

## Hexion Bakelite™ PF 4155 Phenolic Formaldehyde Resin, Resistant to High Temperatures, Improved Electrical Properties, Low Shrinkage, High Mechanical Strength

Category : Polymer , Thermoset , Filled/Reinforced Thermoset , Phenolic

### Material Notes:

Phenolic molding compound, inorganically filled, glass fiber reinforced, good media and temperature resistance. Conditioned Cu-adhesion. Application areas: Commutators (fuel pumps, actuators, starter motors, HVAC motors, fan motors, window lift motors, ABS, wiper motors, garden appliances, household appliances, power tools, universal motors). Information provided by Bakelite AG. Bakelite AG became a part of Hexion in 2005.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Hexion-Bakelite-PF-4155-Phenolic-Formaldehyde-Resin-Resistant-to-High-Temperatures-Improved-Electrical-Properties-Low-Shrinkage-High-Mechanical-Strength.php](http://www.lookpolymers.com/polymer_Hexion-Bakelite-PF-4155-Phenolic-Formaldehyde-Resin-Resistant-to-High-Temperatures-Improved-Electrical-Properties-Low-Shrinkage-High-Mechanical-Strength.php)

Physical Properties	Metric	English	Comments
Density	1.78 g/cc	0.0643 lb/in <sup>3</sup>	ISO 1183
Apparent Bulk Density	0.730 g/cc	0.0264 lb/in <sup>3</sup>	ISO 60
Linear Mold Shrinkage, Flow	-0.000100 cm/cm	-0.000100 in/in	Compression molding; ISO 2577
	0.0010 cm/cm	0.0010 in/in	Injection molding; ISO 2577

Mechanical Properties	Metric	English	Comments
Ball Indentation Hardness	350 MPa	50800 psi	H 961/30; ISO 2039/P1
Flexural Strength	125 MPa	18100 psi	2 mm/min; ISO 178
Flexural Modulus	13.5 GPa	1960 ksi	ISO 178
Compressive Strength	200 MPa	29000 psi	Test specimen flat tested; ISO 604
Charpy Impact Unnotched	0.950 J/cm <sup>2</sup>	4.52 ft-lb/in <sup>2</sup>	ISO 179-1/2 eU
	@Temperature 23.0 °C	@Temperature 73.4 °F	
Charpy Impact, Notched	0.300 J/cm <sup>2</sup>	1.43 ft-lb/in <sup>2</sup>	ISO 179-1/2 eA
	@Temperature 23.0 °C	@Temperature 73.4 °F	

Thermal Properties	Metric	English	Comments
Maximum Service Temperature, Air	170 °C	338 °F	<20000 hours; IEC 60216-P1
	240 °C	464 °F	< 50 hours; IEC 60216-P1
Deflection Temperature at 8.0 MPa	160 °C	320 °F	ISO 75-2

Thermal Properties	0.0500 % Metric	0.0500 % English	Comments
	@Temperature 110 °C	@Temperature 230 °F	Injection molding; ISO 2577
	0.100 %	0.100 %	Injection molding; ISO 2577
	@Temperature 110 °C, Time 605000 sec	@Temperature 230 °F, Time 168 hour	

Electrical Properties	Metric	English	Comments
Volume Resistivity	1.00e+12 ohm-cm	1.00e+12 ohm-cm	IEC 60093
Surface Resistance	1.00e+11 ohm	1.00e+11 ohm	IEC 60093
Dielectric Constant	6.0	6.0	IEC 60250
	@Frequency 100 Hz	@Frequency 100 Hz	
Dielectric Strength	30.0 kV/mm	762 kV/in	IEC 60243-P1
	@Thickness 1.00 mm	@Thickness 0.0394 in	
Dissipation Factor	0.050	0.050	IEC 60250
	@Frequency 100 Hz	@Frequency 100 Hz	
Comparative Tracking Index	175 V	175 V	Test liquid A; IEC 60112

Processing Properties	Metric	English	Comments
Feed Temperature	60.0 - 75.0 °C	140 - 167 °F	Injection molding
Nozzle Temperature	80.0 - 100 °C	176 - 212 °F	Injection molding
Melt Temperature	80.0 - 100 °C	176 - 212 °F	Injection molding
Mold Temperature	160 - 190 °C	320 - 374 °F	Injection molding
	160 - 190 °C	320 - 374 °F	Compression molding
Injection Pressure	>= 15.0 MPa	>= 2180 psi	Compression and injection cavity mold pressure
Back Pressure	0.500 - 2.00 MPa	72.5 - 290 psi	Injection molding
Cure Time	0.167 - 0.333 min	0.00278 - 0.00556 hour	Per 1 mm of wall thickness, injection molding
	0.333 - 0.667 min	0.00556 - 0.0111 hour	Per 1 mm of wall thickness, compression molding

Descriptive Properties	Value	Comments
Chromatic Spectrum	All Colors	
Creep Rupture Strength	Very Good	

Descriptive Properties	Value	Comments
Holding Pressure	Approximately 40-60% of injection pressure	
Media Resistance	Very Good	
Moisture Absorption	13 mg	ISO 62, 24 hours at 23°C
Reserves by Peak Temperature	Very High	
Thermal Expansion	Very Slight	

## Contact Songhan Plastic Technology Co.,Ltd.

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