

ACRYLITE PREMIUM



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ACRYLITE Premium is the highest quality continuously manufactured sheet on the market today. Using a proprietary, innovative process, this premium sheet is economical, provides tight thickness tolerance, high optical characteristics, and low stress levels. This premium sheet is readily available in a variety of standard sizes, thicknesses, and colors. It is a lightweight, rigid, and weather-resistant thermoplastic that is dimensionally stable, resistant to breakage, and can be easily fabricated and cemented.

Applications

Skylights, window glazing, retail displays, signs, optical displays, picture framing

Typical Properties

Property	Test Method	Units	Values
PHYSICAL			
Specific gravity	ASTM D 792	-	1.19
Water absorption, 24 hours @ 73°F	ASTM D 570	%	0.2
MECHANICAL			
Tensile strength, elongation	ASTM D 638	psi	10,000
Rupture modulus of elasticity	ASTM D 638	psi	400,000
Flexural strength	ASTM D 790	psi	17,000
Modulus of elasticity	ASTM D 790	psi	480,000
Compressive strength, yield	ASTM D 695	psi	17,000
Izod impact strength, notch	ASTM D 256	ft/lbs/in.	0.4
Rockwell hardness	ASTM D 785	-	M-93
Barcol Hardness	ASTM D 2583	-	48
Refractive Index	ASTM D 542	psi	1.49
Light transmission, total	ASTM D 1003	%	92
THERMAL			
Forming temperature	-	°F	Approx. 300°F
Deflection temperature under load, 264 psi	ASTM D 648	°F	195°F (91°C)
Vicat softening point	ASTM D 1525	°F	220°F (105°C)
Maximum recommended continuous service temperature	-	°F	160°F (71°C)
Coefficient of linear thermal expansion	ASTM D 696	in/in/°F	0.000040
Coefficient of thermal conductivity	Cenco-Fitch	BTU/hr(sq.ft)(°F)(1470J/Kg·K)	1.3
Flammability, burning rate @ 0.125"	ASTM D 635	in/min.	1.0
Self-ignition temperature	ASTM D 1929	°F	850°F (455°C)
Specific heat @77°F	-	BTU/hr(sq.ft)(°F)(1470J/Kg·K)	0.35
Smoke density rating	ASTM D 2843	%	4.8
ELECTRICAL			
Dielectric strength short time @ 0.125"	ASTM D 149	volts/mil	430
Dielectric constant @ 60 Hz	ASTM D 150	-	3.6
@ 1,000 Hz	ASTM D 150	-	3.3
@ 1,000,000 Hz	ASTM D 150	-	2.8
Dissipation factor @ 60 Hz	ASTM D 150	-	0.06
@ 1,000 Hz	ASTM D 150	-	0.04
@ 1,000,000 Hz	ASTM D 150	-	0.02
Volume resistivity	ASTM D 257	Ohm·cm	10 ¹⁶
Surface resistivity	ASTM D 257	Ohm·cm	10 ¹⁶

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Fabrication guidelines

Cutting: It can be sawed with circular saws or band saws. It can be drilled, routed, filed, and machined much like wood or brass with a slight modification of tools. Because the sheet softens quickly, it is necessary to keep the cutting tool and machined edge of the sheet as cool as possible. Cooling of the cutting tool is recommended. Tool sharpness and "trueness" are essential to prevent gumming, heat buildup, and stresses in the part. Heat buildup at the machined edge could lead to subsequent stress crazing and therefore must be avoided.

Laser cutting: Laser technology is ideal for quick and accurate cutting, welding, drilling, scribing, and engraving of plastics. CO₂ lasers focus a large amount of light energy on a very small area which is extremely effective for cutting complex shapes in acrylic sheet. The laser beam produces a narrow kerf in the plastic allowing for close nesting of parts and minimal waste. CO₂ lasers vaporize the acrylic as they advance resulting in a clean polished edge but with high stress levels; annealing acrylic sheet after laser cutting is recommended to minimize the chance of crazing during the service life of the part.

Cementing: This sheet can be cemented using common solvent cements or polymerizable cements. The most critical factor is good edge preparation of the part to be cemented. The edge of the sheet must be properly machined in order to have a square flat surface and no stresses. Annealing of the part prior to cementing is recommended. Cement and cement fumes should not contact formed or polished surfaces.

Annealing: The sheet may be annealed at 180°F (82°C) with the heating and cooling times determined by the sheet thickness. An approximate guideline is annealing time in hours equals the sheet thickness in millimeters and the cool-down period is a minimum of 2 hours ending when sheet temperature falls below 140°F. For example, 1/8" (3mm) sheet would be heated for 3 hours at 180°F (82°C) and slowly cooled for 3 hours.

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