

DURATRON® POLYBENZIMIDAZOLE (PBI)

KEY FEATURES

- Highest Mechanical Properties of Any Plastic above 400°F
- Highest Compressive Strength of All Unfilled Plastics
- Excellent Thermal Insulator
- Lowest Coefficient of Thermal Expansion of All Unfilled Plastics
- Excellent Ultrasonic Transparency

DESCRIPTION

Duratron® PBI offers the highest mechanical properties of any thermoplastic above 400°F. Duratron® PBI is ideal for high heat bushings, connectors and valve seats. It is extremely hard and can offer a challenge to fabricate. Duratron® PBI has better wear resistance and load carrying capabilities at extreme temperatures than any other reinforced and unreinforced advanced engineering plastic. As an unreinforced material, Duratron® PBI is very clean in terms of ionic impurity and it does not outgas (except water).

TYPICAL PROPERTY VALUES

	Properties	Condition	Units	Value	ASTM Test
Physical	Chemical Designation			PBI	
	Filler				
	Density		g/cm ³	1.3	D792
Mechanical	Tensile Modulus	@ 73 °F	PSI	850,000	D638
	Tensile Strength	@ 150 °F	PSI	16,000	D638
	Tensile Strength	@ 300 °F	PSI	12,000	D638
	Shear Strength	@ 73 °F	PSI		
	Elongation @ Yld	@ 73 °F	%		
	Elongation @ Brk	@ 73 °F	%	2.0	D638
	Flexural Modulus	@ 73 °F	PSI	950,000	D790
	Flexural Strength	@ 73 °F	PSI	32,000	D790
	Compressive Modulus	@ 73 °F	PSI	900,000	D695
	Compressive Strength	@ 73 °F	PSI	50,000	D695
	Izod (charpy) Impact Strength	@ 73 °F	ft-lbs/in	0.500	D256
	Rockwell Hardness	@ 73 °F	M (R) Scale	125	D785
	Coefficient of Friction	Static			
	Coefficient of Friction	Dynamic		0.24	QTM55007
	Wear (K) Factor		in ³ -min/ft-lbs-hr	60x10 ⁻¹⁰	QTM55010
Limiting PV		psi-ft/min	37,500	QTM55007	

TYPICAL PROPERTY VALUES

	Properties	Condition	Units	Value	ASTM Test
Thermal	Vicat Softening Point		°F		
	Melting Temperature		°F		
	Heat Deflection Temperature	@ 66	°F		
	Heat Deflection Temperature	@ 264	°F	800	D648
	Service Temperature	Intermittent	°F		
	Service Temperature	Long Term	°F	600	
	Coefficient of Thermal Expansion	@-300°F	µin/in-°F	13.0	E831
	Specific Heat		BTU/lb-°F		
	Thermal Conductivity		BTU-in/hr-ft ² -°F	2.8	F433
Electrical	Surface Resistivity		ohm	>=1.00e+13	EOS/ESD S11.11
	Volume Resistivity		ohm-cm		
	Dielectric Strength		V/mil	550	D149
	Dielectric Constant	@Frequency 1e+6 Hz		3.2	D150
	Dissipation Factor	@Frequency 1e+6 Hz		0.003	D150
Other	Moisture Absorption	@ 24 hrs, 73 °F	%	0.4	D570
	Moisture Absorption	@ Saturation, 73 °F	%	5.00	D570
	Flammability	UL 94		V-0	
	Food Grade			N	
	Relative Cost			\$\$\$ \$ \$ \$	

*The data stated above are typical values intended for reference and comparison purposes only.

*The data should not be used as a basis for design specifications or quality control.

*The information is provided as a guide to the best of our knowledge and given without obligation or liability.

*Testing under individual application circumstances is recommended.