

Celazole® PBI (Polybenzimidazole)

Celazole® PBI offers excellent mechanical properties above 400° F (205° C). Celazole® is ideal for high heat bushings, connectors and valve seats. Celazole® is extremely hard and can offer a challenge to fabricate. It is an unfilled plastic that offers excellent heat resistance and mechanical property retention over 400°F (205°C). It has better wear resistance and load-carrying capabilities at extreme temperatures than most reinforced or unreinforced advanced 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. Celazole® PBI is also an excellent thermal insulator. Other plastics in melt do not stick to PBI. These characteristics make it ideal for contact seals and insulator bushings in plastic production and molding equipment.

Property	ASTM Test Method	Units	Celazole® PBI
Physical			
Specific Gravity	D792		1.3
Water Absorption Immersion, 24 hr.	D570	%	0.4
Water Absorption Immersion, Sat	D570	%	5
Mechanical			
Tensile Strength	D638	psi	20,000
Tensile Modulus	D638	psi	850,000
Elongation	D638	%	3
Flexural Strength	D790	psi	32,000
Flexural Modulus	D790	psi	950,000
Compressive Strength	D695, 10% Def.	psi	50,000
Compressive Modulus	D695	psi	900,000
Hardness, Rockwell E	D785		105
Hardness, Rockwell M	D785		125
Hardness, Durometer, Shore D Scale	D2240		94
Izod Impact (Notched)	D256 Type A	ft-lb/in	0.5
Coefficient of Friction, Dynamic	Dry vs. Steel, PTM55007		0.24
Limiting PV	PTM55007	psi-fpm	37500
k (wear) factor	PTM55007	10 ⁻¹⁰ in ³ -min/lb-ft-hr	60
Thermal			
Coefficient of Thermal Expansion	E831 (TMA)	in/in/°F	1.3 x 10 ⁻⁵
Deflection Temperature, 264 psi	D648	°F	800
Tg-Glass Transition (Amorphous)	D3418	°F	750
Continuous Service in Air (Max)	Without Load	°F	600
Thermal Conductivity		BTU-in/hr-ft ² -°F	2.8
Flammability	UL94		V-0
Electrical			
Dielectric Strength, Short Term	D149 (2)	Volts/mil	550
Surface Resistance, Ohm/Square	Lower Limit; EOS/ESD S11.11		10 ¹³
Dielectric Constant, 1 MHz	D150 (2)		3.2
Dissipation Factor, 1 MHz	D150 (2)		0.003

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Contact us for manufacturers' complete material property datasheets. All values at 73°F (23°C) unless otherwise noted.