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Engineering Plastics & Fabrication

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Technical Data Sheet

Polycarbonate (PC)

Chemical Name(s): Polycarbonate
Common Abbreviation(s): PC, Polycarb
Available Profiles: Sheet, Rod, Tube

Polycarbonate (PC) is a tough, impact-resistant thermoplastic with excellent optical clarity and high heat resistance. It is widely used in applications requiring transparency, impact resistance, and durability. PC offers better strength and impact resistance than acrylic (PMMA) and is often used in demanding industrial, electrical, and safety applications.

Benefits:

- High impact resistance
- Excellent optical clarity
- Good dimensional stability
- High heat resistance
- Flame retardant
- Easy to fabricate and thermoform

Common Applications:

- Machine guards and safety shields
- Impact-resistant glazing
- Electrical housings
- Lighting fixtures and lenses
- Automotive and aircraft components
- Medical device housings

TYPICAL PROPERTIES of POLYCARBONATE (PC)

	Property	Test Method	Value
Physical Properties	Density (g/cm³)	ATSM D792	1.20
	Water Absorption (%)	ASTM D570	0.15
Mechanical Properties	Tensile Strength at 23°C (MPa)	ASTM D638	65
	Tensile Modulus (MPa)	ASTM D638	2300
	Tensile Elongation at Break (%)	ASTM D638	100
	Flexural Strength (MPa)	ASTM D790	90
	Flexural Modulus (MPa)	ASTM D790	2300
	Compressive Strength (MPa)	ASTM D695	85
	Hardness (Rockwell R)	ASTM D785	R120
	Impact Strength (kJ/m²)	ASTM D256	70
Thermal Properties	Coefficient of Linear Thermal Expansion (mm/mm/°C)	ASTM D696	6.8×10^{-5}
	Heat Deflection Temperature at 0.45 MPa (°C)	ASTM D648	135
	Approx. Melting Temperature (°C)	ASTM D3418	267
	Max Operating Temperature (°C)	-	120
Electrical Properties	Dielectric Strength (kV/mm)	ASTM D149	18
	Dielectric Constant at 1 MHz	ASTM D150	2.9
	Dissipation Factor at 1 kHz	ASTM D150	0.001
	Surface Resistivity (ohm/sq)	ASTM D257	$>10^{15}$
	Arc Resistance (sec)	ASTM D495	180-200
Flammability	Flammability Rating	UL94	V-2
Standards Compliance	FDA compliant for food contact ASTM D638, D790, D695, D257 compliant		
Environmental Considerations	Recyclability: PC is recyclable but may require specific processing techniques for reuse. Environmental Impact: PC is durable and long-lasting, with high impact and UV resistance, often extending product life in various applications.		