PBI Performance Products Celazole® PBI U-60 Unfilled Polybenzimidazole Resin

Category : Polymer , Thermoplastic , Polybenzimidazole (PBI)

Material Notes:

U-60 grade Celazole® polybenzimidazole (PBI) resin is a organic polymer which does not burn in air and has high temperature resistance, along with excellent stability to chemicals and hydrolysis. Celazole PBI is ideal for applications where requirements cannot be met by other resins—in extreme high temperatures, in harsh chemical or plasma environments, or in applications where durability and wear resistance are important. Parts molded of Celazole PBI are being used in semiconductor and flat panel display manufacture, electrical insulating parts, heat insulating applications, as well as seals, bearings and wear plates in various industrial applications. They are also being evaluated in demanding aerospace applications requiring outstanding strength and short-term high temperature resistance.Information provided by PBI Performance Products

Order this product through the following link:
http://www.lookpolymers.com/polymer_PBI-Performance-Products-Celazole-PBI-U-60-Unfilled-Polybenzimidazole-Resin.php

Physical Properties	Metric	English	Comments
Specific Gravity	1.30 g/cc	1.30 g/cc	
Water Absorption	0.40 % @Temperature 22.8 °C, Time 86400 sec	0.40 % @Temperature 73.0 °F, Time 24.0 hour	ASTM D570

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell E	104	104	ASTM D785
Hardness, Rockwell M	>= 125	>= 125	ASTM D785
Hardness, Shore D	95	95	ASTM D2240
Tensile Strength	160 MPa	23200 psi	ASTM D638
Elongation at Break	3.0 %	3.0 %	ASTM D638
Tensile Modulus	5.90 GPa	856 ksi	ASTM D638
Flexural Strength	220 MPa	31900 psi	ASTM D790
Flexural Modulus	6.50 GPa	943 ksi	
Compressive Yield Strength	390 MPa	56600 psi	ASTM D695
	340 MPa @Strain 10.0 %	49300 psi @Strain 10.0 %	ASTM D695
Compressive Modulus	5.90 GPa	856 ksi	ASTM D695

Mechanical Properties	Metric	English	Comments
Fatigue Strength	56.0 MPa @Frequency 1.00 Hz, # of Cycles 1.00e+6	8120 psi @Frequency 1.00 Hz, # of Cycles 1.00e+6	ASTM D638
Izod Impact, Notched	0.300 J/cm	0.562 ft-lb/in	ASTM D256
Izod Impact, Unnotched	5.90 J/cm	11.1 ft-lb/in	
Coefficient of Friction, Dynamic	0.16	0.16	Aluminum
	0.16	0.16	Steel
	0.18	0.18	Brass
Coefficient of Friction, Static	0.14	0.14	Aluminum
	0.15	0.15	Steel
	0.16	0.16	Brass

Thermal Properties	Metric	English	Comments
CTE, linear	23.0 µm/m-°C @Temperature 25.0 - 150 °C	12.8 µin/in-°F @Temperature 77.0 - 302 °F	ASTM TMA
	33.0 µm/m-°C @Temperature 200 - 300 °C	18.3 µin/in-°F @Temperature 392 - 572 °F	ASTM TMA
Thermal Conductivity	0.403 W/m-K @Temperature 25.0 °C	2.80 BTU-in/hr-ft²-°F @Temperature 77.0 °F	
Deflection Temperature at 1.8 MPa (264 psi)	435 °C	815 °F	ASTM D648
Glass Transition Temp, Tg	427 °C	801 °F	ASTM DMA
Oxygen Index	58 %	58 %	ASTM D2863

Electrical Properties	Metric	English	Comments
Volume Resistivity	2.00e+15 ohm-cm	2.00e+15 ohm-cm	ASTM D257
Dielectric Constant	3.3 @Frequency 100000 Hz	3.3 @Frequency 100000 Hz	ASTM D150
	3.4 @Frequency 1000 Hz	3.4 @Frequency 1000 Hz	ASTM D150
	3.4	3.4	

Electrical Properties	Metric	English	Comments
	@Frequency 10000 Hz	@Frequency 10000 Hz	ASTM D150
Dielectric Strength	23.0 kV/mm	584 kV/in	ASTM D149
Dissipation Factor	0.0030 @Frequency 10000 Hz	0.0030 @Frequency 10000 Hz	ASTM D150
	0.034 @Frequency 100000 Hz	0.034 @Frequency 100000 Hz	ASTM D150
Arc Resistance	185 sec	185 sec	ASTM D495

Descriptive Properties	Value	Comments
Environmental Resistance Ratings, ASTM D 543	"Mobile Bay" Sourgas	No effect after 7 days at 450°F
	"NACE "A"	No effect after 7 days at 200°F
	5% Sodium Hypochlorite	No effect after 1 day at 200°F
	5% Sodium Hypochlorite	Small effect after 7 days at 200°F
	5% Sodium Hypochlorite	Small effect after 30 days at 200°F
	Acetic Acid (10%)	No effect after 1 day at 200°F
	Acetic Acid (10%)	Small effect after 7 days at 200°F
	Acetic Acid (10%)	Small effect after 30 days at 200°F
	Acetic Acid (Glacial)	No effect after 7 days at 200°F
	Boiling Water, 212°F	No effect after 1 day
	Boiling Water, 212°F	Small effect after 7 days
	Boiling Water, 212°F	Small effect after 30 days
	Brine	No effect after 7 days at 200°F
	Dimethylacetamide	Large effect after 1 day at 200°F
	Dimethylacetamide	Severe effect after 7 days at 200°F
	Gasoline	No effect after 7 days at 200°F
	Hydrochloric Acid (10%)	No effect after 1 day at 200°F
	Hydrochloric Acid (10%)	Large effect after 7 days at 200°F
	Hydrochloric Acid (10%)	Severe effect after 30 days at 200°F
	Hydrochloric Acid (37%)	Small effect after 1 day at 200°F

Descriptive Properties	Value	Comments
	Hydrochloric Acid (37%)	Large effect after 7 days at 200°F
	Hydrochloric Acid (37%)	Severe effect after 30 days at 200°F
	Kerosene	No effect after 7 days at 200°F
	Methanol	No effect after 1 day
	Methanol	No effect after 7 days
	Methanol	Small effect after 30 days
	Methyl Ethyl Ketone	No effect after 7 days
	Methylene Chloride	No effect after 7 days
	Monsanto Therminol-66 Heat Transfer Fluid	No effect after 7 days at 520°F
	NACE "B"	No effect after 7 days at 200°F
	Nitric Acid (10%)	Small effect after 1 day at 200°F
	Nitric Acid (10%)	Severe effect after 7 days at 200°F
	Nitric Acid (10%)	Severe effect after 30 days at 200°F
	Phenol	No effect after 1 day at 200°F
	Phenol	No effect after 7 days at 200°F
	Phenol	No effect after 30 days at 200°F
	Phosphoric Acid (35%)	No effect after 1 day at 200°F
	Phosphoric Acid (35%)	Small effect after 7 days at 200°F
	Phosphoric Acid (35%)	Severe effect after 30 days at 200°F
	Skydrol B Hydraulic	No effect after 7 days at 200°F
	Sodium Carbonate (10%)	No effect after 1 day at 200°F
	Sodium Carbonate (10%)	No effect after 7 days at 200°F
	Sodium Carbonate (10%)	No effect after 30 days at 200°F
	Sodium Hydroxide (Caustic 15%)	No effect after 1 day at 200°F
	Sodium Hydroxide (Caustic 15%)	Small effect after 7 days at 200°F
	Sodium Hydroxide (Caustic 15%)	Large effect after 30 days at 200°F
	Steam, 650°F, 2200 psi	Small effect after 1 day

Descriptive Properties	Value	Comments
	Steam, 650°F, 2200 psi	Small effect after 7 days
	Steam, 650°F, 2200 psi	Small effect after 30 days
	Sulfuric Acid (30%)	No effect after 1 day at 200°F
	Sulfuric Acid (30%)	Large effect after 7 days at 200°F
	Sulfuric Acid (30%)	Severe effect after 30 days at 200°F
	Texaco Havoline Supreme 30W Motor Oil	No effect after 7 days at 200°F
	Toluene	No effect after 7 days
	Triethylene glycol	No effect after 1 day at 200°F
	Triethylene glycol	No effect after 7 days at 200°F
	Triethylene glycol	No effect after 30 days at 200°F
	Triethylene glycol	No effect after 1 day at 450°F
	Triethylene glycol	No effect after 7 days at 450°F
	Triethylene glycol	No effect after 30 days at 450°F
	Xylene	No effect after 7 days

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