



Celazole[®] PBI Compression Molded Shapes Manufactured by Polymics, Ltd.

Polybenzimidazole (PBI) offers the highest performance of any engineering plastic and is ideally suited for use in the most extreme engineering applications. At temperatures of over 400°F (205C), PBI exhibits the highest strength and stiffness of any unfilled plastic. For short durations, this material can withstand temperatures as high as 800°F (427C) and because it does not melt or burn, brief exposure to 1400°F (760C).



Other Benefits offered by Celazole[®] PBI:

- Highest Compressive Strength of any unfilled thermoplastic
- High Strength with low hysteresis losses and high elastic recovery
- Very Low coefficient of thermal expansion
- Outstanding wear resistance
- Very good resistance to chemicals, plasma, and steam
- Excellent thermal and electrical insulator
- Superior ablative properties
- Very low ionic impurities and does not outgas

Celazole[®] PBI stock shapes manufactured by Polymics, Ltd. provide engineers in technology oriented industries with an incredibly strong, light weight, and wear resistant option to metals.

To meet the wide ranging needs of machinists and fabricators, *Celazole[®] PBI* stock shapes are offered by Polymics in an expansive array of compression molded shapes and sizes. Polymics' offerings include plates in sizes from 5" x 10" to 10.5" x 15" and thicknesses from 1/4" all the way to 2", rods in diameters from 1/4" to 5" in lengths up to 15" long and tubular bars and discs with outer diameters up to 15".

Polymics, Ltd. is the world's premier developer and manufacturer of ultra-high performance engineering plastics for an infinite variety of engineered end uses. We are a technology focused company that offers a truly unique combination of expertise in product development, application engineering, and innovative polymer processing. Polymics' capabilities include the synthesis and polymerization of custom materials, material testing, resin compounding, compression molding, injection molding, and fabrication of finished components. Polymics, Ltd. has the expertise and manufacturing capabilities to provide end users with one stop "problem to finished part" solutions. Polymics, Ltd., offers its products to customers in the western hemisphere through its sales and manufacturing location in State College, PA and to customers in Asia/Pacific through its Applied Polymer Materials, Inc. subsidiary near Taipei, Taiwan.

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Celazole® PBI Compression Molded Shapes

Physical Property Datasheet

Property	ASTM	US Value	SI Unit
Mechanical			
Tensile Strength @ Break	D638	21 Kpsi	145 MPa
Tensile Modulus	D638	0.85 Mpsi	5.9 GPa
Elongation @ Break	D638	3 %	
Flexural Strength	D790	32 Kpsi	220 MPa
Flexural Modulus	D790	0.95 Mpsi	6.5 GPa
Compressive Strength @ Yield	D790	57 Kpsi	390 MPa
Compressive Modulus	D790	0.85 Mpsi	5.9 GPa
Izod, Notched @ 1/8"	D256	0.53 ft-lb/in	30 J/cm
Hardness, Rockwell E/M Scale	D785	104 / >125	
Hardness, Shore D	D2240	95	
Thermal			
Glass Transition Temperature - Tg	DMA	800 °F	427°C
Heat Deflection Temperature @ 264psi/1.8MPa	D648	815 °F	435°C
Coef. of Linear Thermal Expansion			
75°F – 300°F / 25°C – 150°C	TMA	13 µin/in-°F	23 µm/m-°C
390°F – 570°F / 200°C – 200°C	TMA	18 µin/in-°F	33 µm/m-°C
Thermal Conductivity	F433	2.8 BTU-in/hr-ft ² °F	0.41W/m°C
Electrical			
Dielectric Strength – Short Term	D149	580 V/mil	23KV/mm
Dissipation Factor @ 10 ⁶ Hz	D150	0.003	
Volume Resistivity	D257	2 x 10 ¹⁵ Ohm-cm	
Dielectric Constant @ 10 ⁶ Hz	D150	3.2	
General			
Density	D792	1.3 lb/in ³	1.3 g/ml
Color		Dark Brown/Black	
Moisture Absorption @ 24hr.	D570	0.4%	
Limiting Oxygen Index	D2863	58%	
Flammability @ 1/8" (estimated)	UL 94	V-0	

Unless otherwise noted, All values are at 73°F/20°C.

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