



## Polycarbonate

Polycarbonate is a tough, comparatively rigid, dimensionally stable thermoplastic possesses a versatile combination of properties:

- Exceptional impact strength maintained at relatively high values even at very low temperatures.
- Good Resistance to heat distortion.
- Continuous service temperature range in air, under moderate loading, of -150°C to 120°C.
- Good electrical properties that are virtually independent of humidity and temperature.
- Odourless and tasteless, standard grades are approved for contact with food.
- Almost no moisture absorption.
- Clear grades have excellent light transmission - up to 89% in the visible range.
- Classified as self extinguishing.
- Easily fabricated.
- Glass Filled Polycarbonate

The addition of glass fibres affects mainly the mechanical properties. It increases the tensile strength, the compressive strength, the modulus of elasticity and the maximum service temperature. It reduces the coefficient of linear thermal expansion, the long term deformation (creep) under load and the amount of moisture absorption. It has an adverse effect on the impact strength and "toughness", the coefficient of friction and the rate at which bearing surfaces (particularly when the mating part is a metal component) are abraded.

### AVAILABILITY - Polycarbonate

- Natural rod 6mm - 200mm diameter
- Natural sheet 10mm - 50mm thick
- Glassfilled sheet 12mm - 50mm thick
- Machined components
- Injection moulded components
- Glassfilled rod 10mm - 125mm diameter
- Clear sheet 0.75mm - 12mm thick & above to spec

MECHANICAL PROPERTIES	Test Method	Natural	30% Glass Filled	Units
Density	53479	1.20	1.44	g/cm <sup>3</sup>
Tensile Strength at Yield	53455	55	75	N/mm <sup>2</sup>
Elongation at Yield	53455	6	3	%
Tensile Strength at Break	53455	65	70	N/mm <sup>2</sup>
Elongation at Break	53455	110	3.5	%
Flexural Strength	53452	93	130	N/mm <sup>2</sup>
Compressive Strength	53454	80	110	N/mm <sup>2</sup>
Modulus of Elasticity	53457	2300	5500	N/mm <sup>2</sup>
Ball Indentation Hardness 30 Sec. Value	53456	110	145	N/mm <sup>2</sup>
Rockwell Hardness		M70	M86	
Impact Strength	53453	No Break	30	mJ/mm <sup>2</sup>
Notched Impact Strength at 23°C	53453	35	6	mJ/mm <sup>2</sup>
Moisture Absorption in Standard Atmosphere	53495	0.15	0.13	%
Water Absorption (Saturation)	53495	0.36	0.29	%
<b>THERMAL PROPERTIES</b>				
Crystalline Melting Temperature		220 - 230	220 - 230	°C
Average Coefficient of Linear Expansion between -50°C to 90°C	53752	6.5 10 <sup>-5</sup>	2.7 10 <sup>-5</sup>	°C
Thermal Conductivity at 20°C	52612	0.21	0.24	W/m K
Specific Heat		1.17	1.09	kJ/kg K
Heat Distortion Temperature Method A	53461	138	147	°C
Method B	53461	142	153	°C
Inflammability	<b>SELF EXTINGUISHING</b>			
<b>ELECTRICAL PROPERTIES</b>				
Volume Resistivity	53482	10 <sup>16</sup>	10 <sup>16</sup>	ohm cm
Surface Resistivity	53482	10 <sup>15</sup>	10 <sup>14</sup>	ohm
Dielectric Strength	53481	30	30	kV/mm
Dielectric Constant at 50 Hz	53483	3.0	3.3	
at 1K Hz	53483	3.0	3.3	
at 1M Hz	53483	2.9	3.3	
Dissipation Factor at 50 Hz	53483	0.0009	0.001	
at 1K Hz	53483	0.0010	0.001	
at 1M Hz	53484	0.011	0.012	
Tracking Resistance KB/A	53480	100 - 125	100 - 125	grading
KC/F	53480	250 - 300	150 - 175	grading
Arc Resistance	VDE 0303/5	L1	L1	grading