

Overview of materials for Polyphthalamide (PPA), Carbon Fiber

Category : Polymer , Thermoplastic , Polyphthalamide (PPA) , Polyphthalamide (PPA), Carbon Fiber Filled

Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Polyphthalamide, Carbon Fiber". 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-Polyphthalamide-PPA-Carbon-Fiber.php

Physical Properties	Metric	English	Comments
Density	1.20 - 1.65 g/cc	0.0434 - 0.0596 lb/in ³	Average value: 1.37 g/cc Grade Count:52
Filler Content	10.0 - 60.0 %	10.0 - 60.0 %	Average value: 29.5 % Grade Count:19
Water Absorption	0.180 - 0.300 %	0.180 - 0.300 %	Average value: 0.273 % Grade Count:33
Additive Loading	20.0 - 50.0 %	20.0 - 50.0 %	Average value: 35.0 % Grade Count:4
Linear Mold Shrinkage	0.000 - 0.00600 cm/cm	0.000 - 0.00600 in/in	Average value: 0.00223 cm/cm Grade Count:50
Linear Mold Shrinkage, Transverse	0.00300 - 0.0100 cm/cm	0.00300 - 0.0100 in/in	Average value: 0.00804 cm/cm Grade Count:5

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell R	124 - 125	124 - 125	Average value: 125 Grade Count:7
Tensile Strength, Ultimate	115 - 385 MPa	16700 - 55800 psi	Average value: 232 MPa Grade Count:51
	140 - 265 MPa	20300 - 38400 psi	Average value: 210 MPa Grade Count:1
	@Temperature 60.0 - 150 °C	@Temperature 140 - 302 °F	
Elongation at Break	0.700 - 4.00 %	0.700 - 4.00 %	Average value: 1.62 % Grade Count:30
	1.00 - 3.50 %	1.00 - 3.50 %	Average value: 1.95 % Grade Count:1
	@Temperature 60.0 - 150 °C	@Temperature 140 - 302 °F	
Elongation at Yield	1.00 - 2.50 %	1.00 - 2.50 %	Average value: 1.72 % Grade Count:22
Modulus of Elasticity	10.0 - 48.3 GPa	1450 - 7000 ksi	Average value: 22.9 GPa Grade Count:52
	12.0 - 32.0 GPa	1740 - 4640 ksi	

Mechanical Properties	Metric @ Temperature 60.0 - 150 °C	English @ Temperature 140 - 302 °F	Comments Average value: 22.8 GPa Grade Count:1
Flexural Yield Strength	180 - 530 MPa	26100 - 76900 psi	Average value: 331 MPa Grade Count:50
Flexural Modulus	7.58 - 41.4 GPa	1100 - 6000 ksi	Average value: 19.4 GPa Grade Count:50
Izod Impact, Notched	0.320 - 2.14 J/cm	0.600 - 4.01 ft-lb/in	Average value: 0.748 J/cm Grade Count:26
Izod Impact, Unnotched	2.67 - 9.08 J/cm	5.00 - 17.0 ft-lb/in	Average value: 6.11 J/cm Grade Count:25
Izod Impact, Notched (ISO)	6.40 - 8.10 kJ/m ²	3.05 - 3.85 ft-lb/in ²	Average value: 7.50 kJ/m ² Grade Count:3
	7.00 - 7.00 kJ/m ² @Temperature -30.0 - - 30.0 °C	3.33 - 3.33 ft-lb/in ² @Temperature -22.0 - - 22.0 °F	Average value: 7.00 kJ/m ² Grade Count:1
Charpy Impact Unnotched	1.50 - 8.50 J/cm ²	7.14 - 40.5 ft-lb/in ²	Average value: 4.01 J/cm ² Grade Count:22
	1.30 - 8.00 J/cm ² @Temperature -40.0 - - 30.0 °C	6.19 - 38.1 ft-lb/in ² @Temperature -40.0 - - 22.0 °F	Average value: 4.15 J/cm ² Grade Count:6
Charpy Impact, Notched	0.500 - 0.900 J/cm ²	2.38 - 4.28 ft-lb/in ²	Average value: 0.765 J/cm ² Grade Count:11
	0.300 - 1.20 J/cm ² @Temperature -40.0 - - 40.0 °C	1.43 - 5.71 ft-lb/in ² @Temperature -40.0 - - 40.0 °F	Average value: 0.750 J/cm ² Grade Count:2
Coefficient of Friction	0.180 - 0.280	0.180 - 0.280	Average value: 0.243 Grade Count:3
Coefficient of Friction, Static	0.150 - 0.210	0.150 - 0.210	Average value: 0.187 Grade Count:3

Thermal Properties	Metric	English	Comments
CTE, linear	11.0 - 17.0 µm/m-°C	6.11 - 9.44 µin/in-°F	Average value: 13.7 µm/m-°C Grade Count:5
	15.0 - 15.0 µm/m-°C @Temperature 55.0 - 160 °C	8.33 - 8.33 µin/in-°F @Temperature 131 - 320 °F	Average value: 15.0 µm/m-°C Grade Count:1
CTE, linear, Transverse to Flow	85.0 - 85.0 µm/m-°C @Temperature 55.0 - 160 °C	47.2 - 47.2 µin/in-°F @Temperature 131 - 320 °F	Average value: 85.0 µm/m-°C Grade Count:1
Thermal Conductivity	0.450 - 3.80 W/m-K	3.12 - 26.4 BTU-in/hr- ft ² -°F	Average value: 1.16 W/m-K Grade Count:5

Melting Point Thermal Properties	300 - 323 °C Metric	572 - 613 °F English	Average value: 313 °C Grade Count:3 Comments
Maximum Service Temperature, Air	150 - 195 °C	302 - 383 °F	Average value: 179 °C Grade Count:22
Deflection Temperature at 1.8 MPa (264 psi)	240 - 295 °C	464 - 563 °F	Average value: 272 °C Grade Count:36
Vicat Softening Point	275 - 285 °C	527 - 545 °F	Average value: 282 °C Grade Count:3
Flammability, UL94	HB - V-0	HB - V-0	Grade Count:21

Electrical Properties	Metric	English	Comments
Electrical Resistivity	10.0 - 1.00e+16 ohm-cm	10.0 - 1.00e+16 ohm-cm	Average value: 2.97e+14 ohm-cm Grade Count:20
Surface Resistance	10.0 - 1.00e+10 ohm	10.0 - 1.00e+10 ohm	Average value: 8.30e+8 ohm Grade Count:24
Insulation Resistance	100 - 1.00e+9 ohm	100 - 1.00e+9 ohm	Average value: 3.41e+8 ohm Grade Count:21

Processing Properties	Metric	English	Comments
Processing Temperature	296 - 340 °C	565 - 644 °F	Average value: 328 °C Grade Count:29
Nozzle Temperature	320 - 340 °C	608 - 644 °F	Average value: 326 °C Grade Count:22
Melt Temperature	300 - 352 °C	572 - 666 °F	Average value: 330 °C Grade Count:43
Mold Temperature	65.0 - 180 °C	149 - 356 °F	Average value: 139 °C Grade Count:51
Drying Temperature	80.0 - 149 °C	176 - 300 °F	Average value: 98.7 °C Grade Count:44
Moisture Content	0.0300 - 0.200 %	0.0300 - 0.200 %	Average value: 0.0757 % Grade Count:21
Dew Point	-31.7 - -28.9 °C	-25.0 - -20.0 °F	Average value: -30.7 °C Grade Count:17
Injection Pressure	68.9 - 124 MPa	10000 - 18000 psi	Average value: 91.6 MPa Grade Count:24

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