

# PHYSICAL PROPERTIES

The following data are average values for Polycast commercial grade acrylic sheet and should not be used for any specific purpose. Polycast will furnish any additional information you may require.

Typical Properties (.250" unless noted)

Mechanical Properties	Test Method	Unit	Polycast	UF3	UF4	UF96
Ballistic Protection						
Specific Gravity	ASTM-D-792		1.19	1.19	1.19	1.19
Tensile Strength	ASTM-D-638					
Yield		psi	11,250	11,250	11,250	11,250
Elongation, Rupture		%	6.4	6.4	6.4	6.4
Modulus of Elasticity		psi	450,000	450,000	450,000	450,000
Flexural Strength	ASTM-D-790					
(Rupture)		psi	15,250	15,250	15,250	15,250
Modulus of Elasticity		psi	475,000	475,000	475,000	475,000
Compressive Strength	ASTM-D-695					
(Yield)		psi	18,000	18,000	18,000	18,000
Modulus of Elasticity		psi	440,000	440,000	440,000	440,000
Compressive Deformation (Under Load)	ASTM-D-621					
4000 PSI 122F, 24hr		%	0.75	0.75	0.75	0.75
Shear Strength	ASTM-D-732	psi	9,000	9,000	9,000	9,000
Impact Strength						
Izod Milled Notch	ASTM-D-256	ft. lbs/in. of notch	0.375*	0.375*	0.375*	0.375*
Falling Steel Ball, 0.5lb. (Breakage drop height (ft.))			18	18	18	18
Rockwell Hardness	ASTM-D-785		M98*	M98*	M98*	M98*
Barcol Hardness	ASTM-D-2583		50*	50*	50*	50*
Residual Shrinkage (Internal Strain)	ASTM-D-4802					
Polycast		%	2.2	2.2	2.2	2.2
Polycast Mil Spec		%				
Optical Properties						
Refractive Index	ASTM-D-542		1.49	1.49	1.49	1.49
Luminous Transmittance (As Cast)	ASTM-D-1003					
Total		%	92	92	92	92
Haze			<0.5	<0.5	<0.5	<0.5
Yellowness Index	ASTM-D-1925		0.5	2.1		1.0
After 1000 hrs. Accelerated Weathering	ASTM G26					
Total		%	92			
Haze			<0.5			
Effect Of Accelerated Weathering-On Appearance	ASTM G26					
Crazing / Discoloration / Warping			none			
Ultraviolet Transmission @ 320nm		%	0	0 @ 390nm	0 @ 385nm	0 @ 390nm
Craze Resistance	Mil-P-8184	psi				
DRY						
IPA			2,000			
Lacquer Thinner			1,000			
Sulfuric Acid			0			
WET						
IPA			500			
Lacquer Thinner			0			
Sulfuric Acid			0			
Abrasion Resistance (Reported as increase in % haze)						
Taber Abrasion (500g. ea. wheel, 100 rev.) ANSI Z26.1	ASTM-D-1044		14			
Mar Resistance	ASTM-D-637		29			
Thermal Properties						
Hot Forming Temperature		deg. Fahrenheit	320 **	320 **	320 **	320 **
Deflection Temperature under load (Heat Distortion Temp.)	ASTM-D-648					
66 psi		deg. Fahrenheit	230*	230*	230*	230*
264 psi		deg. Fahrenheit	203*	203*	203*	203*
Maximum Recommended Continuous Service Temp.		deg. Fahrenheit	180	180	180	180
Minimum Recommended Continuous Service Temp. [lowest temp. tested for bullet-resistance]						
Coefficient of Linear Thermal Expansion	ASTM-D-696	in./in./deg. F	0.000042	0.000042	0.000042	0.000042
Coefficient of Thermal Conductivity	Cento-Fitch <sup>4</sup>	BTU/(Hr.) (Sq.Ft.) (deg. F/in.)	1.3	1.3	1.3	1.3
Thermal Relaxation						
@ 230 deg. F	Mil-P-25690	%				
@ 293 deg. F	Mil-P-25690	%				
Water Absorption						
26 day immersion		%	0.65	0.65	0.65	0.65
24 hour immersion		%	0.2	0.2	0.2	0.2
Flammability (Burning Rate) UL94HB	ASTM-D-635	in./min.	1.2*	1.2*	1.2*	1.2*
Self-ignition Temperature	ASTM-D-1929	deg. Fahrenheit	830*	830*	830*	830*
Specific Heat @ 77F	DuPont 900 (Therm.An. Cal.) <sup>4</sup>	BTU/(Lb.) (deg. F)	0.35	0.35	0.35	0.35
Smoke Density	ASTM-D-2843	%	27**	27**	27**	27**
Crack Propagation (Received at STD Conditions)	Mil-P-25690	lbs/in 3/2				