

lucitelux™ museum grade

TECHNICAL BULLETIN

Museum Grade UV Max protection is a specialty sheet made to offer the maximum protection possible from harmful UV light. This sheet filters out 98% of damaging UV light which causes fading and decomposition of photos, artwork and exhibits. Visible light ranges between the wavelengths of 400 to 700nm, while UV light is in the 200-400nm wave length. For maximum protection, you need to block any light between the wavelengths of 200-400nm, but let light through between 400 and 700 for the material to be transparent.

FEATURES & BENEFITS

- Excellent optical quality and clarity.
- Meets demanding museum standards.
- More impact resistant than glass.
- Allows for easy fabrication and fitting.
- Easy to clean.
- Uniform caliper control
- Lightweight
- Superior craze resistance

APPLICATIONS

- Museum artifacts
- Artwork
- Photos

FABRICATION

Machining

Museum Grade can be cut, drilled and shaped using traditional acrylic fabricating techniques.

To avoid scratching during such procedures, masking should remain in place as long as possible.

Cementing

Museum Grade can be cemented using solvent cement, embodied cement and two-component polymerizable cements.

Painting

Museum Grade can be decorated using standard acrylic-based paints and silk-screen inks. As with any acrylic painting or screening operation, avoid heavy coats of paint or excessive flooding of screen inks which allow solvents or thinners to remain in contact with the acrylic surface and cause crazing.

Recommended Paints:

- Grip-Flex®, Wyandotte Sign Finishes, Norcross, GA.
- Lacryl®, Spraylat Corporation, Mount Vernon, NY.
- Recommended Screen Inks:
- Multi-Vac Series® Inks, Advance Excello, Chicago, IL.
- 70,000® Series Inks, Naz-Dar Company, Chicago, IL.

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*For sales and information,
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1-800-4-LUCITE x 2426*

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THERMOFORMING

Museum Grade can be thermoformed to any contour – from subtle curves to complex shapes.

Heating Methods

There are two basic heating methods utilized in forming Museum Grade:

- Vertical oven heating
- Horizontal oven heating

If a vertical oven is used, it may be necessary to trim off the edges where clamp marks are present. Clamp along the short edge, exercising great care to ensure the sheets are not exposed to temperatures above 320°F; otherwise stretching of the sheet may occur.

To prevent surface marring, sheets should be loaded onto supporting trays covered with layers of felt or similar material. Dimensional changes will occur when an acrylic sheet is heated freely in an air oven and drape molded without clamping.

The inherent strain present in continuous cast acrylic sheet is relaxed when heated, giving rise to some shrinkage. Precise shrinkage is dependent upon variables such as cycle time, heating temperature, and forming method.

Notes:

(1) Based on laboratory tests conducted in a Q-Panel Company Q-U-V Accelerated Weathering Tester equipped with UVA-340 lamps.

CLEANING

To clean acrylic sheet:

- Dissolve mild liquid detergent in cool water.
- Dip soft, clean cloth in solution and wring out.
- Wipe the surface of the sheet.
- Allow surface to dry naturally, or wipe with a separate cloth slightly dampened with solution.

WARNING: Do not allow concentrated disinfectant, surgical or methylated spirits, any liquid containing alcohol or any other solvents to come in contact with LUCITE® MUSEUM GRADE ACRYLIC SHEET.

DISINFECTION

To disinfect acrylic sheet:

- Dilute an antiseptic or hospital concentrate with cool or cold water in the amount recommended on the label for general disinfection.
- Wipe the surface as described under CLEANING.

CAUTION: When using acrylic sheet in conjunction with applications where electrical units are attached, the unit must be unplugged before cleaning or disinfection. Great care must be taken to see that no water or solution enters the electrical compartment.

DUSTING

Use a soft, clean, slightly damp cloth when dusting. Never use a dry cloth. This tends to generate a static charge which will attract more dust.

POLISHING

If the surface of Lucite® acrylic sheet becomes scratched, it can generally be restored by using a polishing paste designed for use with acrylic or a mild abrasive metal polish applied on a soft clean cloth. If the scratches are too deep to be removed by this method, use a piece of 600 grade waterproof sandpaper (wet). When the surface is smooth, the gloss can be restored with metal polish. Power buffing is only recommended for professional fabricators.

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PHYSICAL PROPERTIES

		Test Method	Typical Value ^(a)		
General	Specific Gravity	ASTM D792	1.19		
Mechanical	Tensile Strength ❖ % Elongation @ break ❖ Modulus of elasticity ❖ % Elongation @ yield	ASTM D638	11,000 psi 7.6% 465,000 psi 6.0%		
	Flexural Strength Flexural modulus (tangent)	ASTM D790	14,700 psi 461,000 psi		
	Impact Strength ❖ Compressive strength (x-y plane) ❖ Compressive stress @ yield ❖ Compressive modulus ❖ Charpy (un-notched) ❖ Charpy (notched) ❖ Shear Strength (punch tool) ❖ Izod (procedure A)	ASTM D695 ASTM D256 ASTM D6110 ASTM D732 ASTM D256	83,300 psi 18,000 psi 279,000 psi 5.0 ft lb/in/in 20.8 J/m 11,200 psi 0.32 ft-lb. / in.		
	Rockwell Hardness	ASTM D785	M-92		
	Residual Shrinkage (b) (Internal Strength)	ASTM D702	2.5 % maximum		
	Optical	Refractive Index	ASTM D542	1.49	
		% Light Transmission (visible)	ASTM D1003	92	
	% UV Transmission (λ 280- 400 nm) (c)		λ 280 nm 300 nm 320 nm 340 nm 360 nm 380 nm 400 nm	%UVT < 0.012 < 0.012 < 0.017 < 0.014 < 0.017 < 0.035 < 2.00	
	Haze	ASTM D1003	Less than 1%		
	Surface Abrasion Resistance (d) (Taber , CS-10)	ASTM D1044	500 cycles : < 1% 1000 cycles: <2%		
Thermal	Maximum Continuous Service Temperature		175°F (e)		
	Coefficient of Thermal Conductivity		1.45 Btu in./ft ² hr. °F		
	Deflection Temperature under load, 264 psi	ASTM D648	200°F		
	Hot Forming Temperature		280°-340°F (138°-170°C)		
	Coefficient of Linear Thermal Expansion	ASTM D696	3.5 E-05 in/in/°F		
	Specific Heat		0.35 Btu/ lb (°F)		

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Electrical	D-C Resistance ❖ Volume Resistivity ❖ Surface Resistivity	ASTM D257	>3.912E+15 Ω /cm > 5.237E+15 Ω /sq
	Dielectric Strength (2000v/sec)	ASTM D149	354 V/mil
	Dielectric Constant, k' ❖ 60 Hz ❖ 1 KHz ❖ 1MHz Dissipation Factor, D ❖ 60Hz ❖ 1KHz ❖ 1MHz	ASTM D150	3.3 3.0 2.7 0.06 0.04 0.02
	Arc Resistance	ASTM D495	No tracking
Combustibility	Smoke Density Rating Tunnel Test (smoke developed)	ASTM D2843 ASTM E84	13.5% 385
	Rate of Flame Spread	ASTM E84	140
	Fuel contribution factor	-	11,300 Btu/lb
	Ignition temperature	ASTM D1929	750°F (399°C)
	Radiant Panel, Flame spread index	ASTM E162	219
	Horizontal Burn	ASTM D635	1.18 in. /min.
	UL Horizontal Burn Rating	UL94	94 HB
Miscellaneous			
Water Absorption	24 hrs @ 23°C 2 hrs boiling water immersion	ASTM D570	0.2% 0.6%
	Soluble Matter Lost (post immersion)	ASTM D570	nil
	Odour	-	nil

Notes:

- Values provided should not be used for specification purposes. Some values will vary with sheet thickness.
- Measured at room temperature before and after heating above 300° F.
- % UVT based on average wavelength values for .118" and .177" Museum Grade sheet
- Numerical values indicate % light transmission loss after indicated cycles.
- It is recommended that temperatures not exceed 180°F for continuous Service.

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