



# VTEC™ PI Polyimide Parts & Shapes

*Heat resistance, long life and non-checking for hot glass handling parts*

VTEC PI – ‘The Ceramic Plastic’ – excels in hot glass handling and contact applications because of its exceptional heat resistance, high strength and amazing purity. How do we know this is true? Laboratory samples of VTEC Polyimide subjected to Thermal Gravimetric Analysis (TGA) at 932°F (500°C) showed no recordable weight loss. And VTEC increases yields because it will not check or crack valuable glass products.

A recent hot glass application involves 70kg glass panels contacting VTEC for about 70 seconds at 850°F (454°C). For the initial evaluation, the glass was placed on a VTEC sample for a full 7 minutes—6 times longer than normal production contact time. The VTEC did not check the glass and appeared unaffected except for a slight shine at the contact point. The customer was using Vespel® SP-1, but the service life was poor. VTEC lasts much, much longer and is more resistant to wear and abrasion—this reduces both equipment downtime and overall costs. Because of VTEC’s ceramic-like qualities, the same customer is also replacing highly expensive and fragile silicon nitride (Si<sub>3</sub>N<sub>4</sub>) parts with VTEC for even more cost savings. At another glass manufacturing factory, VTEC withstands intermittent exposure to freshly made glass products at 1350°F (732°C).

Could your glass making process use a material as tough, pure and long-lived as VTEC Polyimide? V is for VTEC, only from RBI.

## VTEC PI PHYSICAL PROPERTIES & COMPARISON TO VESPEL

VTEC PI — THE CERAMIC PLASTIC™	Test Method	Unit	Vespel® SP-1	VTEC™ PI
Specific Gravity	D792	—	1.43	<b>1.41</b>
Hardness	D785	Durometer D	80	<b>86</b>
Tensile Strength	D638	psi	12,500	<b>12,950</b>
Elongation	D638	%	7	<b>6.5</b>
Compressive Stress (10% strain)	D695	psi	19,300	<b>36,400</b>
Compressive Modulus	D695	psi	343,200	<b>369,800</b>
Compressive Creep	D621	%	0.14	<b>0.20</b>
Flexural Strength	D790	psi	16,000	<b>29,675</b>
Flexural Modulus	D790	psi	450,025	<b>442,850</b>
Impact Strength, Izod Notched	D256	ft lb/in	0.8	<b>1.26</b>
Coefficient Of Thermal Expansion	D696	in/in °F 10 <sup>-6</sup>	30	<b>25</b>
Dimensional Stability (% change, 24 hrs@ 500°F)	—	%	—	<b>0.00</b>
Thermal Conductivity	Cence Fitch	btu in/hr ft <sup>2</sup> °F	0.24	<b>0.27</b>
Dielectric Strength (Short Time, 80 mils thick)	D149	volts/mil	560	<b>590</b>
Volume Resistivity	D257	ohms-m	10 <sup>14</sup> -10 <sup>15</sup>	<b>10<sup>14</sup>-10<sup>15</sup></b>
Surface Resistivity	D257	ohms	10 <sup>15</sup> -10 <sup>16</sup>	<b>10<sup>15</sup>-10<sup>16</sup></b>
Water Absorption	D570	%	1.6	<b>&lt;0.1</b>
Abrasion Coefficient	Matsubara Method	$\frac{\text{cm}^3 \text{ sec}}{\text{kg/m/hr}} \times 10^5$	—	<b>2.46</b>
Dynamic Friction Coefficient	—	µm	—	<b>0.35</b>

## VTEC ‘CERAMIC PLASTIC’ AVAILABILITIES & CAPABILITIES

• <b>STOCK SHAPES</b>	Rod, sheet, tube and custom shapes for machined parts
• <b>DIRECT FORMING</b>	Net and near-net blanks (higher volume applications)
• <b>MACHINING</b>	RBI offers complete CNC machining of finished VTEC parts and components
• <b>CUSTOM COMPOUNDS</b>	VTEC grades can be engineered based on individual service and application needs. Fillers include glass, carbon, graphite, Teflon, MoS <sub>2</sub> , minerals, etc.

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**RBI, Inc. • 1517 Hill Road • Suite 5A • Reading • PA • 19602 • USA**  
**610-236-1445 • Fax: 610-236-1446 • www.vtecpi.com • E-mail: mcd@rblaine.com**