

PLASTICRAFT

TECHNICAL DATA SHEET

Polycarbonate

(PC)

Polycarbonate is best known for its impact resistance but has additional properties like: Optical transparency, excellent creep resistance, wide temperature range, high dimensional stability, good electrical characteristics and self-extinguishing behavior.

Polycarbonate's good heat resistance offers a high melt temperature (it does require higher processing temperatures).

Polycarbonate is a tough, dimensionally stable, transparent thermoplastic that has many applications which demand high performance properties. This versatile thermoplastic maintains its properties over a wide range of temperatures, from -40°F to 280°F. It has the highest impact resistance of any Thermoplastic, transparent up to 2" in special grades, outstanding dimensional and thermal stability, exceptional machinability, stain resistant and non-toxic while having low water absorption.

Machine Grade is relatively stress free to permit the most demanding machining. It is also available in glass-filled. This polycarbonate grade is perfect for high performance uses in tough applications over a broad temperature range.

Window Grade is optically clear, providing total luminous transmittance and a very low haze factor. The high impact strength makes it resistant to repeated blows, shattering and spalling. Glass Filled Grade

Glass-reinforced polycarbonate is primarily selected as a replacement for die-cast aluminum and zinc, when these metals are being used and an upgrade is desired. The coefficient of thermal expansion is reduced by nearly 75%, thus equaling that of some metals. While glass-reinforced has less impact strength than standard grades, it is still tougher and more impact resistant than most other plastics and die cast aluminum.

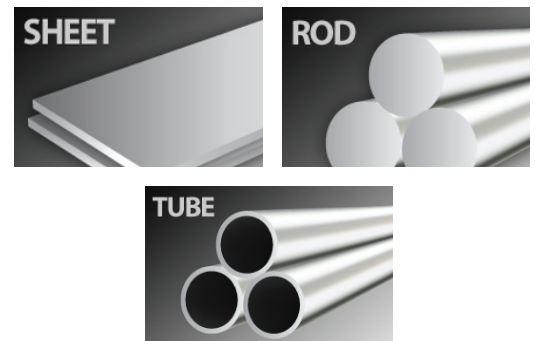
Benefits

- Impact resistance
- Durability
- Machinability
- Formability
- Transparent
- Easily cleaned
- Scratches easily removed
- Temperature range
- UV stable
- High dielectric strength

Applications

- Medical components
- Lenses
- Equipment housings
- Electronics
- Defense
- Automotive
- Lighting fixtures
- Vehicle windows
- Structural parts
- Nameplates and bezels

SHAPES AVAILABLE



SEE NEXT PAGE FOR ADDITIONAL INFORMATION

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.

PLASTICRAFT

| TYPICAL PROPERTIES of POLYCARBONATE | | | |
|--|---|------------------|------------------|
| ASTM or UL test | Property | Unfilled | 30% Glass |
| PHYSICAL | | | |
| D792 | Density (lb/in ³) (g/cm ³) | 0.043 1.2 | 0.052 1.43 |
| D570 | Water Absorption, 24 hrs (%) | 0.12 | 0.12 |
| MECHANICAL | | | |
| D638 | Tensile Strength (psi) | 9,500 | 19,000 |
| D638 | Tensile Modulus (psi) | 320,000 | - |
| D638 | Tensile Elongation at Break (%) | 60 | 10 |
| D790 | Flexural Strength (psi) | 15,000 | 23,000 |
| D790 | Flexural Modulus (psi) | 375,000 | 1,100,000 |
| D695 | Compressive Strength (psi) | 12,000 | 18,000 |
| D695 | Compressive Modulus (psi) | 240,000 | 500,000 |
| D785 | Hardness, Rockwell | M70 / R118 | M92 |
| D256 | IZOD Notched Impact (ft-lb/in) | 13 | 2 |
| THERMAL | | | |
| D696 | Coefficient of Linear Thermal Expansion (x 10 ⁻⁵ in./in./°F) | 3.9 | 1.2 |
| D648 | Heat Deflection Temp (°F / °C) at 264 psi | 270 / 132 | 295 / 146 |
| D3418 | Glass Transition Temp (°F / °C) | 293 / 145 | 300 / 149 |
| - | Max Operating Temp (°F / °C) | 250 / 121 | 270 / 132 |
| C177 | Thermal Conductivity (BTU-in/ft ² -hr-°F) (x 10 ⁻⁴ cal/cm-sec-°C) | 1.3 6.9 | 1.3 6.9 |
| UL94 | Flammability Rating @ less than .45" (11.5mm) thickness @ .45" (11.5mm) thickness and above | H-B V-0 | H-B V-0 |
| ELECTRICAL | | | |
| D149 | Dielectric Strength (V/mil) short time, 1/8" thick | 390 | 470 |
| D150 | Dielectric Constant at 60 Hz | 3.17 | 3.35 |
| D150 | Dissipation Factor at 60 Hz | 0.0009 | 0.0011 |
| D257 | Volume Resistivity (ohm-cm) at 50% RH | 10 ¹⁶ | 10 ¹⁶ |

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