



MANUFACTURING CORPORATION

- Plastics Machining
- Spring Energized Seals
- Rotary Lip Seals

Material Data Sheet

Material: Celazole® PBI | Polybenzimidazole

Celazole® PBI is the highest performance engineering thermoplastic available today. It offers the highest heat resistance and mechanical property retention over 400°F of any unfilled plastic. It has better wear resistance and load carrying capabilities at extreme temperatures than any other reinforced or unreinforced engineering plastic. As an unreinforced material, Celazole® PBI is very "clean" in terms of ionic impurity and it does not outgas (except water). These characteristics make this material very attractive to semiconductor manufacturers for vacuum chamber applications. Celazole® PBI has excellent ultrasonic transparency which makes it an ideal choice for parts such as probe tip lenses in ultrasonic measuring equipment.

Mechanical Properties	Test Method ASTM	Value	Units
Specific Gravity, 73°F	D792	1.3	
Tensile Strength, 73°F	D638	20,000	psi
Tensile Modulus of Elasticity, °F	D638	850,000	psi
Tensile Elongation (at break), 73°F	D638	3	%
Flexural Strength, 73°F	D790	32,000	psi
Flexural Modulus of Elasticity, 73°F	D790	950,000	psi
Shear Strength, 73°F	D732		psi
Compressive Strength, 10% Deformation, 73°F	D695	50,000	psi
Compressive Modulus of Elasticity, 73°F	D695	900,000	psi
Hardness, Rockwell, Scale as noted, 73°F	D785	E105 (M125)	
Hardness, Durometer, Shore "D" Scale, 73°F	D2240	D94	
Izod Impact (notched), 73°F	D256 Type A	0.5	ft-lb/in of notch
Coefficient of Friction (Dry vs. Steel) Dynamic	QTM 55007	0.24	
Limiting PV (with 4:1 safety factor applied)	QTM 55007	37,500	ft.lbs./in. ² min
Wear Factor "k" x 10 ⁻¹⁰	QTM 55010	60	in. ³ -min/ft.lbs.hr
Thermal Properties			
Coefficient of Linear Thermal Expansion (-40°F to 300°F)	E-831 (TMA)	1.3 x 10 ⁻⁵	in/in./°F
Heat Deflection Temperature 264 psi	D648	800 (DMA)	°F
TG-Glass transition (amorphous)	D3418	750 (DMA)	°F
Melting Point (Crystalline) peak	D3418	N/A	°F
Continuous Service Temperature in Air (Max.) (1)		600	°F
Thermal Conductivity	F433	2.8	BTU-in/hr-ft ² -°F
Electrical Properties			
Dielectric Strength, Short Term	D149	550	Volts/mil
Surface Resistivity	EOS/ESD S11.11	>10 ¹³	ohm/square
Dielectric Constant, 106 Hz	D150	3.2	
Dissipation Factor, 106 Hz	D150	0.003	
Flammability @ 3.1 mm (1/8 in.)	UL 94	V-0	
FDA Compliant		No	

237 Glider Circle, Corona, CA 92880 Phone: (951) 272-9395 Fax: (951) 272-9397

*The values shown in these and the following charts are typical, average properties. Actual values may differ due to variations in resin formulations and processing methods. These values are obtained from sources believed to be reliable, including the resin manufactures, converters and other published sources. However, they should not be used for specification or design purposes. Above information is provided by Quadrant EPP.