

Overview of materials for Acrylic, General Purpose, Molded

Category : Polymer , Thermoplastic , Acrylic (PMMA) , Acrylic, General Purpose, Molded

Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Acrylic, General Purpose, Molded". 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-Acrylic-General-Purpose-Molded.php

Physical Properties	Metric	English	Comments
Density	0.700 - 1.20 g/cc	0.0253 - 0.0434 lb/in ³	Average value: 1.17 g/cc Grade Count:249
Water Absorption	0.300 - 2.00 %	0.300 - 2.00 %	Average value: 0.461 % Grade Count:96
Moisture Absorption at Equilibrium	0.300 - 0.600 %	0.300 - 0.600 %	Average value: 0.399 % Grade Count:29
Water Absorption at Saturation	0.300 - 2.20 %	0.300 - 2.20 %	Average value: 1.23 % Grade Count:21
Linear Mold Shrinkage	0.00200 - 0.00800 cm/cm	0.00200 - 0.00800 in/in	Average value: 0.00455 cm/cm Grade Count:174
Melt Flow	0.112 - 40.0 g/10 min	0.112 - 40.0 g/10 min	Average value: 8.51 g/10 min Grade Count:239

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell L	40.0 - 54.0	40.0 - 54.0	Average value: 46.0 Grade Count:3
Hardness, Rockwell M	18.0 - 99.0	18.0 - 99.0	Average value: 81.9 Grade Count:99
Hardness, Rockwell R	69.0	69.0	Average value: 69.0 Grade Count:4
Ball Indentation Hardness	170 - 190 MPa	24700 - 27600 psi	Average value: 179 MPa Grade Count:21
Tensile Strength, Ultimate	19.3 - 85.0 MPa	2800 - 12300 psi	Average value: 64.0 MPa Grade Count:200
Tensile Strength, Yield	25.0 - 85.0 MPa	3630 - 12300 psi	Average value: 60.5 MPa Grade Count:51
Elongation at Break	1.00 - 85.0 %	1.00 - 85.0 %	Average value: 10.3 % Grade Count:244
Elongation at Yield	2.00 - 6.00 %	2.00 - 6.00 %	Average value: 4.54 % Grade Count:58
Modulus of Elasticity	0.950 - 3.79 GPa	138 - 550 ksi	Average value: 2.89 GPa Grade Count:192

Mechanical Properties	Metric	English	Comments
Flexural Modulus	1.17 - 3.59 GPa	170 - 520 ksi	Average value: 2.79 GPa Grade Count:100
Compressive Yield Strength	36.5 - 117 MPa	5300 - 17000 psi	Average value: 102 MPa Grade Count:8
Izod Impact, Notched	0.118 - 1.47 J/cm	0.220 - 2.76 ft-lb/in	Average value: 0.297 J/cm Grade Count:163
	0.240255 - 0.37373 J/cm @Temperature 0.000 - 0.000 °C	0.450096 - 0.70015 ft-lb/in @Temperature 32.0 - 32.0 °F	Average value: 0.463 J/cm Grade Count:6
	0.10678 - 0.80085 J/cm @Temperature 0.000 - 0.000 °C	0.20004 - 1.5003 ft-lb/in @Temperature 32.0 - 32.0 °F	Average value: 0.463 J/cm Grade Count:10
	0.10678 - 0.80085 J/cm @Thickness 3.17 - 6.35 mm	0.20004 - 1.5003 ft-lb/in @Thickness 0.125 - 0.250 in	Average value: 0.463 J/cm Grade Count:10
	0.26695 - 0.85424 J/cm @Diameter 6.35 - 6.35 mm	0.50011 - 1.6003 ft-lb/in @Diameter 0.250 - 0.250 in	Average value: 0.463 J/cm Grade Count:6
	0.26695 - 0.85424 J/cm @Temperature 0.000 - 0.000 °C	0.50011 - 1.6003 ft-lb/in @Temperature 32.0 - 32.0 °F	Average value: 0.463 J/cm Grade Count:6
Izod Impact, Notched (ISO)	1.30 - 19.0 kJ/m ²	0.619 - 9.04 ft-lb/in ²	Average value: 3.13 kJ/m ² Grade Count:23
Charpy Impact Unnotched	1.00 J/cm ² - NB	4.76 ft-lb/in ² - NB	Average value: 2.91 J/cm ² Grade Count:56
Charpy Impact, Notched	0.140 - 2.00 J/cm ²	0.666 - 9.52 ft-lb/in ²	Average value: 0.508 J/cm ² Grade Count:38
Gardner Impact	0.226 - 0.339 J	0.167 - 0.250 ft-lb	Average value: 0.231 J Grade Count:92
Falling Dart Impact	2.17 - 18.6 J	1.60 - 13.7 ft-lb	Average value: 10.7 J Grade Count:4
Tensile Creep Modulus, 1 hour	1800 - 2700 MPa	261000 - 392000 psi	Average value: 2460 MPa Grade Count:9
Tensile Creep Modulus, 1000 hours	1200 - 1800 MPa	174000 - 261000 psi	Average value: 1580 MPa Grade Count:10
Taber Abrasion, mg/1000 Cycles	16.5	16.5	Average value: 16.5 Grade Count:4

Thermal Properties	Metric	English	Comments
CTE, linear	30.0 - 150 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	16.7 - 83.3 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	Average value: 70.2 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ Grade Count:168
	72.0 - 149.4 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature -17.8 - 156 $^\circ\text{C}$	40.0 - 83.00 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 0.000 - 312 $^\circ\text{F}$	Average value: 94.9 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ Grade Count:26
Specific Heat Capacity	1.46 - 1.50 $\text{J}/\text{g}\cdot^\circ\text{C}$	0.349 - 0.359 $\text{BTU}/\text{lb}\cdot^\circ\text{F}$	Average value: 1.47 $\text{J}/\text{g}\cdot^\circ\text{C}$ Grade Count:9
Thermal Conductivity	0.187 - 0.216 $\text{W}/\text{m}\cdot\text{K}$	1.30 - 1.50 $\text{BTU}\cdot\text{in}/\text{hr}\cdot\text{ft}^2\cdot^\circ\text{F}$	Average value: 0.202 $\text{W}/\text{m}\cdot\text{K}$ Grade Count:15
Maximum Service Temperature, Air	50.0 - 98.0 $^\circ\text{C}$	122 - 208 $^\circ\text{F}$	Average value: 83.9 $^\circ\text{C}$ Grade Count:68
Deflection Temperature at 0.46 MPa (66 psi)	73.0 - 109 $^\circ\text{C}$	163 - 228 $^\circ\text{F}$	Average value: 96.8 $^\circ\text{C}$ Grade Count:61
Deflection Temperature at 1.8 MPa (264 psi)	51.7 - 106 $^\circ\text{C}$	125 - 223 $^\circ\text{F}$	Average value: 89.2 $^\circ\text{C}$ Grade Count:211
Vicat Softening Point	58.3 - 119 $^\circ\text{C}$	137 - 246 $^\circ\text{F}$	Average value: 100 $^\circ\text{C}$ Grade Count:231
Annealing Point	60.0 - 90.0 $^\circ\text{C}$	140 - 194 $^\circ\text{F}$	Average value: 77.1 $^\circ\text{C}$ Grade Count:7
Heat Distortion Temperature	85.0 - 105 $^\circ\text{C}$	185 - 221 $^\circ\text{F}$	Average value: 96.4 $^\circ\text{C}$ Grade Count:7
Glass Transition Temp, Tg	102 - 122 $^\circ\text{C}$	216 - 252 $^\circ\text{F}$	Average value: 110 $^\circ\text{C}$ Grade Count:21
Flammability, UL94	HB	HB	Grade Count:160
Oxygen Index	18.0 %	18.0 %	Average value: 18.0 % Grade Count:7
Glow Wire Test	650 - 700 $^\circ\text{C}$	1200 - 1290 $^\circ\text{F}$	Average value: 662 $^\circ\text{C}$ Grade Count:30

Optical Properties	Metric	English	Comments
Refractive Index	1.49 - 1.52	1.49 - 1.52	Average value: 1.49 Grade Count:106
Haze	0.400 - 98.0 %	0.400 - 98.0 %	Average value: 7.35 % Grade Count:163
Yellow Index	-7.50 - 6.50 %	-7.50 - 6.50 %	Average value: 0.758 % Grade Count:25
Transmission, Visible	74.0 - 93.0 %	74.0 - 93.0 %	Average value: 90.5 % Grade Count:233
UV Transmittance	0.190 - 88.5 %	0.190 - 88.5 %	Average value: 39.8 % Grade Count:5

Electrical Properties	Metric	English	Comments
	1.00e+10 - 1.00e+17	1.00e+10 - 1.00e+17	Average value: 3.49e+15 ohm-cm

Electrical Properties	ohm-cm Metric	ohm-cm English	Grade Count:36 Comments
Surface Resistance	2.60e+9 - 1.00e+16 ohm	2.60e+9 - 1.00e+16 ohm	Average value: 1.17e+15 ohm Grade Count:25
Dielectric Constant	2.80 - 4.00	2.80 - 4.00	Average value: 3.45 Grade Count:32
Dielectric Strength	0.787 - 60.0 kV/mm	20.0 - 1520 kV/in	Average value: 25.5 kV/mm Grade Count:39
Dissipation Factor	0.0200 - 0.190	0.0200 - 0.190	Average value: 0.0488 Grade Count:34
Comparative Tracking Index	600 V	600 V	Average value: 600 V Grade Count: 16

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