

AEROSPACE PRODUCTS

Acrylic Products Available from Professional Plastics, Inc.

POLY 76 (MIL-P-8184) is a crosslinked, preshrunk acrylic with excellent resistance to crazing, solvent attacks and thermal dimensional change. As one of few U.S. Military approved materials for stretched panels (MIL-P-25690), sophisticated applications for both military and commercial aircraft are numerous. Availability in transparent colors enhances the versatility of this product. It meets or exceeds all requirements of MIL-P-8184. Type I and II, Class 1 and 2.

POLY 84 (MIL-P-8184) is a uniquely formulated, crosslinked preshrunk acrylic specifically designed to provide superior craze and solvent resistance for today's changing environment. Improvements such as lower water absorption and increased resistance to acids expands the number of "as cast" applications. Poly 84 also meets or exceeds MIL-P-8184, Type I and II, Class 1 and 2. Its superior craze resistance makes it ideal for monolithic windscreens, outer laminates and canopies. It is also available in transparent colors. It meets or exceeds all requirements of MIL-P-8184. Type I and II, Class 1 and 2.

POLY 2000 (MIL-P-25690) military specification covering stretched acrylic sheet specially designed from Mil-P-8184 base material. It offers enhanced craze properties and increased crack resistance. Material supplied for conformance to this specification is identified as Poly 2000™.







PROPERTIES

Typical Properties (.250" ur	nless noted)			Polycast	Poly FR9 (.060")	Poly 900 (DTD-5592- UK)	Poly II (Mil-P-5425)	Poly 84 (Mil-P-8184)	Poly 76 (Mil-P-8184)	Poly 2000 (Mil-P-25690; Class I)	Poly 2000 (Mil-P-25690; Class 2)
Mechanical Properties		Test Method	Units			G.C.				Cilioc iy	0.000 2/
Specific Gravity		ASTM-D-792		1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19
Tensile Strength		ASTM-D-638								0	
Yield			psi	11,250	>10,500	11,250	11,250	11,250	11,250	12,100	12,100
Elongation, Rupture			%	6.4	4.5	6.2	6.4	4.0	4.0		
Modulus of Elasticity			psi	450,000	450,000						
Flexural Strength		ASTM-D-790									
(Rupture)			psi	15,250		15,250	15,250	15,250	15,250		
Modulus of Elasticity		ACTM D COF	psi	475,000		475,000	475,000	475,000	475,000		
Compressive Strength (Yield)		ASTM-D-695	noi	18,000		10,000	10,000	10,000	10.000		
Modulus of Elasticity			psi psi	440,000		18,000 440,000	18,000 440,000	18,000 440,000	18,000 440,000		
Compressive Deformation	(Under Load)	ASTM-D-621	μοι	440,000		440,000	440,000	440,000	440,000		
4000 PSI 122F, 24hr	(Order Lodd)	A01W-D-021	%	0.75		0.75	0.75	0.75	0.75		
Sheer Strength		ASTM-D-732	psi	9,000		9,000	9,000	9,000	9,000	3,700	3,700
Impact Strength		7.OTH D 7.OL					-,		-,		
Izod Milled Notch		ASTM-D-256	ft. lbs/in. of notch	0.375*							
Falling Steel Ball, 0.5lb.	(Breakage drop height (ft.))			18							
Rockwell Hardness		ASTM-D-785		M98*	M96*	M98*	M98*	M98*	M98*		
Barcol Hardness		ASTM-D-2583		50*		50*	50*	50*	50*		
Residual Shrinkage (Inter	mal Strain)	ASTM-D-4802									
Polycast			%	2.2							
Polycast Mil Spec			%		<1	2.2	<1	<1	<1		
Optical Properties											
Refractive Index		ASTM-D-542		1.49	1.49	1.49	1.49	1.49	1.49	1.49	1.49
Luminous Transmittance	(As Cast)	ASTM-D-1003									
Total	(%	92	92	92	92	92	92		
Haze				<0.5	<0.5	<0.5	<0.5	<0.75	<0.75	91	91
Yellowness Index		ASTM-D-1925		0.5						<1.5	<1.5
After 1000 hrs. Accelerate	ed Weathering	ASTM G26									
Total			%	92		92	92	91	91	90	90
Haze				<0.5		<0.5	<0.5	<0.75	<0.75	<3.0	<3.0
Effect Of Accelerated We		ASTM G26									
Crazing / Discoloration			0/	none	^	none	none	none	none		
Ultraviolet Transmission (<u> </u>	10.000	%	0	0	0	0		^		
Craze Resistance DRY	IPA	Mil-P-8184	psi	2,000		2,100	0.100	0 3,225	0 3,100	3,700	4,300
טחז	Lacquer Thinner			1,000		1,350	2,100 1,100	3,030	3,150	3,700	3,600
	Sulfuric Acid			0		NA	0	1,550	1,285	3,300	3,000
WET	IPA			500		1,460	1,000	2,775	2,440	2,750	3,600
***	Lacquer Thinner			0		1,200	0	2,700	2,450	2,650	3,000
	Sulfuric Acid			0		NA	Ö	1,020	500	2,000	0,000
Thermal Properties								1,020			
•										0.4044	0.1011
Hot Forming Temperature				320 **		320 **	320 **	320 **	320 **	218**	218**
Deflection Temperature ur	nder load	107110.010									
(Heat Distortion Temp.)		ASTM-D-648	dan Eshranhai	020*							
66 psi 264 psi			deg. Fahrenhei	t 230* 203*		230*	216*	221*	234*		
	Continuous Service Temp.			180		180	180	180	180		
	Continuous Service Temp.		deg. Fahrenhei			100	100	100	100		
[lowest temp. tested for			deg. Fahrenhei								
Coefficient of Linear Therr			deg. Fahrenhei			0.000042	0.000042	0.000042	0.000042	0.000042	0.000042
Coefficient of Thermal Co		ASTM-D-696		1.3		1.3	1.3	1.3	1.3	1.3	1.3
Thermal Relaxation	,	Cento-Fitch ⁴				-					-
@ 230 deg. F			in./in./deg. F							3.3	3.3
@ 293 deg. F		Mil-P-25690	BTU/(Hr.)(Sq.Ft)							45	45
Water Absorption		Mil-P-25690	(deg. F/in.)	0.65	0.65	0.65	0.65	1.6	2.6	2.6	1.6
		26 day immersion		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Flammability (Burning Rat		24 hour immersion		1.2*	<0.3	1.2*	1.2*	0.8*	0.8*		
Self-ignition Temperature		ASTM-D-635	%	830*	0.55		830*			0.00	
Specific Heat @ 77°F		ASTM-D-1929	%	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Cmoko Donoit		DuPont 900	% in /min	27**	Max13%;		27**				
Smoke Density Crack Propagation (Recei	(anaithana) aTD to bou	(Therm. An. Cal.)4	in./min.		Rating 23.2%					2,900	2 000
Crack Propagation (Recei	ived at 3 1D Conditions)	ASTM-D-2843 Mil-P-25690	deg. Fahrenhei BTU/(Lb.)(deg. F							2,900	2,900
			% lbe/in 3/2								
			lbs/in 3/2								

OUR SERVICES

- Here are some of the ways in which Polycast has made creative, effective and prompt response to the needs of our customers and the aerospace industry in general.
- The development of improved acrylic to meet the fast-changing demands of commercial and military aircraft manufactures for superior material.
- The production of a horizontally shrunk sheet with residual shrinkage of less than .25% (Mil Spec allows up to 1%). This characteristic allows for forming before fabrication. It is ideal for edgelit panel and radar screen applications.
- Polycast standards consistently surpass the quality levels required by the Mil Spec. Polycasts sheet cleanliness and optical clarity are superior in the industry.
- The development of a sheet with different thicknesses in the center as compared to the edges. This enabled an aircraft manufacturer to design a canopy with strong, frontal impact capabilities yet which is thin enough on top so that a pilot can eject through it.

The formulation of colors which meet specific percentages of light transmission at final, stretched thickness.

The development of a strong technical support which is widely known in the aerospace industry for its commitment to technical customer service, whether rendered by mail, phone or in person.

OUR PRODUCTS

POLY A (ASTM D-4802) is our standard unshrunk acrylic manufactured to a visual and optical aircraft specification. It is available in clear as well as transparent colors. Common applications are non-critical glazing for commercial helicopters and sport planes.

POLY FR9 is an interior acrylic material ideal for aircraft applications where low flame spread and low smoke generation are desirable.

POLY 900 is a semi-cross-linked material formulated to meet British specifications DTD-5592.

POLY II (MIL-P-5425) military specification covering heat-resistant, preshrunk, clear, and colored acrylic sheet. Material supplied for conformance for this specification is identified by the name POLY II[®]. Polycast is qualified to furnish sheets in thickness 0.060-1.000 to meet this specification.

TOLERANCES

POLY II®

POLY 76[®]

POLY 84®

	Stan Thick	dard ness ¹	Cla	ss A	Cla	ss B	Class C			
In	ches	Metric	Inches	Metric	Inches	Metric	Inches	Metric		
(0.030 0.060 0.080 0.100 0.125	0.762 1.524 2.032 2.540 3.175	±0.012 ±0.012 ±0.012 ±0.012 ±0.015	±0.305 ±0.305 ±0.305 ±0.305 ±0.381	±0.020 ±0.020 ±0.020 ±0.020	±0.508 ±0.508 ±0.508 ±0.508	±0.030	<u>+</u> 0.762		
(0.150 0.187 0.220 0.250 0.312	3.810 4.750 5.588 6.350 7.925	±0.017 ±0.020 ±0.023 ±0.025 ±0.030	±0.432 ±0.508 ±0.584 ±0.635 ±0.762	±0.020 ±0.023 ±0.025 ±0.030 ±0.035	±0.508 ±0.584 ±0.635 ±0.762 ±0.889	±0.030 ±0.030 ±0.030 ±0.035 ±0.040	±0.762 ±0.762 ±0.762 ±0.889 ±1.016		
(0.375 0.417 0.500 0.625 0.750	12.700 15.875	±0.050	±0.889 ±1.016 ±1.270 ±1.270	±0.040 ±0.045 ±0.050 ±0.050	±1.016 ±1.143 ±1.270 ±1.270	±0.045 ±0.050 ±0.060 ±0.065	±1.143 ±1.270 ±1.524 ±1.651		
	0.875 1.000 1.250 1.500 1.750	25.400 31.750 38.100	±0.050 ±0.063	±1.270 ±1.270 ±1.600 ±1.905	±0.050 ±0.050 ±0.063 ±0.075	±1.270 ±1.270 ±1.600 ±1.905	±0.070 ±0.075 ±0.094 ±0.112	±1.778 ±1.905 ±2.388 ±2.845		
	2.000 2.250 2.500 3.000 3.500 4.000	57.150 63.500 76.200 88.900	±0.113 ±0.126 ±0.146	±2.540 ±2.870 ±3.200 ±3.708 ±4.039	±0.100 ±0.113 ±0.126 ±0.146 ±0.159	±2.540 ±2.870 ±3.200 ±3.708 ±4.039	±0.131 ±0.168 ±0.180 ±0.204 ±0.219	±3.327 ±4.267 ±4.572 ±5.182 ±5.563		

Overages

All sheet supplied net trim (with no overages).

Untrimmed Sheet

Untrimmed sheets are available. No guarantee is given as to the additional area obtained by ordering untrimmed sheet.

¹Intermediate thicknesses are available.

APPROVALS AND SPECIFICATIONS

	U.S	GREAT BRITAIN	GERMANY
POLY A	AMTM D-4802 AMS-L-P391		
POLY II®	MIL-PRF-5425		Exceeds WL5.1412
POLY 76° Type I or II, Class 1	MIL-PRF-8184	Exceeds DTD 5592	Exceeds W25.1415
POLY 84° Type I or II, Class 2	MIL-PRF-8184	Exceeds DTD 5592	Exceeds WL5.1415
POLY 900°		Exceeds DTD 5592	

POLY II® UVA (MIL-PRF-5425)

Clear

- Standard Items: Standard items may be ordered Non-standard Items: Contact Inside Sales for in standard packages (cases and pallets) in quantities listed on inside back cover.
 - availability. Also contact Inside Sales for items which do not appear on chart.

Color

POLY II is available in most colors. manufactured in accordance with MIL-P5425 insofar as the specification Sales for further information.

SIZES	Tolerance Class	Thicknesses1	.030	.060	.080	.100	.125	.150	.187	.220	.250	.312	.375	.500	.625	.750	.875	1.000
36 x 48 36 x 60 36 x 72 40 x 50 48 x 48	A * A *		•															
48 x 60 48 x 72 48 x 96 60 x 72 60 x 96	* BCBC																	
72 x 72 72 x 96	CC						L	B	Ł	E	L	B	E	E				

*Available as cutdowns from larger sizes. Tolerance of larger size prevails.

POLY II® UVT

(MIL-PRF-5425) -Standard in 48 x 96 .125 and .250 only. All other sizes & thicknesses are on a min-max basis.

POLY 76® (MIL-PRF-8184, Type I and II, Class I)

POLY 84® (MIL-PRF-8184, Type I and II, Class 2)

Clear

- Standard Items: Standard items may be ordered in standard packages (cases and pallets) listed on inside back cover.
- □ Non-standard Items: Contact Inside Sales for availability and for items which do not appear on chart.

Color

Available in most colors, manufactured in accordance with MIL-PRF-8184 insofar as the specification is applicable. Please contact Inside Sales for further information.

SIZES	Tolerance Class	Thicknesses'	.090	080	.100	.125	.150	.187	.220	.250	.312	.375	.500	.625 & above	1
36 x 48 36 x 60 36 x 72 40 x 50 48 x 48	A * A														1
48 x 60 48 x 72 48 x 96 60 x 72 60 x 96	* BCBC														
72 x 72 72 x 96	C							-	1	Ŧ[4 1 4	F	늄		

¹Intermediate thicknesses are available with special ordering requirements.

*Available as cutdowns from larger sizes. Tolerance of larger size prevails.



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