

## Overview of materials for Polycarbonate, Optical Grade

Category : Polymer , Thermoplastic , Polycarbonate (PC) , Polycarbonate, Optical Grade

### Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Polycarbonate, Optical Grade". Each property range of values reported is minimum and maximum values of appropriate MatWeb entries. The comments report the average value, and number of data points used to calculate the average. The values are not necessarily typical of any specific grade, especially less common values and those that can be most affected by additives or processing methods.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Overview-of-materials-for-Polycarbonate-Optical-Grade.php](http://www.lookpolymers.com/polymer_Overview-of-materials-for-Polycarbonate-Optical-Grade.php)

Physical Properties	Metric	English	Comments
Density	1.02 - 1.40 g/cc	0.0368 - 0.0506 lb/in <sup>3</sup>	Average value: 1.20 g/cc Grade Count:38
Water Absorption	0.130 - 0.350 %	0.130 - 0.350 %	Average value: 0.170 % Grade Count:27
Moisture Absorption at Equilibrium	0.120 - 0.340 %	0.120 - 0.340 %	Average value: 0.220 % Grade Count:5
Water Absorption at Saturation	0.150 - 0.350 %	0.150 - 0.350 %	Average value: 0.250 % Grade Count:8
Thickness	180 - 12700 microns	7.09 - 500 mil	Average value: 4290 microns Grade Count:5
Linear Mold Shrinkage	0.00400 - 0.0100 cm/cm	0.00400 - 0.0100 in/in	Average value: 0.00636 cm/cm Grade Count:21
Melt Flow	6.00 - 60.0 g/10 min	6.00 - 60.0 g/10 min	Average value: 15.6 g/10 min Grade Count:35

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	70.0 - 75.0	70.0 - 75.0	Average value: 71.7 Grade Count:3
Hardness, Rockwell R	70.0 - 121	70.0 - 121	Average value: 114 Grade Count:28
Tensile Strength, Ultimate	53.9 - 72.0 MPa	7820 - 10400 psi	Average value: 65.2 MPa Grade Count:19
Tensile Strength, Yield	60.0 - 75.8 MPa	8700 - 11000 psi	Average value: 63.0 MPa Grade Count:29
Elongation at Break	6.00 - 150 %	6.00 - 150 %	Average value: 110 % Grade Count:38
Elongation at Yield	6.00 - 120 %	6.00 - 120 %	Average value: 25.3 % Grade Count:6
Modulus of Elasticity	2.30 - 2.41 GPa	334 - 350 ksi	Average value: 2.38 GPa Grade Count:6
Flexural Yield Strength	82.7 - 131 MPa	12000 - 19000 psi	Average value: 93.5 MPa Grade Count:35

Flexural Modulus Mechanical Properties	2.06 - 3.52 GPa Metric	299 - 511 ksi English	Average value: 2.34 GPa Grade Count:31
Izod Impact, Notched	1.07 - 9.70 J/cm	2.00 - 18.2 ft-lb/in	Average value: 7.31 J/cm Grade Count:34
Izod Impact, Unnotched	7.85 - 5340 J/cm	14.7 - 10000 ft-lb/in	Average value: 8.50 J/cm Grade Count:5
Charpy Impact Unnotched	NB	NB	Grade Count:3
	NB - NB @Temperature -30.0 - - 30.0 °C	NB - NB @Temperature -22.0 - - 22.0 °F	Grade Count:1

Thermal Properties	Metric	English	Comments
CTE, linear	56.0 - 70.2 $\mu\text{m}/\text{m}\cdot\text{°C}$	31.1 - 39.0 $\mu\text{in}/\text{in}\cdot\text{°F}$	Average value: 66.5 $\mu\text{m}/\text{m}\cdot\text{°C}$ Grade Count:19
CTE, linear, Transverse to Flow	60.0 - 70.0 $\mu\text{m}/\text{m}\cdot\text{°C}$	33.3 - 38.9 $\mu\text{in}/\text{in}\cdot\text{°F}$	Average value: 67.9 $\mu\text{m}/\text{m}\cdot\text{°C}$ Grade Count:11
Specific Heat Capacity	1.17 - 1.70 J/g-°C	0.280 - 0.406 BTU/lb-°F	Average value: 1.36 J/g-°C Grade Count:3
Thermal Conductivity	0.173 - 0.200 W/m-K	1.20 - 1.39 BTU-in/hr- ft <sup>2</sup> -°F	Average value: 0.191 W/m-K Grade Count:5
Maximum Service Temperature, Air	70.0 - 100 °C	158 - 212 °F	Average value: 80.0 °C Grade Count:3
Deflection Temperature at 0.46 MPa (66 psi)	132 - 146 °C	270 - 295 °F	Average value: 139 °C Grade Count:13
Deflection Temperature at 1.8 MPa (264 psi)	120 - 143 °C	248 - 289 °F	Average value: 130 °C Grade Count:38
Vicat Softening Point	143 - 157 °C	289 - 315 °F	Average value: 151 °C Grade Count:10
Minimum Service Temperature, Air	-55.0 - -40.0 °C	-67.0 - -40.0 °F	Average value: -46.7 °C Grade Count:3
Glass Transition Temp, Tg	145 - 148 °C	293 - 298 °F	Average value: 147 °C Grade Count:3
UL RTI, Electrical	75.0 - 125 °C	167 - 257 °F	Average value: 120 °C Grade Count:11
UL RTI, Mechanical with Impact	75.0 - 115 °C	167 - 239 °F	Average value: 111 °C Grade Count:11
UL RTI, Mechanical without Impact	75.0 - 125 °C	167 - 257 °F	Average value: 120 °C Grade Count:11
Flammability, UL94	HB - V-0	HB - V-0	Grade Count:37
Oxygen Index	26.0 - 28.0 %	26.0 - 28.0 %	Average value: 26.5 % Grade Count:4
Glow Wire Test	775 - 960 °C	1430 - 1760 °F	Average value: 868 °C Grade Count:8

Optical Properties	Metric	English	Comments
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Optical Properties	Metric 1.59	English 59	Comments 1.59 Grade Count:17
Haze	1.00 - 3.20 %	1.00 - 3.20 %	Average value: 1.17 % Grade Count:16
Transmission, Visible	63.0 - 90.0 %	63.0 - 90.0 %	Average value: 85.4 % Grade Count:38

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1.00e+13 - 1.00e+17 ohm-cm	1.00e+13 - 1.00e+17 ohm-cm	Average value: 4.52e+16 ohm-cm Grade Count:12
Surface Resistance	4.00 - 1.00e+15 ohm	4.00 - 1.00e+15 ohm	Average value: 8.00e+14 ohm Grade Count:5
Shielding Effectiveness	35.0 - 105 dB	35.0 - 105 dB	Average value: 60.9 dB Grade Count:3
Dielectric Constant	2.85 - 3.17	2.85 - 3.17	Average value: 2.97 Grade Count:8
Dielectric Strength	15.0 - 38.0 kV/mm	380 - 965 kV/in	Average value: 25.8 kV/mm Grade Count:12
Dissipation Factor	0.000500 - 0.0100	0.000500 - 0.0100	Average value: 0.00551 Grade Count:8
Arc Resistance	30.0 - 120 sec	30.0 - 120 sec	Average value: 95.0 sec Grade Count:12
Comparative Tracking Index	250 - 400 V	250 - 400 V	Average value: 315 V Grade Count:10
Hot Wire Ignition, HWI	15.0 - 60.0 sec	15.0 - 60.0 sec	Average value: 33.8 sec Grade Count:8
High Amp Arc Ignition, HAI	60.0 - 120 arcs	60.0 - 120 arcs	Average value: 105 arcs Grade Count:8
High Voltage Arc-Tracking Rate, HVTR	80.0 - 150 mm/min	3.15 - 5.91 in/min	Average value: 115 mm/min Grade Count:8

Processing Properties	Metric	English	Comments
Nozzle Temperature	254 - 332 °C	490 - 630 °F	Average value: 284 °C Grade Count:18
Melt Temperature	241 - 343 °C	465 - 650 °F	Average value: 282 °C Grade Count:29
Mold Temperature	49.0 - 121 °C	120 - 250 °F	Average value: 85.7 °C Grade Count:24
Drying Temperature	116 - 121 °C	241 - 250 °F	Average value: 121 °C Grade Count:19
Moisture Content	0.0200 %	0.0200 %	Average value: 0.0200 % Grade Count:5
Injection Pressure	51.7 - 152 MPa	7500 - 22000 psi	Average value: 100 MPa Grade Count:16
Cycle Time - Injection	1.00 - 2.50 sec	1.00 - 2.50 sec	Average value: 1.75 sec Grade Count:6

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