

# Duratron<sup>®</sup> Polybenzimidazole (PBI)

## KEY FEATURES

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

## DESCRIPTION

Duratron<sup>®</sup> PBI offers the highest mechanical properties of any thermoplastic above 400°F. Duratron<sup>®</sup> PBI is ideal for high heat bushings, connectors and valve seats. It is extremely hard and can offer a challenge to fabricate. Duratron<sup>®</sup> 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<sup>®</sup> PBI is very clean in terms of ionic impurity and it does not outgas (except water).

## TYPICAL PROPERTY VALUES

Physical	Properties	Condition	Units	Value	ASTM Test
	Density		g/cm <sup>3</sup>	1.3	D792
	Chemical Designation			PBI	
	Filler				

Mechanical	Properties	Condition	Units	Value	ASTM Test
	Tensile Modulus	@ 73 °F	PSI	850,000	D638
	Tensile Strength	@ 73 °F	PSI	16,000	D638
	Shear Strength	@ 73 °F	PSI		
	Elongation @ Yld	@ 73 °F	%		
	Elongation @ Brk	@ 73 °F	%	2.0	D638
	Compressive Strength	@ 73 °F, 10% strain	PSI	50,000	D695
	Flexural Modulus	@ 73 °F	PSI	950,000	D790
	Flexural Strength	@ 73 °F	PSI	32,000	D790
	Compressive Modulus	@ 73 °F	PSI	900,000	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, 40PSI, 50 FPM		0.24	QTM55007
	Wear (K) Factor		in <sup>3</sup> -min/ft-lbs-hr	60*10 <sup>-10</sup>	QTM55010
Limiting PV		psi-fpm	37,500	QTM55007	

Thermal	Properties	Condition	Units	Value	ASTM Test
	Heat Deflection Temperature	@ 66 PSI	°F		
	Service Temperature	Long Term	°F	600	
	Heat Deflection Temperature	@ 264 PSI	°F	800	D648
	Service Temperature	Intermittent	°F		
	Coefficient of Thermal Expansion	@ -300°F	µin/in-°F	13.0	E831
	Specific Heat		BTU/lb-°F		
Thermal Conductivity		BTU-in/hr-ft <sup>2</sup> -°F	2.8	F433	

Electrical	Properties	Condition	Units	Value	ASTM Test
	Surface Resistivity		ohm	>=1.00e+13	EOS/ESD S11.11
	Volume Resistivity		ohm-cm		
	Dielectric Constant	@Frequency 1e+6 Hz		3.2	D150
	Dielectric Strength		V/mil	550	D149
Dissipation Factor	@Frequency 1e+6 Hz		0.003	D150	

Other	Properties	Condition	Units	Value	ASTM Test
	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