

# **POLYCAST®**

# Cell Cast Acrylic

**General Catalog** 



# Spartech Polycast®—Ready to perform in your products—in air, on the ground, in the human body

Polycast: The one material with so many diverse applications. Spartech is shaping the future of plastics through material strength and application expertise. This is especially evident in our Polycast specialty cell-cast acrylic sheet – a plastic solution that is sustainable, diverse, reliable and helps bring innovative ideas to life. We're the world's largest supplier of this highly versatile product for industries specializing in aerospace, transportation, security, optics and acrylic furniture.

The quality of Polycast is evident in the variety of applications it is used for and the fact that we work with our customers to meet their most demanding material requirements. This kind of service is matched by our supply chain reliability made possible in part by our strategically placed manufacturing locations around the country. It's how we deliver peace of mind as we focus on solutions to deliver material orders on time and within budget.

What we achieve today is improved upon tomorrow as we constantly develop new Polycast products and services to help you achieve manufacturing success. If you don't find the exact material you need in this catalog, simply contact Spartech today and our material engineers and sales team can help solve your acrylic sheeting challenges.

#### **SPECIAL SERVICES**

#### **Unique Properties**

Polycast can modify its acrylic sheet to change certain physical, chemical or optical properties to help meet your requirements, including the introduction of sensitive dyes and other additives.

#### **Custom Colors**

Polycast has an extensive color database. Custom colors can be quoted upon your request.

#### **Cut To Size**

Polycast will cut sheet to your size requirements—saving you time and money.

#### **Special Tolerance Control**

Polycast can achieve special tolerances for more critical applications.

#### **Technical Services**

Field technical support from Polycast's sales engineering staff to augment Polycast's extensive product line.

#### **SPECIAL PRODUCTS**

# Acryshield™ Bullet Resisting Sheet - MP1.25, SARMP1.25, HP1.25, SARHP1.25, SP1.25, and SMG1.25

Polycast produces sheet listed by Underwriters Laboratories as bullet resisting for Level I Medium Power (MP 1.25) which is also available with an SAR (abrasion resistant coating), Level 2 High Power (SAR HP 1.25) and Level 3 Super Power (SP 1.25) small arms, both of which come standard with an abrasion resistant coating. Polycast bullet resisting sheet has higher optical clarity than glass or polycarbonate, and can be easily machined and polished. It is available in bronze, as well as clear.

## Super Abrasion Resistant Acrylic Sheet (S-A-R)

Polycast S-A-R is produced by applying a very hard, highly cross-linked polysilicate coating to a substrate. This coating provides Polycast SAR sheet with a surface that has 45 times the abrasion resistance of uncoated acrylic. It also has five times the impact resistance of glass and weighs half as much.

#### **Ultraviolet Transmitting Sheet—UVT**

Provides increased transmission of ultraviolet wavelengths between 280 and 360 nanometers.

## Solacryl®—SUVT (Stabillized Ultraviolet Transmitting Sheet)

Provides increased resistance to degradation of UV exposure, while transmitting increased UV suitable for suntan beds.

## Ultraviolet Filtering Sheet—UF-96, UF-3 and UF-4

Provides increased protection from ultraviolet wavelengths. UF-96 and UF-3 block all UV light below 395 nanometers. UF-4 blocks all UV light below 385 nanometers.

#### Infrared Transmitting Sheet—POLY 2711

A special formula that blocks all visible light, but allows infrared wavelengths to pass through. Specially suited for sophisticated security systems based on infrared technology.

#### Scintillator and Wavelength Shifter Sheet

Utilizes a special formula that produces visible light when bombarded with sub-atomic particles.

#### Pressurized Vehicle for Human Occupancy— PVHO

Polycast is the major supplier of acrylic sheet to the PVHO market. This highly critical application utilizes our expertise in producing optically superior sheet in thick sections.

#### **Extra Thick Sheet**

Sheet thicker than 4.500" is available as composite casting. The sheet is optically superior when viewed though the surface; however, polished edges may show the original casting surfaces as lines. This material meets the PVHO requirements.

#### **Close Tolerance Sheet**

Polycast® CT maintains closer thickness tolerances than standard ASTM 4802 commercial grade sheet (based on standard size sheets of 24" × 36"). Polycast® CT can also be manufactured in clear and colors, Infrared transmitting, UV filtering or transmitting, cross-linked or pre-shrunk and is suitable for FDA applications.

#### **Preshrunk Sheet**

Sheet that is thermally preshrunk, but does not meet MIL-P-5425. Available in thicknesses of .060" to 4.250".

#### National Sanitation Foundation—NSF

A special formulation that meets the requirements of the NSF for food contact.

#### FDA

An acrylic sheet which complies with the Food and Drug Administration's regulations concerning food contact applications as described in 21 CFR 177.1010 for all food types, including alcoholic beverages in room temperature or refrigerated applications.

#### **Aircraft Quality**

Our Aircraft Quality grade conforms to ASTM-D4802 and AMS-L-P-391, but is manufactured and inspected to the highest optical quality standards of Aerospace mil specs.

#### **Poly 900**

A semi-cross-linked material formulated to meet British specification DTD-5592.

#### Military Specification Sheet

Polycast produces sheet covered in Mil-P-5425, Mil-P-8184 and Mil-P-25690 whose inherent properties include; increased weatherability, high solvent and craze resistance and lower water absorption. Material manufactured to Mil-PRF-25690, maintains process control from cell casting to stretching operation. Poly 2000 (Mil-P-25690) is a biaxially stretched acrylic sheet derived from Mil-P-8184 base material. It offers enhanced craze properties and increased crack resistance, primarily for those applications involving pressurized aircraft. These technologically advanced materials are supplied primarily to the aviation industry. POLY II is our heat-resistant, preshrunk, clear and colored acrylic sheet formulated to meet military specification MILPRF-5425. We are qualified to furnish sheets in thicknesses 0.060"-1.000" to meet this specification.

## **UV Blocking & Solar Heat Control Cell Cast Acrylic Sheet**

Polycast SolarControl® is a custom cell cast acrylic sheet solution that blocks out significant amounts of near-infrared (NIR) radiation while maintaining high visible light transmission. It is available in a wide variety of patented SolarControl® colors and light transmissions, including Night Vision Compatibility (NVG). This aircraft-quality monolithic glazing material can be manufactured to MIL-PRF-5425, 8184, and 25690; DTD-5592; L-P-391; ASTM D-4802 and other specifications.

				ULTR	A-VIOLET FILTE	RING	(UVT)	
PHYSICAL PROPERTIES			POLYCAST	UF3	UF4	UF96	Ultra-Violet Transmitting	
MECHANICAL	TEST METHOD	UNIT						
Ballistic Protection			-	-	-	-	-	
Specific Gravity	ASTM D792		1.19	1.19	1.19	1.19	1.19	
Tensile Strength								
Yield	ASTM D638	psi	11,250	11,250	11,250	11,250	11,250	
Elongation, Rupture Modulus Elasticity		% psi	6.4 450,000	6.4 450,000	6.4 450,000	6.4 450,000	6.4 450,000	
Flexural Strength		раг	430,000	100,000	100,000	100,000	100,000	
(Rupture)	ASTM D790	psi	15,250	15,250	15,250	15,250	15,250	
Modulus of Elasticity		psi	475,000	475,000	475,000	475,000	475,000	
Compressive Strength								
(Yield)	ASTM D695	psi	18,000	18,000	18,000	18,000	18,000	
Modulus of Elasticity  Compressive Deformation (Under Load)		psi	440,000	440,000	440,000	440,000	440,000	
4000 PSI 122F, 24hr	ASTM D621	%	0.75	0.75	0.75	0.75	9,000	
Shear Strength	ASTM D732	psi	9,000	9,000	9,000		9,000	
Impact Strength								
Izod Milled Notch Falling Steel Ball, 0.5lb. (Breakage drop height (ft.)	ASTM D256	ft-lbs/in of notch	.375* 18	.375* 18	.375* 18	.375* 18	.375* 18	
Rockwell Hardness	ASTM D785	oi noten	M98*	M98*	M98*	M98*	M98*	
Barcol Hardness	ASTM D2583	-	50*	50*	50*	50*	50*	
Residual Shrinkage (Internal Strain)								
Polycast Mil Space	ASTM D4802	% %	2.2	2.2	2.2	2.2	2.2	
Polycast Mil Spec								
OPTICAL PROPERTIES	TEST METHOD	UNIT						
Refractive Index	ASTM D542		1.49	1.49	1.49	1.49	1.49	
Luminous Transmittance (As Cast) Total	ASTM D1003		92	92		92	92	
Haze		%	<0.5	<0.5	92	<0.5	< 0.5	
Yellowness Index	ASTM D1925		0.5	2.1	<0.5	1.0		
After 1000 Hrs. Accelerated Weathering								
Total	ASTM G26	%	92	_	_	_	_	
Haze			<0.5					
Effect of Accelerated Weathering on Appearance – Crazing, Discoloration, Warping	ASTM G26	-	none	-	-	-	-	
Ultraviolet Transmission @ 320nm		%	0	0 @ 390nm	0 @ 385nm	0 @ 390nm	>80	
Craze Resistance								
DRY IPA			2,000					
Lacquer Thinner Sulfuric Acid	Mil-P-8184	psi	1,000				_	
WET IPA	141111111111111111111111111111111111111	poi	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 D1044	-	14	-	-	-	-	
Mar Resistance	ASTM D637	-	29	-	-	-	_	
THERMAL PROPERTIES	TEST METHOD	UNIT						
Hot Forming Temperature	I I I I I I I I I I I I I I I I I I I	°F	320**	320**	320**	320**	260**	
Deflection Temperature Under Load (Heat Distortion Temp.)	ASTM D648	<u>'</u>	320	320	320	JZU	200	
60 psi		°F	230*	230*	230*	230*	230*	
264 psi		°F	203*	203*	203*	203*	203*	
Max. Recommended Continuous Service Temperature  Min Recommended Continuous Service Temperature"	_	°F	180	180	180	180	180	
(lowest temp. tested for bullet-resistance)	-							
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/°F	0.000042	0.000042	0.000042	0.000042	0.000042	
Coefficient of Thermal Conductivity	Cento-Fitch⁴	BTU/(hr) (Ft²)	1.3	1.3	1.3	1.3	1.3	
Thermal Relaxation		(°F/in)						
@ 230°F	Mil-P-25690	%	_	_	_	-	_	
@ 293°F	Mil-P-25690	%			-	-	_	
Water Absorption	26 day immersion	%	.65	.65	.65	.65	.65	
Flammakility / Duming Both \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	24 hour immersion	%	0.2	0.2	0.2	0.2	0.2	
Flammability (Burning Rate) UL94HB Self-ignition Temperature	ASTM D635 ASTM D1929	in/min °F	1.2* 830*	1.2* 830*	1.2* 830*	1.2* 830*	1.2* 830*	
<u> </u>	DuPont 900							
Specific Heat @ 77°F	(Therm. An. Cal.)	BTU/(lb) (°F)	0.35	0.35	0.35	0.35	0.35	
Smoke Density	ASTM D2843	%	27**	27**	27**	27**	27**	

PHYSICAL PROPERTIES			Solacryl® (tests based on .187")	ACRYSHIELD™ MP1.25, SARMP1.25 (UL 752 Level 1)	ACRYSHIELD™ HP1.25, SARHP1.25 (UL 752 Level 2)	ACRYSHIELD™ SP1.25 (UL 752 Level 3)	ACRYSHIELD™ SMG1.25 (UL 752 Level 6)
MECHANICAL	TEST METHOD	UNIT					
Ballistic Protection			-	9mm	.357 Magnum	.44 Magnum	Submachine Gun/Uzi
Specific Gravity	ASTM D792		1.19	-	_		
Tensile Strength							
Yield	ASTM D638	psi o/	8,600	9,500	9,500	9,400	9,400
Elongation, Rupture Modulus Elasticity		% psi	7 400,000	400,000	400,000	400,000	400,000
Flexural Strength (Rupture) Modulus of Elasticity	ASTM D790	psi psi	_	-	-	-	-
Compressive Strength (Yield) Modulus of Elasticity	ASTM D695	psi psi	-	400,000	400,000	400,000	400,000
Compressive Deformation (Under Load) 4000 PSI 122F, 24hr	ASTM D621	%				_	_
Shear Strength	ASTM D732	psi	_	_	_		
Impact Strength Izod Milled Notch Falling Steel Ball, 0.5lb. (Breakage drop height (ft.)	ASTM D256	ft-lbs/in	-	-	-	-	-
Rockwell Hardness	ASTM D785	-	-	_	_		
Barcol Hardness	ASTM D2583	-					
Residual Shrinkage (Internal Strain) Polycast Polycast Mil Spec	ASTM D4802	% %	2.2	2.2	2.2	-	-
OPTICAL PROPERTIES	TEST METHOD	UNIT					
Refractive Index	ASTM D542		1.49			_	_
Luminous Transmittance (As Cast)	ASTM D1003		1.10				
Total		0/	92	>90	>90	>85	>85
Haze Yellowness Index	ASTM D1925	%	<1	<1.0 <0.7	<1.0 <0.7	<1.5 <1.0	<1.5 <1.0
After 1000 Hrs. Accelerated Weathering Total	ASTM G26		_	-	_	_	_
Haze  Effect of Accelerated Weathering on Appearance –		%					
Crazing, Discoloration, Warping	ASTM G26	-	-	_	_		
Ultraviolet Transmission @ 320nm		%		0	0	0	0
Craze Resistance DRY IPA Lacquer Thinner Sulfuric Acid WET IPA Lacquer Thinner Sulfuric Acid	Mil-P-8184	psi	-	-	-	-	-
Abrasion Resistance (Reported as increase in % haze)	-	-	-	-	-	-	-
Taber Abrasion (500g. ea. wheel, 100 rev.) ANSI Z26.1	ASTM D1044	-	-	_	1.5	1.5	1.5
Mar Resistance	ASTM D637	-	-	-	2.3	2.3	2.3
THERMAL PROPERTIES	TEST METHOD	UNIT					
Hot Forming Temperature		°F	260**	320**	320**	-	_
Deflection Temperature Under Load (Heat Distortion Temp.) 60 psi 264 psi	ASTM D648	°F °F	200*				
Max. Recommended Continuous Service Temperature	_	°F	155	170	170	170	170
Min Recommended Continuous Service Temperature"	_			-26	-26	-26	-26
(lowest temp. tested for bullet-resistance)  Coefficient of Linear Thermal Expansion	ASTM D696	in/in/°F	0.000042	0.000042	0.000042	_	_
•		BTU/(hr) (Ft <sup>2</sup> )	0.000042				
Coefficient of Thermal Conductivity	Cento-Fitch⁴	(°F/in)		1.3	1.3	-	-
Thermal Relaxation @ 230°F @ 293°F	Mil-P-25690 Mil-P-25690	% %	- -	- -	- -	-	-
Water Absorption	26 day immersion 24 hour immersion	% %	0.2	0.2	0.2	0.2	0.2
Flammability (Burning Rate) UL94HB	ASTM D635	in/min	1.2*	1.2*	1.2*	.23*	.23*
Self-ignition Temperature	ASTM D1929	°F	830*	870	870	_	-
Specific Heat @ 77°F	DuPont 900 (Therm. An. Cal.)	BTU/(lb) (°F)	0.35	0.35	0.35	- May 65: Rating	-
Smoke Density	ASTM D2843 Mil-P-25690	% lbs/in 3/2	-	Max 8%; Rating 5%	Max 8%; Rating 5%	Max. 65; Rating 49%	Max. 65; Rating 49%

PHYSICAL PROPERTIES			SAR (Super Abrasion Resistant)	<b>POLY 900</b> (DTD-5592)	POLY II (Mil-PRF-5425)
MECHANICAL	TEST METHOD	UNIT			
Ballistic Protection			-	_	_
Specific Gravity	ASTM D792		1.19	1.19	1.19
Tensile Strength					
Yield	ASTM D638	psi	10,000	11,250	11,250
Elongation, Rupture Modulus Elasticity		% psi	4.5 427,000	6.2	6.4
Flexural Strength		po.	127,000		
(Rupture)	ASTM D790	psi	16,000	15,250	15,250
Modulus of Elasticity		psi	450,000	475,000	475,000
Compressive Strength	A OTA A DOOF		47.000	40.000	40.000
(Yield) Modulus of Elasticity	ASTM D695	psi psi	17,900 427,000	18,000 440,000	18,000 440,000
Compressive Deformation (Under Load)	A 071 A D004	μοι	427,000	770,000	440,000
4000 PSI 122F, 24hr	ASTM D621	%		0.75	9,000
Shear Strength	ASTM D732	psi	8,900	9,000	
mpact Strength Izod Milled Notch		ft-lbs/in	.375*	_	_
Falling Steel Ball, 0.5lb. (Breakage drop height (ft.)	ASTM D256	of notch	.3/5*	_	_
Rockwell Hardness	ASTM D785	-	M100*	M98*	M98*
Barcol Hardness	ASTM D2583	_		50*	50*
Residual Shrinkage (Internal Strain)	40714.0	0/	2.2		
Polycast Polycast Mil Spec	ASTM D4802	% %		2.2	<1
	TEST METUOD			2.2	ζ1
OPTICAL PROPERTIES	TEST METHOD	UNIT			
Refractive Index	ASTM D542		1.43***	1.49	1.49
Luminous Transmittance (As Cast) Total	ASTM D1003		93	92	92
Haze		%	0.5	< 0.5	< 0.5
Yellowness Index	ASTM D1925				
After 1000 Hrs. Accelerated Weathering					
Total Haze	ASTM G26	%	-	92	92
				<0.5	<0.5
Effect of Accelerated Weathering on Appearance – Crazing, Discoloration, Warping	ASTM G26	_	-	none	none
Ultraviolet Transmission @ 320nm		%	0–5	0	0
Craze Resistance					
DRY IPA				2,100	2,100
Lacquer Thinner Sulfuric Acid	Mil-P-8184	psi	_	1,350 NA	1,100 0
WET IPA	WIII-1 -010 <del>1</del>	рзі		1,460	1,000
Lacquer Thinner				1,200	0
Sulfuric Acid				NA	0
Abrasion Resistance (Reported as increase in % haze)	_	-	-	_	-
Taber Abrasion (500g. ea. wheel, 100 rev.) ANSI Z26.1	ASTM D1044	_	1.5	_	_
Mar Resistance	ASTM D637	_	2.3	_	_
THERMAL PROPERTIES	TEST METHOD	UNIT			
Hot Forming Temperature	TEGT METITOD	°F	223**	320**	320**
Deflection Temperature Under Load (Heat Distortion Temp.)	ASTM D648		220	020	320
60 psi		°F			
264 psi		°F	200	230*	216*
Max. Recommended Continuous Service Temperature Min Recommended Continuous Service Temperature"	_	°F	176	180	180
(lowest temp. tested for bullet-resistance)	_			_	_
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/°F	0.000042	0.000042	0.000042
Coefficient of Thermal Conductivity	Cento-Fitch⁴	BTU/(hr) (Ft²) (°F/in)	1.45	1.3	1.3
Thermal Relaxation	MU D OFFICE	0/			
@ 230°F @ 293°F	Mil-P-25690 Mil-P-25690	% %		-	_
Water Absorption	26 day immersion	%		.065	.065
	24 hour immersion	%	0.2	0.2	0.2
lammability (Burning Rate) UL94HB	ASTM D635	in/min	0.98	1.2*	1.2*
Self-ignition Temperature	ASTM D1929	°F	870*		830*
Specific Heat @ 77°F	DuPont 900 (Therm. An. Cal.)	BTU/(lb) (°F)	0.35	0.35	0.35
Smoke Density	ASTM D2843	%	13.9	_	_
Crack Propagation (Received at STD Conditions)	Mil-P-25690	Ibs/in 3/2	-		

PHYSICAL PROPERTIES			POLY 76 MIL-PRF-8184	POLY 84 MIL-PRF-8184	POLY 20001™ MIL-PRF-25690 CLASS 1 POLY 76	POLY 20002™ MIL-PRF-25690 CLASS 2 POLY 84
MECHANICAL	TEST METHOD	UNIT				
Ballistic Protection			-	-	-	-
Specific Gravity	ASTM D792		1.19	1.19	1.19	1.19
Tensile Strength Yield		psi	11,250	11,250	12,100	12,100
Elongation, Rupture	ASTM D638	%	5	5	-	-
Modulus Elasticity		psi	450,000	450,000		
Flexural Strength (Rupture)	ASTM D790	psi	15,250	15,250	_	_
Modulus of Elasticity	ACTIVI D730	psi	450,000	450,000	_	_
Compressive Strength						
(Yield) Modulus of Elasticity	ASTM D695	psi psi	18,000 440,000	18,000 440,000	_ _	
Compressive Deformation (Under Load)	ASTM D621	·	110,000			
4000 PSI 122F, 24hr		%	0.75	0.75	- 2700	- 2700
Shear Strength Impact Strength	ASTM D732	psi	9,000	9,000	3,700	3,700
Izod Milled Notch	ASTM D256	ft-lbs/in	_	_	_	_
Falling Steel Ball, 0.5lb. (Breakage drop height (ft.)  Rockwell Hardness	ASTM D785	of notch	M98*	M98*		
Barcol Hardness	ASTM D2583	_	50*	50*		
Residual Shrinkage (Internal Strain)		.,				
Polycast Polycast Mil Spec	ASTM D4802	%	<1	<1	_	_
OPTICAL PROPERTIES	TEST METHOD	UNIT				
Refractive Index	ASTM D542	Oran	1.49	1.49	1.49	1.49
Luminous Transmittance (As Cast)	ASTM D1003		92	92	91	91
Total Haze		%	<0.5	<0.75	<1.5	<1.5
Yellowness Index	ASTM D1925	70				
After 1000 Hrs. Accelerated Weathering			04	04	00	00
Total Haze	ASTM G26	%	91 <0.75	91 <0.75	90 <3.0	90 <3.0
Effect of Accelerated Weathering on Appearance –				10110		1919
Crazing, Discoloration, Warping	ASTM G26	-	none	none	_	_
Ultraviolet Transmission @ 320nm		%	0	0	0	0
Craze Resistance DRY IPA			3,100	3,225	3,700	4,300
Lacquer Thinner	MII D 0404		3,150	3,030	3,300	3,600
Sulfuric Acid WET IPA	Mil-P-8184	psi	1,285	1,550	2.750	2.000
Lacquer Thinner			2,440 2,450	2,775 2,700	2,750 2,650	3,600 3,600
Sulfuric Acid			500	1,020		
Abrasion Resistance (Reported as increase in % haze)	A CTAA D1044		_	_	_	_
Taber Abrasion (500g. ea. wheel, 100 rev.) ANSI Z26.1	ASTM D1044	-	_	_	_	_
Mar Resistance	ASTM D637	-		-	_	_
THERMAL PROPERTIES	TEST METHOD	UNIT				
Hot Forming Temperature  Deflection Temperature Under Load (Heat Distortion Temp.)	ASTM D648	°F	320*	320*	218*	218*
60 psi	AOTIVI DOTO	°F	235*	225*	_	_
264 psi		°F	100	100		
Max. Recommended Continuous Service Temperature Min Recommended Continuous Service Temperature"	_	°F	0.000042	180 0.000042	0.000042	0.000042
(lowest temp. tested for bullet-resistance)	_					
Coefficient of Linear Thermal Expansion	ASTM D696	in/in/°F BTU/(hr) (Ft²)	1.3	1.3	1.3	1.3
Coefficient of Thermal Conductivity	Cento-Fitch⁴	(°F/in)	_	_	3.3	3.3
Thermal Relaxation	MIL D OFFICE	0/	0.0	1.0	0.0	10
@ 230°F @ 293°F	Mil-P-25690 Mil-P-25690	%	2.6 0.2*	1.6 0.2*	2.6 0.2*	1.6 0.2*
Water Absorption	26 day immersion	%	0.8*	0.8*	-	-
Flammability (Burning Rate) UL94HB	24 hour immersion ASTM D635	% in/min		_	_	_
Self-ignition Temperature	ASTM D1929	in/min °F	0.35	0.35	0.35	0.35
Specific Heat @ 77°F	DuPont 900	BTU/(lb) (°F)	=	-	-	-
Smoke Density	(Therm. An. Cal.) ASTM D2843	%	_	_	2,900	2,900
Crack Propagation (Received at STD Conditions)	Mil-P-25690	lbs/in 3/2		_	2,900	- 2,300

ELECTRICAL PROPERTIES	TEST METHOD	UNIT	AVERAGE VALUE FOR .250" THICKNESS
Dielectric Strength Short Time Test	ASTM D149	volts/mil. (1/8" thickness)	430**
Dielectric Constant 60 Cycles 1,000 Cycles 1,000,000 Cycles	ASTM D150	-	3.5 3.2 2.7
Dissipation Factor 60 Cycles 1,000 Cycles 1,000,000 Cycles	ASTM D150	-	0.06 0.04 0.02
Power Factor 60 Cycles 1,000 Cycles 1,000,000 Cycles	ASTM D1500	-	0.06 0.044 0.02
Loss Factor 60 Cycles 1,000 Cycles 1,000,000 Cycles	ASTM D150	-	0.21 0.13 0.06
Arc Resistance	ASTM D495	_	No Tracking
Volume resistivity Surface Resistivity	ASTM D257 ASTM D257	ohm-cm ohms	1.6 × 1016 1.9 × 1015

- <sup>1</sup> ADDITIONAL DATA, CODES AND APPROVALS ARE AVAILABLE UPON REQUEST. All values shown are for 0.250" thickness sheet, unless otherwise noted. Asterisked (\*) values will change with thickness. Difference in length and width, as measured at room temperature, before and after heating above
- <sup>2</sup> Unshrunk sheet will shrink in size by approximately 2% and increase in thickness by aproximately 4% when heated to forming temperature.
- 3 Not ASTM method.
- \*\* Varies with thickness.
- \*\*\* Because the surface of Polycast SAR has a lower refractive index than the substrate, the amount of back reflectance is reduced and the transmittance increased.
- (A) Steel Wool Rotary Test-This severe abrasion uses a 1.25" square pad of commercially available 0000 grade steel wool. The steel wool pad is loaded with appropriate weights to give either 12 or 24 psi pressure and is revolved five times.
- (B) Simulated Cleaning Test-An abrasive water slurry of a commercially available standard test dust is placed on the sample. It is then stroked 360 times with a felt pad under an approximately 2.0 psi load. @ MP 1.25 also available in SAR abrasion resistant coating.

#### **COLOR\***

COLOR								
COLOR	TYPE	% TRANS	COLOR	TYPE	% TRANS			
SEMI OPAQUE			TRANSPARENT					
2022 Black	S0	0%	2111 Green	TP	77%			
2025 Black	S0	0%	2208 Yellow	TP	77%			
WHITE SEMI O	PAQUE		2414 Green	TP	60%			
7138 White	SO	41%	2422 Amber	TP	48%			
7328 White	TL	34%	2423 Red	TP	6%			
7420 White	TL	26%	2424 Blue	TP	8%			
7508 White	TL	8%	2444 Red	TP	5%			
TRANSLUCENT	•		3030 Green	TP	92%			
2039 Red	TL	2%	2064 Gray	TP	27%			
2050 Blue	TL	1%	2074 Gray	TP	13%			
2146 Ivory	TL	38%	2094 Gray	TP	45%			
2157 Red	TL	2%	2370 Bronze	TP	10%			
2283 Red	TL	12%	2404 Bronze	TP	49%			
2662 Red	TL	4%	2412 Bronze	TP	27%			
WHITE TRANS	LUCENT		2514 Gray	TP	59%			
2067 White	TL	71%	2515 Gray	TP	76%			
2447 White	TL	51%	2537 Gray	TP	32%			
TRANSPARENT			2538 Gray	16%				
2069 Blue	TP	55%	2539 Bronze	TP	61%			
2092 Green	TP	26%	2540 Bronze	TP	75%			

<sup>\*</sup>Colors and whites listed below are standard items and may be ordered in the case and pallet quantities listed on inside back cover. These colors are also available in other sizes and thicknesses as non-standard items. Polycast manufactures many other colors. Please call for availability.

POLYCAST SOLARCONTROL® UV-SC COLOR EXAMPLES											
COLOR	% VISIBLE LIGHT	% SOLAR ENERGY**	% ENERGY REDUCTION								
Clear Acrylic	92	85	15								
82SCTM*	82	53	47								
2111 Green	77	75	25								
SC11™ Green*	72	45	55								
2515 Gray	76	74	26								
SC15™ Gray*	72	51	49								
2540 Bronze	75	72	28								
SC40™ Bronze*	71	47	53								
2256 Gray	65	66	34								
SC56™ Gray*	65	47	53								
2094 Gray	45	49	51								
SC94™ Gray*	45	38	62								
2537 Gray	32	41	59								
SC37™ Gray*	32	27	73								
2412 Bronze	27	35	65								
SC12™ Bronze*	27	26	74								
2064 Gray	27	34	66								
SC64™ Gray*	26	24	76								
2130 Green	23	40	60								
SC30™ Green*	24	21	79								
2538 Gray	16	26	74								
SC38™ Gray*	15	15	85								
2074 Gray	13	32	68								
SC74™ Gray*	13	13	87								
2370 Bronze	10	16	84								
SC70™ Bronze*	10	13	87								

- \* Indicates special solar control properties. Colors not listed are available upon request. Polycast SolarControl® colors are
- available in wide range of light transmissions.

  \*\* Solar Energy calculated using Lawrence Berkeley National Laboratory Optics v.5 software. The actual temperature in service will be dependent on the combination of many factors, such as weather conditions (including wind velocity) and type of

	POLYCAST SOLARCONTROL® NVG COMPATIBLE COLORS										
COLOR	DESCRIPTION	RELATIVE HEAT GAIN (BTU/ HR X FT²)	% T SOLAR	% VLT	%T <sub>NVG</sub>	R (VLT/T SOLAR)					
Gold Coat	Gold Coating Standard	_	_	_	72	_					
NV73™	Copper	173	57	73	75	1.3					
NV83™	Near Clear	174	60	83	73	1.4					
NV72™	Light Gray	173	59	73	73	1.2					

## **POLY II UVA**

Produ	ct Dimensions			Thickness <sup>2</sup>													
Inches	Metric (mm)	Tolerance Class <sup>1</sup>	.060" 1.6 mm	.080" 2.1 mm	.100" 2.6 mm	.125" 3.2 mm	.150" 3.9 mm	.185" 4.8 mm	.220" 5.6 mm	.250" 6.4 mm	.312" 8.0 mm	.375" 9.6 mm	.500" 12.7 mm	.625" 15.9 mm	.750" 19.1 mm	.875" 22.3 mm	1.000" 25.4 mm
36 × 48	914.40 × 1219.2	А	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
36 × 60	914.40 × 1524.0	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36 × 72	914.40 × 1828.8	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	•
40 × 50	1016.00 × 1270.0	Α	•	•	•	•	•	•	•	•	•	•	•	0	0	0	0
48 × 48	1219.20 × 1219.2	*				•	•	•	•	•	•	•	•	•	•	•	•
48 × 60	1219.20 × 1524.0	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48 × 72	1219.20 × 1828.8	В	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
48 × 96	1219.20 × 2438.4	В				•	•	•	•	•	•	•	•	•	•	•	
60 × 72	1524.00 × 1828.8	В				•	•	•	•	•	•	•	•	0	0	0	•
60 × 96	1524.00 × 2438.4	С				•	•	•	•	•	•	•	•	0	0	0	0
72 × 72	1828.80 × 1828.8	С				•	•	•	•	•	•	•	•	0	0	0	0
72 × 96	1828.80 × 2438.4	С				•	•	•	•	•	•	•	•	0	0	0	0

Poly II UVT available upon request.

POLY 76	POLY 84
MIL-PRF-8184, Type	MIL-PRF-8184, Type I and II, Class 2

Produ	uct Dimensions						Th	ickness	<sup>2</sup> (inches	s/mm)				
Inches	Metric (mm)	Tolerance Class <sup>1</sup>	.060" 1.6 mm	.080/ 2.1 mm	.100" 2.6 mm	.125" 3.2 mm	.150" 3.9 mm	.187" 4.8 mm	.220" 5.6 mm	.250" 6.4 mm	.312" 8.0 mm	.375" 9.6 mm	.500" 12.8 mm	.625" 15.9 mm & Up
36 × 48	914.40 × 1219.2	Α	•	•	•	•	•	•	•	•	•	•	•	0
36 × 60	914.40 × 1524.0	*	0	0	0	0	0	0	0	0	0	0	0	0
36 × 72	914.40 × 1828.8	*	0	0	0	0	0	0	0	0	0	0	0	0
40 × 50	1016.00 × 1270.0	Α	0	0	0	•	0	•	0	•	0	0	0	0
48 × 48	1219.20 × 1219.2	*				•	0	•	0	•	0	0	0	0
48 × 60	1219.20 × 1524.0	*	0	0	0	•	0	•	0	•	0	0	0	0
48 × 72	1219.20 × 1828.8	В	0	0	0	•	•	•	•	•	•	•	•	•
48 × 96	1219.20 × 2438.4	В				•	•	•	•	•	•	•	•	•
60 × 72	1524.00 × 1828.8	В				•	0	•	0	•	•	0	0	0
60 × 96	1524.00 × 2438.4	С				•	0	•	0	•	•	0	0	0
72 × 72	1828.80 × 1828.8	С				•	0	•	0	•	•	•	•	•
72 × 96	1828.80 × 2438.4	С				0	0	•	0	•	0	0	0	0

#### CLEAR

- Standard Items: Standard items may be ordered in standard packages (cases and pallets).
- Non-Standard Items: Contact Polycast® Customer Service for availability.

#### **COLOR**

Poly 76 & Poly 84 are available in most colors, manufactured in accordance with MIL-PRF-8184 insofar as the specification is applicable.

POLY II is available in most colors, manufactured in accordance with MIL-PRF-5425 insofar as the specification is applicable. Please contact Customer Service for further information.

- <sup>1</sup> Refer to tolerance table on page 6.
- <sup>2</sup> Intermediate thicknesses are available with special ordering requirements.
- \* Available with cutdowns from larger sizes. Tolerance of larger size prevails.

### SPECIFICATIONS BY PRODUCT, RANKED BY PERFORMANCE

PRODUCT	PRODUCT DESCRIPTION	USA	EUROPEAN EQUIVALENT SPECIFICATION
POLY A	As Cast	ASTM 4802, AMS-L-P-391	EN 4364, WL5.1412
POLY II	As Cast, Pre-Shrunk	MIL-PRF 5425	EN 4364, WL5.1412
POLY 900	Crosslinked, As Cast		DTD 5592, EN4365, meets and exceeds requirements of WL 5.1415.2, LN 9130 and DIN 65321
POLY 76	Crosslinked, As Cast, Pre-Shrunk	MIL-PRF 8184 (Class 1)	EN4365, WL5.1415
POLY 84	Crosslinked, As Cast, Lower Water Absorption, Pre-Shrunk	MIL-PRF 8184 (Class 2)	EN4365, WL5.1415
POLY 2000 (POLY 2001, POLY 2002)	Crosslinked and Stretched, Pre-Shrunk	MIL-PRF 25690	EN4366, WL5.1416

Customers may inquire about other specifications not listed, such as France AIR 9106 and Russia GOST 10667-90

# TOLERANCES FOR POLY II\*, POLY 76 AND POLY 84 as per MIL-SPEC

Standard	d Thickness <sup>1</sup>	CI	ass A	Cla	ass B	CI	ass C
Inches	Millimeters	Inches	Millimeters	Inches	Millimeters	Inches	Millimeters
0.060	1.524	±0.012	±0.305	±0.020	±0.508		
0.080	2.032	±0.012	±0.305	±0.020	±0.508		
0.100	2.540	±0.012	±0.305	±0.020	±0.508		
0.125	3.175	±0.015	±0.381	±0.020	±0.508	±0.030	±0.762
0.150	3.810	±0.017	±0.432	±0.020	±0.508	±0.030	±0.762
0.187	4.750	±0.020	±0.508	±0.023	±0.584	±0.030	±0.762
0.220	5.588	±0.023	±0.584	±0.025	±0.635	±0.030	±0.762
0.250	6.350	±0.025	±0.635	±0.030	±0.762	±0.035	±0.889
0.312	7.925	±0.030	±0.762	±0.035	±0.889	±0.040	±1.016
0.375	9.525	±0.035	±0.889	±0.040	±1.016	±0.045	±1.143
0.500	12.700	±0.040	±1.016	±0.045	±1.143	±0.050	±1.270
0.625	15.875	±0.050	±1.270	±0.050	±1.270	±0.060	±1.524
0.750	19.050	±0.050	±1.270	±0.050	±1.270	±0.065	±1.651
0.875	22.225	±0.050	±1.270	±0.050	±1.270	±0.070	±1.778
1.000	25.400	±0.050	±1.270	±0.050	±1.270	±0.075	±1.905
1.250	31.750	±0.063	±1.600	±0.063	±1.600	±0.094	±2.388
1.500	38.100	±0.075	±1.905	±0.075	±1.905	±0.112	±2.845
2.000	50.800	±0.100	±2.540	±0.100	±2.540	±0.131	±3.327
2.250	57.150	±0.113	±2.870	±0.113	±2.870	±0.168	±4.267
2.500	63.500	±0.126	±3.200	±0.126	±3.200	±0.180	±4.572
3.000	76.200	±0.146	±3.708	±0.146	±3.708	±0.204	±5.182
3.500	88.900	±0.150	±4.039	±0.159	±4.039	±0.219	±5.563

<sup>\*</sup>We are qualified to furnish sheets in the entire range of thicknesses between 0.060" – 1.000" to meet this specification. 'Intermediate thicknesses are available.

#### **POLY 900 Thickness and Sheet Sizes Thickness** Tolerance 36 × 48" 40 × 50" 48 × 72" 48 × 96" 60" × 72" 60" × 96" 72" × 72" 72" × 96" Standard .060" / 1.50 mm .048/.072" • • • Items: Standard • .080" / 2.0 mm .165/.095" items may • • be ordered .100" / 2.50 mm .082/.118" in standard .118" / 3.0 mm .098/.138" packages • 0 0 .125" / 3.20 mm .105/.145" • • 0 0 (cases and .138" / 3.50 mm .116/.159" • • • 0 0 0 0 pallets). • • • 0 0 0 .150" / 3.80 mm .127/.173" Non-Standard .157" / 4.0 mm .133/.181" 0 0 0 0 Items: Contact Polycast® .187" / 4.70 mm .161/.213" • • • • 0 0 0 0 Customer 0 0 0 • • • • 0 .197" / 5.0 mm .169/.225" Service for • 0 0 .220" / 5.60 mm .191/.249" • • • 0 0 availability. .236" / 6.0 mm .208/.264" • • • • 0 0 0 0 Tolerances • • 0 0 0 0 .250" / 6.40 mm .220/.280" interpreted .315" / 8.0 mm .280/.350" • • • 0 0 0 0 from Fig. 2 of .375" / 9.50 mm • • 0 0 0 0 DTD-5592A. .337/.413" • 0 0 0 .394" / 10.0 mm .355/.433" • • 0 .472" / 12.70 mm .429/.514" • • • 0 0 0 0 .50" / 12.70 mm .455/.545" • 0 0 0 0 .512" / 13.0 mm .466/.558" • 0 0 0 0 0 0 0 .591" / 15.0 mm .544/.638" 0 0 • • 0 .625" / 15.90 mm .575/.675" 0 .709" / 18.0 mm .659/.759" • • • • 0 0 0 0 • 0 0 .750" / 19.0 mm • 0 0 .697/.803" .787" / 20.0 mm .736/.838" • • • 0 0 0 0 .875" / 22.20 mm .822/.928" 0 0 0 0 .984" / 25.0 mm .930/1.038" • 0 0 0 0

# POLYCAST® POLY 2000 STRETCHED ACRYLIC SHEET (MIL PRF 25690)

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KEY A	_		

- Largest sheet yields lower unit costs
- Superior optical quality
- Available in standard thicknesses

#### **MANUFACTURING PERFORMANCE**

- Offer tighter tolerances than standard mil spec (+/- .020" < .250"; >.250" +/- 10%), upon request
- Flexibility and consistency
- Control from cell casting to stretching

#### **SERVICE**

- Parts cut to your size and shape configurations
- Cradle to grave options
- Inventory levels exacted to your specifications
- Technical expertise and superior customer support

#### **APPLICATIONS**

Military, commercial and general aviation glazing for fixed and rotary wing:

- Aircraft cockpit windows
- Aircraft canopies
- Windscreens
- Cabin windows
- Outer laminates

PROPERTY	REQUIREMENT	TYPICAL VALUE		
Angular Deviation*	7 minutes (more than 2" from edge)	1–3 min.		
Optical Distortion*	< 14 minute of arc over any 6"	3 min./6"		
Luminous Transmittance Before Weathering After Weathering	0.060" - 0.220": 91% 0.221" - 0.375": 90% 0.376" - 0.675": 89% > .675": 88% 0.060" - 0.220": 89% 0.221" - 0.375": 88% 0.376" - 0.675": 87% > .675": 86%	92.0 91.0 90.0 89.0 90.0 88.0 87.0		
Haze*: Before Weathering After Weathering	3% max. 4% max.	< 1.5 < 3.0		
Long Term Water Absorption (Class 2)	≤ 2.90%	2.79 – 2.85%		
Crack Propagation Received @ STD Conditions	Individual value: 2,300 lbs/in <sup>3/2</sup> Average value: 2,700 lbs/in <sup>3/2</sup>	2,600 - 3,000 2,700 - 3,100		
As Received @ –17.8C	Individual value: 1,150 lbs/in <sup>3/2</sup> Average value: 1,250 lbs/in <sup>3/2</sup>	1,200 — 1,500 1,300 — 1,600		
After Weathering @ STD Conditions	Individual value: 2,100 lbs/in <sup>3/2</sup> Average value: 2,300 lbs/in <sup>3/2</sup>	2,500 3,000		
Thermal Relaxation @ 110C @ 145C	10.0% max. 37.5% min.	1.6 - 5.0% 40.0 - 50.0%		
Tensile Strength	Individual value: 10,000 psi Average value: 10,500 psi	11,300 — 12,700 11,300 — 12,900		
Shear Strength	3,000 psi	3,200 — 4,200		
Craze Resistance Dry IPA a) Class 1 b) Class 2	3,000 psi 3,000 psi	3,700 — no craze 4,300 — no craze		
Dry Laquer Thinner a) Class 1 b) Class 2 Wet IPA	2,500 psi 2,500 psi	3,300 — no craze 3,400 — 3,800		
a) Class 1 b) Class 2	2,000 psi 2,500 psi	2,400 - 3,000 3,100 - 4,100		
Wet Laquer Thinner a) Class 1 b) Class 2	1,750 psi 2,000 psi	2, 200 – 3,100 2, 700 – 3,300		
Dimension Stability	0.2% max. after natural weathering	0.11		

<sup>\*</sup>Special optical requirements will be considered.

### APPROVALS AND SPECIFICATIONS

#### **MEETS THE TEST REQUIREMENTS OF:**

**ANSI Z97.1 (American National Standards Institute** Specification); defines performance criteria for safety glazing used in buildings, concerning impact hardness and degradation after accelerated weathering. Polycast acrylic sheet in thicknesses greater than 0.099 are certified as complying.

#### ANSI Z26.1 and FMVSS 205 (Federal Motor Vehicle

Safety Standard); define performance characteristics of safety glazing for passenger car, trailers, trucks, buses, and motorcycles, including (but not limited to) impact resistance, chemical resistance, abrasion resistance, flammability, weathering, and optics.

NSF Grade Sheet; Polycast offers an acrylic sheet which meets the requirements for the National Sanitation Foundation Certified NSF Standard 51 for use in manufacturing food and beverage dispensing equipment. Certified colors: Clear, White, Green, Red, Blue

FDA; Food and Drug Administration's regulations concerning food contract applications as described in 21 CFR 177.1010 for all food types, including alcoholic beverages in room temperature or refrigerated applications.

UL 94HB; Underwriters Laboratories recognized for flammability\* of plastic materials for parts in devices and appliances. Polycast acrylic is recognized under UL 94HB, with some exceptions.

UL 723: Underwriters Laboratories classified for surfaces burning characteristics of a building material. Polycast acrylic 3/8 inches and greater is classified with the following test values: flame spread = 140; smoke developed = greater than 500.

UL 746A; Underwriters Laboratories recognized for polymeric materials in electrical applications. Contact inside sales for further information.

UL 752; Underwriters Laboratories listed for bullet-resisting equipment. Polycast offers the following in clear and bronze:

- -Level 1, MP 1.25, SAR MP 1.25 Medium power, small arms resistant.
- -Level 2, SAR HP 1.25 High power, small arms resistant.
- -Level 3, SP 1.25 Super power, small arms resistant.

FAR 25.853 (Federal Aviation Regulation); defines the flammability requirements for acrylic windows and signs for aircraft interiors. Polycast sheet .049" and greater meets this requirement.

#### FMVSS-302 (Federal Motor Vehicle Safety Standard);

defines burn rates of interior materials for passenger cars, trailers, trucks and buses. All Polycast materials meet this standard.

ASME PVHO-1 and MIL-C-24449; defines the requirements for materials used in the fabrication of windows for service in pressure vessels for human occupancy. Polycast material meets these requirements.

MIL-DTL-24191; Shipboard application of illumination and signal lighting. Defines the requirements of the material intended for use in the fabrication of lighting fixtures for Naval service. Among the associated tests are flammability, deflection temperature, flexural strength, impact strength and optical properties. Polycast material meets these requirements.

City of New York, Dept. of Buildings; Accepted for use, City of New York, Department of Buildings, as glazing material in lieu of glass in non-rated windows, doors and in skylights in sheet thicknesses up to 3/8-inch maximum, and for ground, wall and roof sign combustible material, where permitted by Code. File number MEA 80-82-M.

### City of New York, Board of Standards and Appeals:

Approved for use in safety glazing applications. Calendar number 1997-61-SM.

#### Consumer Product Safety Commission (CPSC);

Polycast acrylic sheet .080 and greater complies with the requirements of the Consumer Product Safety Act and the CPSC Safety Standard of Architectural Glazing materials, 16 CFR 1201 for both Category I and Category II.

### POLYCAST ACRYLIC SHEET CONFORMS TO THE FOLLOWING SPECIFICATIONS

(Current Editions)

ASTM D702; defines physical properties which acrylics should meet or exceed, such as tensile strength, refractive index, specific gravity, deflection temperature, and impact strength. Polycast acrylic sheet meets or exceeds the requirements for all types of grades of sheet of this specification.

**ASTM D4802**; A specification covering monolithic methacrylate sheet produced by the cell-cast method. Polycast acrylic sheet in thickness 0.030-4.250 meets or exceeds the requirements for Category A-1, finish 1,2,3; Types UVA & UVT.

AMS-L-P-391; An S.A.E. material specification referencing specific Federal quality standards and ASTM test methods. Polycast acrylic sheet in thickness 0.030-4.250 meets or exceeds the requirements for item A, Type I, II and III, Grade A. B. or C.

MIL-P-8184; military specification covering modified acrylic (specially designed for superior resistance to chemical attack). Materials supplied for conformance to this specification are Polycast Poly-76® and Poly-84® (available in both Type I and II and Class 1 and 2). All products are on the Qualified Products list for this Mil-Spec.

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™.

MIL-P-5425; military specifications 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.

There are many more standards, codes, and specifications to which Polycast can demonstrate compliance. Inquiries regarding your particular problems or requirements should be directed to the Polycast Marketing Department. Call 1-800-243-9002 or email polycast.marketing@ spartech.com.

\*This term and any corresponding data refer to typical performance in the specific tests indicated and should not be construed to imply this material's behavior under actual fire conditions.

### **COMMERCIAL TOLERANCE CLASSES**

THICKNESS	090.	080	.100	.125	.150	.187	.220	.250	.312	.375	.500	.625	.750	.875	1.000	1.125	1.250	1.500	1.750	2.000	2.250	2.500	2.750	3.000	3.250	3.500	3.750	4.000	4.250
SIZES																													
36 × 48	В	В	В	В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
36 × 60*	В	В	В	В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
36 × 72*	С	С	С	С	С	С	С	С	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
40 × 50	В	В	В	В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
48 × 48	В	В	В	В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
48 × 60*	С	С	С	С	С	С	С	С	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
48 × 72	В	В	В	В	В	В	В	В	В	В	В	Α	А	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
48 × 84	В	В	В	В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
48 × 96			В	В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
53 × 80*				В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
53 × 90*				В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
60 × 60*				В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
60 × 72				В	В	В	В	В	В	В	В	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
60 × 84				С	С	С	С	С	С	С	С	С	С	С	С	Α	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
60 × 96				С	С	С	С	С	С	С	С	С	С	С	С	Α	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
72 × 72				С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
72 × 84				С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
72 × 96				С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	Α	Α	Α	Α	Α	Α	Α	Α	Α	Α
OVERSIZE																			,										
48 × 120				С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С
60 × 120				С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С
72 × 120				С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С	С

<sup>\*</sup>Available as cutdown from larger size. Tolerance of larger size prevails.

## COMMERCIAL THICKNESS TOLERANCES (ASTM D4802/LP-391)

Normal Thickness in	Approx. Wt.	Thickness Tolerances in Inches							
inches		Size 1 Class A	Size 2 Class B	Size 3 Class C					
.030	.18 lb.	+.007 /009	-	-					
.040	.25 lb.	+.006 /010	-	-					
.050	.31 lb.	+.006 /010	-	-					
.060	.37 lb.	+.015 /019	+.023 /027	-					
.080	.49 lb.	+.014 /020	+.022 /028	-					
.100	.62 lb.	+.013 /021	+.021 /029	_					
.125	.77 lb.	+.015 /025	+.020 /030	+.030 /040					
.150	.92 lb.	+.016 /030	+.022 /036	+.029 /050					
.187	1.15 lb.	+.017 /033	+.022 /038	+.027 /043					
.220	1.36 lb.	+.020 /040	+.025 /045	+.029 /050					
.250	1.54 lb.	+.020 /040	+.025 /045	+.030 /050					
.312	1.92 lb.	+.022 /048	+.027 /053	+.032 /058					
.375	2.31 lb.	+.025 /055	+.030 /060	+.035 /065					
.500	3.08 lb.	+.025 /065	+.030 /070	+.035 /075					
.625	3.85 lb.	+.033 /077	+.033 /077	+.038 /082					
.750	4.62 lb.	+.030 /080	+.030 /080	+.040 /090					

Normal Thickness in	Approx. Wt. per Sq. Ft.	Thickness Tolerances in Inches							
inches		Size 1 Class A	Size 2 Class B	Size 3 Class C					
.875	5.39 lb.	+.026 /084	+.026 /084	+.046 /104					
1.000	6.16 lb.	+.023 /087	+.023 /087	+.048 /112					
1.125	6.93 lb.	+.039 /091	+.039 /091	+.050 /102					
1.250	7.70 lb.	+.052 /094	+.052 /094	+.052 /094					
1.500	9.24 lb.	+.039 /121	+.039 /121	+.077 /159					
1.750	10.78 lb.	+.049 /137	+.049 /137	+.092 /180					
2.000	12.32 lb.	+.058 /152	+.058 /152	+.108 /202					
2.250	13.86 lb.	+.070 /166	+.070 /166	_					
2.500	15.40 lb.	+.079 /181	+.079 /181	_					
2.750	16.94 lb.	+.092 /194	+.092 /194	_					
3.000	18.48 lb.	+.102 /208	+.102 /208	-					
3.250	20.02 lb.	+.114 /222	+.114 /222	_					
3.500	21.56 lb.	+.121 /239	+.121 /239	_					
3.750	23.10 lb.	+.134 /252	+.134 /252	-					
4.000	24.64 lb.	+.142 /268	+.142 /268	_					
4.250	26.18 lb.	+.150 /280	+.150 /280	_					

# **POLYCAST® STANDARD PACKAGING, TOLERANCES AND OVERAGES**The following listing shows guaranteed overages, tolerance ranges and standard package quantities.

THICKNESS	BILLING SIZE	ACTUAL SIZE	TOLERANCE RANGE	SHEETS PER CASE	SHEETS PER PALLET	THICKNESS	BILLING SIZE	ACTUAL SIZE	TOLERANCE RANGE	SHEETS PER CASE	SHEETS PER PALLET
0.060	36 × 48	37 × 51	.033084	60	384		36 × 48	37.00 × 49.25	.259–.339	12	72
	48 × 72	51 × 75	.033–.084 .052–.102	30	192		48 × 72 48 × 84	49.25 × 73.75 49.25 × 86.00	.259–.339 .259–.339	6 5	36 30
0.080	36 × 48 48 × 72	37 × 51 51 × 75	.052–.102 .052–.102	48 24	288 144		48 × 96	49.25 × 98.50	.259339	5	30
-	36 × 48	37 × 51	.071–.121	40	240		53 × 80	54.50 × 82.00	.259–.339	5	30
0.100	48 × 72	51 × 75	.071121	20	120	0.312	53 × 90 60 × 60	54.50 × 92.25 61.50 × 61.50	.259–.339 .259–.339	5 6	30 36
	60 × 60 36 × 48	63 × 63 37 × 51	.071121 .095145	19 32	114 192		60 × 72	61.50 × 73.75	.259339	5	30
	48 × 72	51 × 75	.095–.145	16	96		60 × 84 60 × 96	61.50 × 86.00 61.50 × 98.50	.254–.344 .254–.344	4	24 24
	48 × 84	51 × 88	.095–.145	14	84		72 × 72	73.75 × 73.75	.254–.344	4	24
	48 × 96 53 × 80	51 × 100 56 × 83	.095–.145 .095–.145	12 13	72 78		72 × 84	73.75 × 86.00	.254344	3	18
	53 × 90	55 × 93	.095145	12	72		72 × 96 36 × 48	$73.75 \times 98.50$ $37.00 \times 49.25$	.254–.344 .315–.405	3 12	18 72
0.125	60 × 60 60 × 72	63 × 63 63 × 75	.095–.145 .095–.145	15 13	90 78		48 × 72	49.25 × 73.75	.315405	6	36
	60 × 84	63 × 88	.085–.155	11	66		48 × 84	49.25 × 86.00	.315–.405	4	24
	60 × 96	63 × 100	.085–.155	10	60		48 × 96 53 × 80	49.25 × 98.50 54.50 × 82.00	.315–.405 .315–.405	4	24 24
	72 × 72 72 × 84	75 × 75 75 × 88	.085–.155 .085–.155	11 9	66 54		53 × 90	54.50 × 92.25	.315405	4	24
	72 × 96	75 × 100	.085–.155	8	48	0.375	60 × 60 60 × 72	61.50 × 61.50 61.50 × 73.75	.315–.405 .315–.405	5	30 24
	36 × 48	37 × 51	.114–.172	28	168		60 × 72	$61.50 \times 86.00$	.310–.410	3	18
	48 × 72 48 × 84	51 × 75 51 × 88	.114–.172 .114–.172	14 11	84 66		60 × 96	61.50 × 98.50	.310–.410	3	18
	48 × 96	51 × 100	.114–.172	9	54		72 × 72 72 × 84	73.75 × 73.75 73.75 × 86.00	.310–.410 .310–.410	3	24 18
	53 × 80	56 × 83	.114–.172 .114–.172	11	66		72 × 96	73.75 × 98.50	.310–.410	3	18
0.150	53 × 90 60 × 60	55 × 93 63 × 63	.114–.172	10 12	60 72		36 × 48	37.00 × 49.25	.430530	8	48
	60 × 72	63 × 75	.114–.172	11	66		48 × 72 48 × 84	49.25 × 73.75 49.25 × 86.00	.430–.530 .430–.530	4 3	24 18
	60 × 84 60 × 96	63 × 88 63 × 100	.100–.179 .100–.179	9 8	54 48		48 × 96	$49.25 \times 98.50$	.430530	3	18
	72 × 72	75 × 75	.100179	9	54		53 × 80 53 × 90	54.00 × 82.00 54.00 × 92.00	.430–.530 .430–.530	3	18 18
	72 × 84	75 × 88	.100–.179 .100–.179	8 7	48 42	0.500	60 × 60	61.50 × 61.50	.430–.530	4	24
	72 × 96 36 × 48	75 × 100 37 × 51	.149–.209	22	132		60 × 72	61.50 × 73.75	.430–.530	3	18
	48 × 72	51 × 75	.149209	11	66		60 × 84 60 × 96	61.50 × 86.00 61.50 × 98.50	.425–.535 .425–.535	2 2	12 12
	48 × 84	51 × 88	.149–.209	9 8	54 48		72 × 72	73.75 × 73.75	.425535	3	18
	48 × 96 53 × 80	51 × 100 56 × 83	.149–.209 .149–.209	9	54		72 × 84 72 × 96	$73.75 \times 86.00$ $73.75 \times 98.50$	.425–.535 .425–.535	2 2	12 12
0.407	53 × 90	55 × 93	.149209	8	48		48 × 72	48.50 × 72.75	.548–.658	3	18
0.187	60 × 60 60 × 72	63 × 63 63 × 75	.149–.209 .149–.209	10 9	60 54		48 × 96	$48.50 \times 97.00$	.548658	2	14
	60 × 84	63 × 88	.144–.214	8	48	0.625	60 × 72 60 × 96	$60.75 \times 72.75$ $60.75 \times 97.00$	.548–.658 .543–.663	2 2	14 12
	60 × 96 72 × 72	63 × 100 75 × 75	.144–.214 .144–.214	7 7	42 42		72 × 72	72.75 × 72.75	.543–.663	2	12
	72 × 72 72 × 84	75 × 75	.144–.214	6	48		72 × 96	72.75 × 97.00	.543663	2	8
	72 × 96	75 × 100	.144–.214	6	48		36 × 48 48 × 72	37.00 × 49.00 48.50 × 72.75	.670–.780 .670–.780	6 3	30 15
	36 × 48 48 × 72	37 × 51 51 × 75	.175–.245 .175–.245	18 9	108 54		48 × 96	$48.50 \times 97.00$	.670780	2	12
	48 × 84	51 × 75	.175–.245	8	48	0.750	60 × 72	60.75 × 72.75	.670–.780	2	12
	48 × 96	51 × 100	.175–.245	7	42		60 × 96 72 × 72	60.75 × 97.00 72.75 × 72.75	.660–.790 .660–.790	2 2	10 10
	53 × 80 53 × 90	56 × 83 55 × 93	.175–.245 .175–.245	8 7	48 42		72 × 96	$72.75 \times 97.00$	.660–.790	2	8
0.220	60 × 60	63 × 63	.175–.245	9	54		48 × 72	48.50 × 72.75	.791–.901	3	15
	60 × 72 60 × 84	63 × 75 63 × 88	.175–.245 .170–.249	8 7	48 42	0.075	48 × 96 60 × 72	48.50 × 97.00 60.75 × 72.75	.791–.901 .791–.901	2 2	10 10
	60 × 96	63 × 100	.170249	6	36	0.875	60 × 96	$60.75 \times 97.00$	.753921	2	8
	72 × 72	75 × 75	.170–.249	6	36		72 × 72 72 × 96	72.75 × 72.75 72.75 × 97.00	.753–.921 .753–.921	1	9 6
	72 × 84 72 × 96	75 × 88 75 × 100	.170–.249 .170–.249	5 5	30 30		36 × 48	37.00 × 49.00	.913–1.023	4	24
·-	36 × 48	37 × 51	.205–.275	16	96		48 × 72	48.50 × 72.75	.913-1.023	2	12
	48 × 72	51 × 75	.205–.275	8	48	1.000	48 × 96 60 × 72	48.50 × 97.00 60.75 × 72.75	.913–1.023 .913–1.023	2 2	10 10
	48 × 84 48 × 96	51 × 88 51 × 100	.205–.275 .205–.275	7 6	42 36	1.000	60 × 96	$60.75 \times 97.00$	.888-1.048	1	7
	53 × 80	56 × 83	.205–.275	7	42		72 × 72	72.75 × 72.75	.888-1.048	1	8
0.250	53 × 90 60 × 60	55 × 93 63 × 63	.205–.275 .205–.275	6 8	36 48		72 × 96 48 × 72	$72.75 \times 97.00$ $48.50 \times 72.75$	.888–1.048 1.021–1.157	2	10
0.200	60 × 72	63 × 75	.205–.275	7	42		48 × 96	$48.50 \times 97.00$	1.021-1.157	1	8
	60 × 84	63 × 88	.200–.280	6	36	1.125	60 × 72	$60.75 \times 72.75$	1.021-1.157	1	8
	60 × 96 72 × 72	63 × 100 75 × 75	.200–.280 .200–.280	5 6	30 36		60 × 96 72 × 72	60.75 × 97.00 72.75 × 72.75	1.005–1.175 1.005–1.175	1	6 7
	72 × 84	75 × 88	.200280	5	30		72 × 96	$72.75 \times 97.00$		i	5
-	72 × 96	75 × 100	.200–.280	4	24	I	_				_

# **POLYCAST® STANDARD PACKAGING, TOLERANCES AND OVERAGES**The following listing shows guaranteed overages, tolerance ranges and standard package quantities.

	36 × 48			PER CASE	PALLET
	40	37.00 × 49.00	1.156-1.302	3	18
1	48 × 72 48 × 96	48.50 × 72.75 48.50 × 97.00	1.156–1.302 1.156–1.302	2 1	10 7
1.250	60 × 72	60.75 × 72.75	1.156–1.302	1	7
	$60 \times 96$	60.75 × 97.00	1.156-1.302	1	6
	72 × 72 72 × 96	72.75 × 72.75	1.156–1.302	1 1	6 5
	48 × 72	72.75 × 97.00 48.50 × 72.75	1.156–1.302 1.156–1.344	2	10
	48 × 96	48.50 × 97.00	1.156–1.344	1	7
1.125	$60 \times 72$	60.75 × 72.75	1.156-1.344	1	7
20	60 × 96 72 × 72	60.75 × 97.00 72.75 × 72.75	1.156–1.344 1.156–1.344	1 1	6 6
	72 × 96	72.75 × 97.00	1.156–1.344	1	5
	36 × 48	37.00 × 49.00	1.379-1.539	2	18
	48 × 72	48.50 × 72.75	1.379–1.539	1	9
1.500	$48 \times 96$ $60 \times 72$	48.50 × 97.00 60.75 × 72.75	1.379–1.539 1.379–1.539	1 1	7 7
1.500	$60 \times 96$	$60.75 \times 97.00$	1.341–1.577	i	6
	$72 \times 72$	72.75 × 72.75	1.341-1.577	1	6
	72 × 96	72.75 × 97.00	1.341–1.577	1	5
	48 × 72 48 × 96	48.50 × 72.75 48.50 × 97.00	1.613–1.799 1.613–1.799	1	8 6
1.750	60 × 72	60.75 × 72.75	1.613-1.799	1	6
1.750	$60 \times 96$	60.75 × 97.00	1.570-1.842	1	5
	72 × 72	72.75 × 72.75	1.570-1.842	1 1	5 4
	72 × 96 36 × 48	72.75 × 97.00 37.00 × 49.00	1.570–1.842 1.848–2.058	2	14
	48 × 72	48.50 × 72.75	1.848-2.058	1	7
	$48 \times 96$	48.50 × 97.00	1.848-2.058	1	6
2.000	60 × 72 60 × 96	60.75 × 72.75 60.75 × 97.00	1.848–2.058 1.798–2.108	1 1	6 5
	72 × 72	72.75 × 72.75	1.798-2.108	1	5 5
	72 × 96	72.75 × 97.00	1.798–2.108	i	4
	48 × 72	48.50 × 72.75	2.084-2.320	1	5
	48 × 96 60 × 72	48.50 × 97.00 60.75 × 72.75	2.084-2.320 2.084-2.320	1 1	4 4
2.250	$60 \times 72$	60.75 × 97.00	2.084-2.320	1	3
	$72 \times 72$	72.75 × 72.75	2.084-2.320	1	4
	72 × 96	72.75 × 97.00	2.084-2.320	1	3
	48 × 72 48 × 96	48.50 × 72.75 48.50 × 97.00	2.319–2.579 2.319–2.579	1 1	4 4
2 500	60 × 72	60.75 × 72.75	2.319–2.579	i	4
2.500	$60 \times 96$	$60.75 \times 97.00$	2.319-2.579	1	3
	72 × 72 72 × 96	72.75 × 72.75 72.75 × 97.00	2.319–2.579 2.319–2.579	1 1	3 2
	48 × 72	48.50 × 72.75	2.556-2.842	1	5
	48 × 96	48.50 × 97.00	2.556-2.842	i	3
2.750	$60 \times 72$	60.75 × 72.75	2.556-2.842	1	4
	$60 \times 96$ $72 \times 72$	60.75 × 97.00 72.75 × 72.75	2.556-2.842 2.556-2.842	1	3 4 3 3
	$72 \times 96$	$72.75 \times 97.00$	2.556-2.842	i	2
	36 × 48	36.50 × 48.50	2.792-3.102	2	6
	48 × 72	48.50 × 72.75	2.792-3.102	1	4 3 3 2 3
3.000	48 × 96 60 × 72	48.50 × 97.00     60.75 × 72.75	2.792–3.102 2.792–3.102	1 1	3
0.000	60 × 96	60.75 × 97.00	2.792-3.102	i	2
	72 × 72	72.75 × 72.75	2.792-3.102	1	3
	72 × 96	72.75 × 97.00	2.792–3.102	1	2
	48 × 72 48 × 96	48.50 × 72.75 48.50 × 97.00	3.028-3.364 3.028-3.364	1 1	4 3
3.250	$60 \times 72$	60.75 × 72.75	3.028-3.364	i	3
3.230	$60 \times 96$	60.75 × 97.00	3.028-3.364	1	3 2 2
	72 × 72 72 × 96	72.75 × 72.75   72.75 × 97.00	3.028-3.364 3.028-3.364	1 1	2
	48 × 72	48.50 × 72.75	3.261–3.621	1	3
	$48 \times 96$	48.50 × 97.00	3.261-3.621	1	ž
3.500	60 × 72	60.75 × 72.75	3.261-3.621	1	2
	60 × 96 72 × 72	60.75 × 97.00     72.75 × 72.75	3.261-3.621 3.261-3.621	1 1	2 2 2 2
	72 × 96	$72.75 \times 97.00$	3.261–3.621	i	2

THICKNESS	BILLING SIZE	ACTUAL SIZE	TOLERANCE RANGE	SHEETS PER CASE	SHEETS PER PALLET
	48 × 72	48.50 × 72.75	3.498-3.884	1	3
	48 × 96	48.50 × 97.00	3.498-3.884	1	2
3.750	60 × 72	$60.75 \times 72.75$	3.498-3.884	1	2
3.730	$60 \times 96$	$60.75 \times 97.00$	3.498-3.884	1	2
	72 × 72	72.75 × 72.75	3.498-3.884	1	2
	72 × 96	$72.75 \times 97.00$	3.498-3.884	1	2
-	36 × 48	$36.50 \times 48.50$	3.732-4.142	1	6
	48 × 72	48.50 × 72.75	3.732-4.142	1	3 2
	48 × 96	48.50 × 97.00	3.732-4.142	1	
4.000	60 × 72	60.75 × 72.75	3.732-4.142	1	2
	$60 \times 96$	$60.75 \times 97.00$	3.732-4.142	1	2
	72 × 72	72.75 × 72.75	3.732-4.142	1	2
	72 × 96	$72.75 \times 97.00$	3.732-4.142	1	2
	48 × 72	48.50 × 72.75	3.970-4.400	1	3
	48 × 96	$48.50 \times 97.00$	3.970-4.400	1	2
4 250	60 × 72	$60.75 \times 72.75$	3.970-4.400	1	2
4.250	$60 \times 96$	$60.75 \times 97.00$	3.970-4.400	1	2
	72 × 72	72.75 × 72.75	3.970-4.400	1	2
	72 × 96	$72.75 \times 97.00$	3.970-4.400	1	2

### **OVERSIZED SHEET**

THICKNESS	BILLING SIZE	ACTUAL SIZE	TOLERANCE RANGE	SHEETS PER CASE
	48 × 120	48.75 x 121.75	.085155	10
0.125	60 × 120	61.00 x 121.75	.085155	8
020	72 × 120	73.00 x 121.75	.085155	6
	48 × 120	48.75 x 121.75	.109179	8
0.150	60 × 120	61.00 x 121.75	.109179	7
	72 × 120	73.00 x 121.75	.109179	6
	48 × 120	48.75 x 121.75	.144214	7
0.187	60 × 120	61.00 x 121.75	.144214	6
	72 × 120	73.00 x 121.75	.144214	5
	48 × 120	48.75 x 121.75	.170250	6
0.220	60 × 120	61.00 x 121.75	.170250	5
	72 × 120	73.00 x 121.75	.170250	5
0.050	48 × 120	48.75 x 121.75	.200280	5
0.250	60 × 120 72 × 120	61.00 x 121.75 73.00 x 121.75	.200280 .200280	4 3
	48 × 120	48.75 x 121.75	.254344	4
0.312	60 × 120	46.75 x 121.75 61.00 x 121.75	.254344	3
0.512	72 × 120	73.00 x 121.75	.254344	3
	48 × 120	48.75 x 121.75	.310410	3
0.375	60 × 120	61.00 x 121.75	.310 .410	3
0.070	72 × 120	73.00 x 121.75	.310410	2
	48 × 120	48.75 x 121.75	.425535	3
0.500	60 × 120	61.00 x 121.75	.425535	2
	72 × 120	73.00 x 121.75	.425535	2
	48 × 120	48.75 x 121.75	.690810	1
0.750	60 × 120	61.00 x 121.75	.690810	1
	72 × 120	73.00 x 121.75	.690810	1
	48 × 120	48.75 x 121.75	.888-1.048	1
1.000	60 × 120	61.00 x 121.75	.888-1.048	1
	72 × 120	73.00 x 121.75	.888-1.048	1
1.250	48 × 120 60 × 120	48.75 x 121.75 61.00 x 121.75	1.156-1.302 1.156-1.302	1 1
1.250	72 × 120	73.00 x 121.75	1.156-1.302	1
	48 × 120	48.75 x 121.75	1.341-1.577	1
1.500	60 × 120	61.00 x 121.75	1.341-1.577	i
1.500	72 × 120	73.00 x 121.75	1.341-1.577	i
	48 × 120	48.75 x 121.75	1.798-2.108	1
2.000	60 × 120	61.00 x 121.75	1.798-2.108	i
	72 × 120	73.00 x 121.75	1.798-2.108	1
	48 × 120	48.75 x 121.75	2.319-2.579	1
2.500	60 × 120	61.00 x 121.75	2.319-2.579	1
	72 × 120	73.00 x 121.75	2.319-2.579	1
	48 × 120	48.75 x 121.75	2.792-3.102	1
3.000	60 × 120	61.00 x 121.75	2.792-3.102	1
	72 × 120	73.00 x 121.75	2.792-3.102	1
2 500	48 × 120	48.75 x 121.75	3.261-3.621	1
3.500	60 × 120 72 × 120	61.00 x 121.75	3.261-3.621 3.261-3.621	1 1
	48 × 120	73.00 x 121.75 48.75 x 121.75	3.732-4.142	1
4.000	48 × 120 60 × 120	48.75 X 121.75 61.00 X 121.75	3.732-4.142	1
4.000	72 × 120	73.00 x 121.75	3.732-4.142	i
	12 ^ 120	10.00 A 121.13	0.702 T.172	

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