Reference Information supplied by our sources: ACRYLITE is a trademark of Cyro Industries. PLEXIGLAS is a registered trademark of Altuglas International / Arkema. LUCITE is a trademark of ICI Acrylics Inc.

ACRYLIC

GENERAL DESCRIPTION

Acrylics (Polymethyl-Methacrylate or PMMA) is an amorphous thermoplastic which is optically transparent, unaffected by moisture, and offers a high strength-to-weight ratio. Common trade names of acrylic include Plexiglas ®, Lucite ®, and Acrylite ®.

GENERAL PROPERTIES

Acrylics offer high light transmittance with a Refractive Index of 1.49 and can be easily heat-formed without loss of optical clarity. Prolonged exposure to moisture, or even total immersion in water, does not significantly effect the mechanical or optical properties of acrylic. Most commercial acrylics have been UV stabilized for good weatherability and resistance prolonged sunlight exposure.

Acrylics are unaffected by aqueous solutions of most laboratory chemicals, by detergents, cleaners, dilute inorganic acids, alkalies, and aliphatic hydrocarbons -- however, acrylics are NOT recommended for use with chlorinated or aromatic hydrocarbons, esters, or ketones.

Acrylics are easily sawed, drilled, milled, engraved, and finished with sharp carbide-tipped tools. Cut surfaces may be readily sanded and polished. They are also readily bend or thermoformed at low temperature and solvent bonding of properly fitting parts produces a strong, invisible joint. Acrylics are available in colorless clear as well as a wide variety of colors and tints. They are available in extruded and/or cast material in sheet, rod and tube forms as well as custom profiles.

TYPICAL APPLICATIONS

Acrylic is an economical, general purpose material used in a wide variety of applications, including: • store fixtures and displays • lenses and lighting fixtures • light pipes • windows and skylights • sight gauges • furniture • outdoor signs • sculpture

TYPICAL PROPERTIES of ACRYLIC PMMA

ASTM or UL test	Property	Acrylic
	PHYSICAL	
D792	Density (lb/in³) (g/cm³)	0.043 1.18
D570	Water Absorption, 24 hrs (%)	0.3

	MECHANICAL	
D638	Tensile Strength (psi)	8,000 - 11,000
D638	Tensile Modulus (psi)	350,000 - 500,000
D638	Tensile Elongation at Break (%)	2
D790	Flexural Strength (psi)	12,000 - 17,000
D790	Flexural Modulus (psi)	350,000 - 500,000
D695	Compressive Strength (psi)	11,000 - 19,000
D695	Compressive Modulus (psi)	-
D785	Hardness, Rockwell	M80 - M100
D256	IZOD Notched Impact (ft-lb/in)	0.3
	THERMAL	
D696	Coefficient of Linear Thermal Expansion (x 10^{-5} in./in./°F)	5 - 9
D648	Heat Deflection Temp (°F / °C) at 264 psi	150-210 / 65-100
D3418	Melting Temp (°F / °C)	265-285 / 130-140
-	Max Operating Temp (°F / °C)	150-200 / 65-93
C177	Thermal Conductivity (BTU-in/ft²-hr-°F) (x 10^{-4} cal/cm-sec-°C)	3.9 1.2
UL94	Flammability Rating	-
	ELECTRICAL	
D149	Dielectric Strength (V/mil) short time, 1/8" thick	400
D150	Dielectric Constant at 60 Hz	4.0
D150	Dissipation Factor at 60 Hz	0.05
	OPTICAL	
-	Light Transmission, minimum (%)	92
-	Refractive Index	1.48-1.50

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Contact us for manufacturers' complete material property datasheets.
All values at 73°F (23°C) unless otherwise noted.