Technical Data Sheet

EVANTIC®

Performance Polymers | Engineered Components | Custom Solutions®

VERTEC™ 5020

30% Carbon Fiber PEEK

Product Description:

VERTEC™ 5020 is a bearing grade carbon fiber reinforced PEEK (polyetheretherketone) material. It offers higher modulus, mechanical strength and resistance to deformation under load than VERTEC 5010. Due to the presence of carbon fibers, thermal conductivity of this material is 3.5 times higher than VERTEC 5000 (unreinforced PEEK), thus it dissipates heat at a faster rate. It also gives stable and reliable ESD performance providing maximum protection from static charge build-up.

Physical Properties	ASTM Method	Typical Values
Specific Gravity, g/cm^3 (lb/ft^3)	D792	1.41 g/cm^3 (88 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	19,000 psi (131 MPa)
Tensile Elongation	D1708	4.0 %
Flexural Strength	D790	25,200 psi (173.7 MPa)
Flexural Modulus	D790	1,200,000 psi (8,273.7 MPa)
Compressive Strength	D695	25,000 psi (172.3 MPa)
Compressive Modulus	D695	550,000 psi (3,792.1 MPa)
Impact Strength (Izod, notched)	D256	1.4 ft-lb/in
Hardness	Shore D	90

Tribological Properties	ASTM Method	Typical Values
Coefficient of Friction - Static	D3702	0.58
Coefficient of Friction - Dynamic	D3702	0.52
Wear Rate PV: 20,000 psi·fpm (137.9 MPa·m/s)	D3702	4.08 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 (78-300°F / 25.6-204.4°C)	D696	12 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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EVANTIC®

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Corporate Headquarters
10633 West Little York Road
Building 3, Suite 3
Houston, Texas 77041
Phone: 1-855-686-8600
Sales: sales@evantic.com
www.evantic.com