers excellent abrasion and chemical resistance, and long lasting outdoor weathering performance. In addition, the black frit provides a bondable surface for dependable performance and protects the adhesive against UV degradation. TUFFAK FP is available in clear, standard, and custom tints.

APPLICATIONS

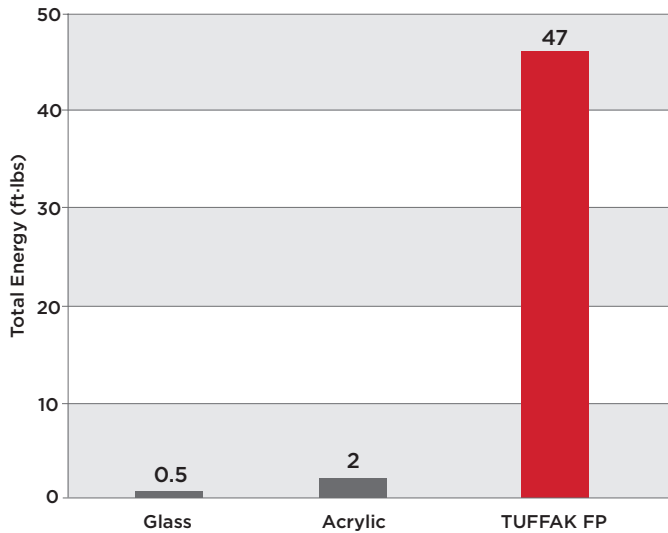
Heavy equipment cab safety glazing, marine and mass transit glazing

Typical Properties*			
Property	Test Method	Units	Values
PHYSICAL			
Specific Gravity	ASTM D 792	-	1.2
Light Transmission, Clear, 0.375"	ASTM D 1003	%	80
Light Transmission, Clear, 0.500"	ASTM D 1003	%	77
Light Transmission, blackout surface	ASTM D1003	%	<0.3%
Chemical Resistance	ANSI Z26.1	-	Pass
Taber Abrasion @ 100 Cycles, Delta Haze CS-10F Wheel @ 500 g load	ASTM D 1044	%	2
MECHANICAL			
Tensile Strength, Break	ASTM D 638	psi	9,500
Flexural Strength	ASTM D 790	psi	13,500
Compressive Strength	ASTM D 695	psi	12,500
Modulus of Elasticity	ASTM D 638	psi	340,000
Poisson's Ratio	-	-	0.38
Izod Impact Strength, Notched @ 0.125"	ASTM D 256	ft-lbs/in	16
Izod Impact Strength, Unnotched @ 0.125"	ASTM D 256	ft-lbs/in	60 (no break)
Instrumented Impact @ 0.125"	ASTM D 3763	ft-lbs	47
THERMAL			
Coefficient of Thermal Expansion	ASTM D 696	in/in/°F	3.75 x 10 ⁻⁵
Heat Deflection Temperature @ 264 psi	ASTM D 648	°F	270
Heat Deflection Temperature @ 66 psi	ASTM D 648	°F	280

*Typical properties are not intended for specification purposes

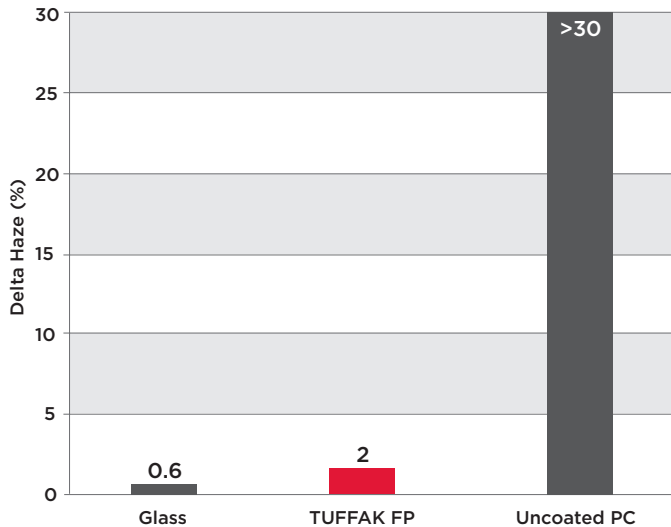
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Impact Resistance*



*Instrumented Impact per ASTM D 3763, sample thickness is 0.125" nominal

Abrasion Resistance*



*Taber Abrasion per ASTM D 1044, 100 cycles, using CS-10F wheels at 500 g load

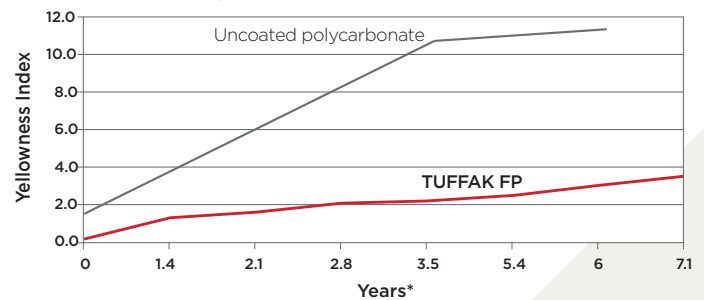
Chemical Resistance*

Chemical Tested	Resistance Time
Acetone	>24 hrs
Ammonia (10% concentration)	>24 hrs
Antifreeze (50/50)	>24 hrs
Benzene	>24 hrs
Bleach (Clorox concentrated)	>24 hrs
Chloroform	>24 hrs
Denatured Alcohol	>24 hrs
Di (2-ethylhexyl) phthalate	>24 hrs
Diesel Oil	>24 hrs
Isopropyl Alcohol (IPA)	>24 hrs
Kerosene	>24 hrs
Methyl Alcohol	>24 hrs
Methyl Butyl Ketone	>24 hrs
Methyl Ethyl Ketone	>24 hrs
Methylene Chloride	>24 hrs
Naphthalene, 1-bromo-	>24 hrs
Potassium Hydroxide - Lye (10%)	>24 hrs
Sodium Hydroxide (10%)	>24 hrs
Toluene	>24 hrs
Turpentine	>24 hrs
Unleaded Gasoline (87 Octane)	>24 hrs
Vinegar	>24 hrs
Xylene	>24 hrs
Acids:	
Hydrochloric Acid (20%)	>24 hrs
Nitric Acid (20%)	>24 hrs
Sulfuric Acid (20%)	>24 hrs

*Tested in accordance to ASTM D 1308-02

Always keep hazardous chemicals away from uncoated edge of Tuffak Polycarbonate Sheet

Weathering Behavior in Vertical Orientation



*Based upon Xenon WOM accelerated weathering for UV dose at mid-latitude location

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 determine the suitability of our materials and suggestions before adopting them on a commercial scale.