Technical Data Sheet

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VERTEC™ 5025

Proprietary Wear Grade PEEK

Product Description:

VERTEC™ 5025 is a proprietary, bearing grade PEEK (polyetheretherketone) material, reinforced with carbon fibers and internally lubricated with different proprietary lubricants to improve dry running capabilities. Tribological evaluations under dry running conditions have shown its friction coefficient and wear rate to be much lower than other bearing grade composite materials available in the market. Its extremely low wear rate along with low coefficient of thermal expansion properties make this material an ideal candidate for replacing metal wear components.

This material is especially suited to centrifugal pump components such as impeller/case wear rings, throat bushings, and line shaft bearings. In addition to improved reliability and increased MTBR (mean time between repair), these features allow for 50% tighter clearance gaps than API recommended values, thereby increasing pump efficiency resulting in substantial savings.

Physical Properties	ASTM Method	Typical Values
Specific Gravity, g/cm^3 (lb/ft^3)	D792	1.42 g/cm^3 (88.6 lb/ft^3)
Water Absorption 24 hrs @73.4° F (23°C)	D570	0.15%
Color	N/A	Black

Mechanical Properties	ASTM Method	Typical Values
Tensile Strength	D1708	18,900 psi (130.3 MPa)
Tensile Elongation	D1708	3.5 %
Flexural Strength	D790	25,000 psi (172.3 MPa)
Flexural Modulus	D790	1,200,000 psi (8,273.7 MPa)
Compressive Strength	D695	25000 psi
Compressive Modulus	D695	540,000 psi (3,723.1 MPa)
Impact Strength (Izod, notched)	D256	1.4 ft-lb/in
Hardness	Shore D	88

Tribological Properties	ASTM Method	Typical Values
Coefficient of Friction - Static	D3702	0.12
Coefficient of Friction - Dynamic	D3702	0.08
Wear Rate PV: 20,000 psi·fpm (137.9 MPa·m/s)	D3702	1.34 µin/min

Characteristics:

- High strength
- High temperature resistance
- Excellent wear resistance
- Excellent chemical resistance
- Low smoke and toxic gas emission
- Superior electrical insulating properties

Typical Applications:

- Centrifugal pump components
  - Impeller and case wear bearings
  - Throat and throttle bearings
  - Inter-stage sleeve bearings
- Jet engine components
- Electrical multi-pin connectors
- Silicon wafer carriers
- Compressor piston and rider rings
- High-temperature valve seats
- Surgical devices
- Down-hole seals and backup rings
- Compressor valve plates
- Food preparation equipment components

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Thermal Properties	ASTM Method	Typical Values
Coefficient of Linear Thermal Expansion (78-400°F / 25.6-204.4°C)	D696	11 x 10 -6/° F
Heat Deflection Temperature (@264 psi / 1.82 MPa)	D648	600°F (315.5°C)
Glass Transition Temperature (Tg)	D3418	289°F (142.7°C)
Continuous Service Temperature (Max @ no load)		500°F (260°C)
Melting Point		644°F (340°C)

Electrical Properties	ASTM Method	Typical Values
Volume Resistivity	D257	10^4 Ω-cm
Dielectric Strength	D149	
Dielectric Constant	D150	

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