

## Overview of materials for Acrylic, Optical Grade, Molded

Category : Polymer , Thermoplastic , Acrylic (PMMA) , Acrylic, Optical Grade, Molded

### Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Acrylic, Optical Grade, 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-Optical-Grade-Molded.php](http://www.lookpolymers.com/polymer_Overview-of-materials-for-Acrylic-Optical-Grade-Molded.php)

Physical Properties	Metric	English	Comments
Density	1.11 - 1.19 g/cc	0.0401 - 0.0430 lb/in <sup>3</sup>	Average value: 1.18 g/cc Grade Count:132
Water Absorption	0.300 %	0.300 %	Average value: 0.300 % Grade Count:23
Water Absorption at Saturation	0.300 - 2.00 %	0.300 - 2.00 %	Average value: 0.867 % Grade Count:3
Particle Size	230 - 600 µm	230 - 600 µm	Average value: 538 µm Grade Count:6
Viscosity	2.00e+6 - 2.00e+6 cP	2.00e+6 - 2.00e+6 cP	Average value: 2.00e+6 cP Grade Count:1
	@Temperature 240 - 240 °C	@Temperature 464 - 464 °F	
	2.00e+6 - 2.00e+6 cP	2.00e+6 - 2.00e+6 cP	Average value: 2.00e+6 cP Grade Count:1
	@Shear Rate 100 - 100 1/s	@Shear Rate 100 - 100 1/s	
Linear Mold Shrinkage	0.00200 - 0.00800 cm/cm	0.00200 - 0.00800 in/in	Average value: 0.00420 cm/cm Grade Count:130
Melt Flow	0.700 - 40.0 g/10 min	0.700 - 40.0 g/10 min	Average value: 10.7 g/10 min Grade Count:131

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell M	48.0 - 99.0	48.0 - 99.0	Average value: 85.3 Grade Count:30
Tensile Strength, Ultimate	38.0 - 89.3 MPa	5510 - 13000 psi	Average value: 59.5 MPa Grade Count:125
Tensile Strength, Yield	60.0 - 72.0 MPa	8700 - 10400 psi	Average value: 69.4 MPa Grade Count:7
Elongation at Break	2.00 - 40.0 %	2.00 - 40.0 %	Average value: 8.79 % Grade Count:125
Elongation at Yield	2.00 - 6.00 %	2.00 - 6.00 %	Average value: 3.65 % Grade Count:10
Modulus of Elasticity			Average value: 2.86 GPa Grade

Mechanical Properties	1.76 - 3.65 GPa Metric	255 - 530 ksi English	Count:124 Comments
Flexural Yield Strength	48.3 - 124 MPa	7000 - 18000 psi	Average value: 94.3 MPa Grade Count:131
Flexural Modulus	2.00 - 3.45 GPa	290 - 500 ksi	Average value: 2.96 GPa Grade Count:20
Izod Impact, Notched	0.160 - 1.30 J/cm	0.300 - 2.44 ft-lb/in	Average value: 0.306 J/cm Grade Count:125
	0.26695 - 0.800 J/cm @Temperature 0.000 - 0.000 °C	0.50011 - 1.50 ft-lb/in @Temperature 32.0 - 32.0 °F	Average value: 0.516 J/cm Grade Count:3
	0.26695 - 0.800 J/cm @Diameter 6.35 - 6.35 mm	0.50011 - 1.50 ft-lb/in @Diameter 0.250 - 0.250 in	Average value: 0.516 J/cm Grade Count:3
Izod Impact, Notched (ISO)	1.70 - 2.20 kJ/m <sup>2</sup>	0.809 - 1.05 ft-lb/in <sup>2</sup>	Average value: 1.85 kJ/m <sup>2</sup> Grade Count:6
Charpy Impact Unnotched	1.80 - 2.60 J/cm <sup>2</sup>	8.57 - 12.4 ft-lb/in <sup>2</sup>	Average value: 2.00 J/cm <sup>2</sup> Grade Count:6
Charpy Impact, Notched	0.200 - 1.80 J/cm <sup>2</sup>	0.952 - 8.57 ft-lb/in <sup>2</sup>	Average value: 0.592 J/cm <sup>2</sup> Grade Count:9
Gardner Impact	0.226 - 9.04 J	0.167 - 6.67 ft-lb	Average value: 1.58 J Grade Count:106

Thermal Properties	Metric	English	Comments
CTE, linear	30.0 - 120 µm/m-°C	16.7 - 66.7 µin/in-°F	Average value: 68.9 µm/m-°C Grade Count:127
	72.0 - 72.0 µm/m-°C @Temperature 0.000 - 156 °C	40.0 - 40.0 µin/in-°F @Temperature 32.0 - 312 °F	Average value: 72.0 µm/m-°C Grade Count:2
Specific Heat Capacity	1.30 - 1.50 J/g-°C	0.311 - 0.359 BTU/lb-°F	Average value: 1.44 J/g-°C Grade Count:11
	1.90 - 2.30 J/g-°C @Temperature 100 - 175 °C	0.454 - 0.550 BTU/lb-°F @Temperature 212 - 347 °F	Average value: 2.10 J/g-°C Grade Count:3
Thermal Conductivity	0.190 - 0.220 W/m-K	1.32 - 1.53 BTU-in/hr- ft <sup>2</sup> -°F	Average value: 0.205 W/m-K Grade Count:11
Melting Point	132 - 157 °C	270 - 315 °F	Average value: 150 °C Grade Count:7
Maximum Service Temperature, Air	50.0 - 100 °C	122 - 212 °F	Average value: 78.1 °C Grade Count:61
Deflection Temperature at 0.46 MPa (66 psi)	91.0 - 106 °C	196 - 223 °F	Average value: 100 °C Grade Count:7

Thermal Properties	Metric	English	Comments
Modulus at 1.8 MPa (26.4 psi)	80.0 - 104 °C	140 - 220 °F	Average value: 85.2 °C Grade Count:132
Vicat Softening Point	75.6 - 117 °C	168 - 243 °F	Average value: 102 °C Grade Count:122
Flammability, UL94	HB	HB	Grade Count:79
Glow Wire Test	650 °C	1200 °F	Average value: 650 °C Grade Count:6

Optical Properties	Metric	English	Comments
Refractive Index	1.49 - 1.51	1.49 - 1.51	Average value: 1.49 Grade Count:22
Haze	0.400 - 12.0 %	0.400 - 12.0 %	Average value: 1.41 % Grade Count:122
Yellow Index	-0.400 - 1.00 %	-0.400 - 1.00 %	Average value: 0.750 % Grade Count:8
Transmission, Visible	84.0 - 92.0 %	84.0 - 92.0 %	Average value: 91.6 % Grade Count:132
UV Transmittance	49.5 - 88.5 %	49.5 - 88.5 %	Average value: 75.2 % Grade Count:4

Electrical Properties	Metric	English	Comments
Dielectric Constant	3.40 - 3.80	3.40 - 3.80	Average value: 3.67 Grade Count:8
Dielectric Strength	18.0 - 45.0 kV/mm	457 - 1140 kV/in	Average value: 21.4 kV/mm Grade Count:8
Dissipation Factor	0.0400 - 0.0500	0.0400 - 0.0500	Average value: 0.0471 Grade Count:7

Processing Properties	Metric	English	Comments
Melt Temperature	193 - 260 °C	380 - 500 °F	Average value: 233 °C Grade Count:8
Mold Temperature	26.7 - 79.4 °C	80.0 - 175 °F	Average value: 55.0 °C Grade Count:7
Drying Temperature	71.1 - 79.4 °C	160 - 175 °F	Average value: 77.5 °C Grade Count:7

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