

# Celazole<sup>®</sup> PBI U-60 SD

## Typical Properties

PROPERTIES	ASTM METHOD	ENGLISH VALUE	METRIC VALUE
<b>MECHANICAL</b>			
Tensile Strength	D638	23 kpsi	160 MPa
Modulus		850 kpsi	5900 MPa
Elongation		3.0%	3.0%
Tensile Fatigue, % of stress to failure at 1,000,000 cycles, 1 Hz	D638	35% (8.1 kpsi)	35% (56 MPa)
Flexural Strength	D790	32 kpsi	220 MPa
Modulus		950 kpsi	6500 MPa
Compressive Strength (Yield)	D695	57 kpsi	390 MPa
Compressive Strength (10% Strain)	D695	50 kpsi	340 MPa
Compressive Modulus	D695	850 kpsi	5900 MPa
Hardness – Rockwell M	D785	>125	>125
– Rockwell E	D785	104	104
– Shore D	D2240	95	95
Izod Impact Strength (notched)	D256	0.53 ft-lb/in	0.28 J/cm
(unnotched)		11 ft-lb/in	5.9 J/cm
<b>THERMAL</b>			
Heat Deflection Temp. (264 psi; 1.8 MPa)	D648	815°F	435°C
Glass Transition	DMA	800°F	427°C
Coefficient of Linear Thermal Expansion			
75-300°F (25-150°C)	TMA	13 X 10 <sup>-6</sup> in/in°F	23 μm/m°C
390-570°F (200-300°C)	TMA	18 X 10 <sup>-6</sup> in/in°F	33 μm/m°C
Limiting Oxygen Index	D2863	58%	58%
Thermal Conductivity 77°F (25°C)		2.8 Btu-in/hr-ft <sup>2</sup> °F	0.41 W/m°C
<b>ELECTRICAL</b>			
Dielectric Strength	D149	580 V/mil	23 KV/mm
Volume Resistivity	D257	2 X 10 <sup>15</sup> ohm-cm	2 X 10 <sup>15</sup> ohm-cm
Dissipation Factor			
1 kHz	D150	0.000	0.000
10 kHz	D150	0.003	0.003
0.1 MHz	D150	0.034	0.034
Dielectric Constant			
1 kHz	D150	3.4	3.4
10 kHz	D150	3.4	3.4
0.1 MHz	D150	3.3	3.3
Arc Resistance	D495	185 sec.	185 sec.

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PROPERTIES	ASTM METHOD	ENGLISH VALUE	METRIC VALUE
<b>PURITY</b>			
Metals – Typical maximum (ppm)			
Fe	ICP	1	1
Ni	ICP	1	1
Cr	ICP	1	1
Cu	ICP	1	1
<b>OTHER</b>			
Specific Gravity		1.3	1.3
Coef. of Friction, Static			
Aluminum		0.14	0.14
Steel		0.15	0.15
Brass		0.16	0.16
Coef. of Friction, Dynamic			
Aluminum		0.16	0.16
Steel		0.16	0.16
Brass		0.18	0.18
Water Adsorption, 24 hrs at 73F	D570	0.4%	0.4%

U-60SD grade Celazole<sup>®</sup> polybenzimidazole (PBI) is a high purity/ ultra-low metal form of Celazole PBI; recommended for use in semiconductor dry etch, sputter, chemical vapor deposition and physical vapor deposition systems; and other purity sensitive applications.

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