

Overview of materials for Polycarbonate, Gamma Radiation Resistant

Category : Polymer , Thermoplastic , Polycarbonate (PC) , Polycarbonate, Gamma Radiation Resistant

Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Polycarbonate, Gamma Radiation Resistant". 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-Gamma-Radiation-Resistant.php

Physical Properties	Metric	English	Comments
Density	1.19 - 1.20 g/cc	0.0430 - 0.0434 lb/in ³	Average value: 1.20 g/cc Grade Count:17
Water Absorption	0.150 - 0.350 %	0.150 - 0.350 %	Average value: 0.183 % Grade Count:7
Moisture Absorption at Equilibrium	0.150 - 0.350 %	0.150 - 0.350 %	Average value: 0.271 % Grade Count:7
	0.580 - 0.580 %	0.580 - 0.580 %	Average value: 0.580 % Grade Count:1
	@Temperature 100 - 100 °C	@Temperature 212 - 212 °F	
Water Absorption at Saturation	0.160 - 0.350 %	0.160 - 0.350 %	Average value: 0.255 % Grade Count:6
Linear Mold Shrinkage	0.00500 - 0.00800 cm/cm	0.00500 - 0.00800 in/in	Average value: 0.00628 cm/cm Grade Count:15
Melt Flow	3.00 - 112 g/10 min	3.00 - 112 g/10 min	Average value: 15.2 g/10 min Grade Count:16

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	70.0 - 85.0	70.0 - 85.0	Average value: 73.8 Grade Count:12
Hardness, Rockwell R	118 - 122	118 - 122	Average value: 119 Grade Count:15
Tensile Strength, Ultimate	65.0 - 75.0 MPa	9430 - 10900 psi	Average value: 68.7 MPa Grade Count:16
Tensile Strength, Yield	60.0 - 65.0 MPa	8700 - 9430 psi	Average value: 63.1 MPa Grade Count:17
Elongation at Break	7.00 - 150 %	7.00 - 150 %	Average value: 109 % Grade Count:17
Elongation at Yield	6.00 - 7.00 %	6.00 - 7.00 %	Average value: 6.50 % Grade Count:16
Modulus of Elasticity	2.09 - 2.43 GPa	303 - 352 ksi	Average value: 2.27 GPa Grade Count:8
Flexural Yield Strength	66.0 - 97.9 MPa	9570 - 14200 psi	Average value: 90.5 MPa Grade Count:14

Mechanical Properties	Metric	English	Comments
Elongation at Break	2.02 - 2.34 GPa	29.3 - 340 ksi	Average value: 2.22 GPa Grade Count:14
Izod Impact, Notched	6.40 - 9.08 J/cm	12.0 - 17.0 ft-lb/in	Average value: 7.61 J/cm Grade Count:16
	1.39 - 1.44 J/cm @Temperature -30.0 - - 30.0 °C	2.60 - 2.70 ft-lb/in @Temperature -22.0 - - 22.0 °F	Average value: 1.43 J/cm Grade Count:4
Izod Impact, Unnotched	32.0 J/cm - NB	60.0 ft-lb/in - NB	Average value: 32.0 J/cm Grade Count:8
Izod Impact, Notched (ISO)	13.0 - 70.0 kJ/m ²	6.19 - 33.3 ft-lb/in ²	Average value: 39.8 kJ/m ² Grade Count:5
	10.0 - 12.0 kJ/m ² @Temperature -30.0 - - 30.0 °C	4.76 - 5.71 ft-lb/in ² @Temperature -22.0 - - 22.0 °F	Average value: 10.8 kJ/m ² Grade Count:5
Izod Impact, Unnotched (ISO)	NB - NB @Temperature -30.0 - - 30.0 °C	NB - NB @Temperature -22.0 - - 22.0 °F	Grade Count:2
Charpy Impact Unnotched	1000 J/cm ² - NB	4760 ft-lb/in ² - NB	Grade Count:5
	999.9 - 999.9 J/cm ² @Temperature -30.0 - - 30.0 °C	4759 - 4759 ft-lb/in ² @Temperature -22.0 - - 22.0 °F	Grade Count:2
Charpy Impact, Notched	1.20 - 9.50 J/cm ²	5.71 - 45.2 ft-lb/in ²	Average value: 4.64 J/cm ² Grade Count:7
	1.00 - 1.50 J/cm ² @Temperature -30.0 - - 30.0 °C	4.76 - 7.14 ft-lb/in ² @Temperature -22.0 - - 22.0 °F	Average value: 1.33 J/cm ² Grade Count:2
Gardner Impact	36.2 J	26.7 ft-lb	Average value: 36.2 J Grade Count:8
Tensile Impact Strength	378 - 589 kJ/m ²	180 - 280 ft-lb/in ²	Average value: 541 kJ/m ² Grade Count:6
Dart Drop, Total Energy	149 - 169 J	110 - 125 ft-lb	Average value: 154 J Grade Count:4

Thermal Properties	Metric	English	Comments
CTE, linear	55.8 - 91.8 µm/m-°C	31.0 - 51.0 µin/in-°F	Average value: 69.2 µm/m-°C Grade Count:9
CTE, linear, Transverse to Flow	57.0 - 70.0 µm/m-°C	31.7 - 38.9 µin/in-°F	Average value: 62.3 µm/m-°C Grade Count:6
Specific Heat Capacity	1.25 J/g-°C	0.299 BTU/lb-°F	Average value: 1.25 J/g-°C Grade Count:4
Thermal Conductivity		1.32 - 1.46 BTU-in/hr-	Average value: 0.204 W/m-K Grade

Thermal Properties	Metric 0.190 - 0.210 W/m-K	English F ² -°F	Count:4 Comments
Deflection Temperature at 0.46 MPa (66 psi)	128 - 160 °C	262 - 320 °F	Average value: 136 °C Grade Count:13
Deflection Temperature at 1.8 MPa (264 psi)	122 - 151 °C	252 - 304 °F	Average value: 131 °C Grade Count:16
Vicat Softening Point	140 - 160 °C	284 - 320 °F	Average value: 150 °C Grade Count:16
UL RTI, Electrical	125 - 130 °C	257 - 266 °F	Average value: 126 °C Grade Count:4
UL RTI, Mechanical with Impact	125 - 130 °C	257 - 266 °F	Average value: 126 °C Grade Count:4
UL RTI, Mechanical without Impact	125 - 130 °C	257 - 266 °F	Average value: 126 °C Grade Count:4
Flammability, UL94	V-2	V-2	Grade Count:10

Optical Properties	Metric	English	Comments
Refractive Index	1.59 - 1.60	1.59 - 1.60	Average value: 1.60 Grade Count:4
Haze	1.00 - 1.10 %	1.00 - 1.10 %	Average value: 1.01 % Grade Count:14
Transmission, Visible	85.0 - 89.0 %	85.0 - 89.0 %	Average value: 86.8 % Grade Count:6
UV Transmittance	88.0 %	88.0 %	Average value: 88.0 % Grade Count:8

Electrical Properties	Metric	English	Comments
Electrical Resistivity	1.00e+17 - 2.60e+17 ohm-cm	1.00e+17 - 2.60e+17 ohm-cm	Average value: 2.13e+17 ohm-cm Grade Count:6
Dielectric Constant	2.70 - 3.17	2.70 - 3.17	Average value: 2.98 Grade Count:6
Dielectric Strength	14.9 - 20.2 kV/mm	378 - 513 kV/in	Average value: 17.9 kV/mm Grade Count:6
Dissipation Factor	0.000500 - 0.0240	0.000500 - 0.0240	Average value: 0.00728 Grade Count:6
Comparative Tracking Index	175 - 250 V	175 - 250 V	Average value: 213 V Grade Count:3
Hot Wire Ignition, HWI	30.0 - 60.0 sec	30.0 - 60.0 sec	Average value: 45.0 sec Grade Count:3
High Amp Arc Ignition, HAI	0.000 - 15.0 arcs	0.000 - 15.0 arcs	Average value: 7.50 arcs Grade Count:3
High Voltage Arc-Tracking Rate, HVTR	80.0 - 150 mm/min	3.15 - 5.91 in/min	Average value: 115 mm/min Grade Count:3

Processing Properties	Metric	English	Comments
Melt Temperature	249 - 343 °C	480 - 650 °F	Average value: 293 °C Grade Count:8

Mold Temperature Processing Properties	65.6 - 116 °C Metric	150 - 240 °F English	Average value: 85.7 °C Grade Count: 8 Comments
Drying Temperature	118 - 124 °C	245 - 255 °F	Average value: 121 °C Grade Count: 8

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