PEEK HPV Bearing Grade

Carbon Fiber Reinforced Thermoplastic

Description and Overview

PEEK HPV is a specialized bearing grade of PEEK that has been modified and reinforced with carbon fibers, PTFE, and graphite to lower its coefficient of friction and increase its wear characteristics past traditional PEEK's typical values.

PEEK HPV shares standard PEEK's wear and slide characteristics and its resistance to chemicals, but has increased thermal characteristics. PEEK HPV has a maximum continuous use temperature of 500°F, an increase of 20°F over standard PEEK. It can handle extreme temperatures without its mechanical properties degrading, even when exposed to superheated steam or high-pressure water.

Applications and Uses

PEEK HPV is an incredibly versatile material used in the aerospace, automotive, and textile industries for bearing and wear applications. It can run at high loads and speeds and with or without an external lubricant. With the best machinability of all PEEK grades, PEEK HPV machines into a diverse set of parts, including:

- Rollers
- Gears
- Pump components
- Compressor parts
- High-temperature insulators
- Scraper blades in heat exchangers
- Pump wear rings
- Bushings

Properties and Specifications

Thermal Properties	Test Method	English Values	Metric Values
Coefficient of Thermal Expansion, 10E-4/°F	ASTM E831 (TMA)	0.17	0.31 10-4/K
Deflection Temperature 264 psi, ºF	ASTM D648	383	195 °C
Melting Point (Crystalline) Peak, °F	ASTM D3418	644	340 °C
Tg-Glass Transition (Amorphous), ºF	ASTM D3418	289	143 °C
Continuous Service in Air (Max), °F	Without Load	482	250 °C
Thermal Conductivity, BTU-in/hr-ft^2-°F	-	1.7	0.24 W/m-K

Properties are typical.
Chem is an abbreviation for chemically affixed with glues, chemicals, or adhesive.
Mech is an abbreviation for mechanically affixed bonding.
Field testing is recommended for any application.

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Typical Properties

Property	Test Method	English Values	Metric Values
PHYSICAL and MECHANICAL			
Specific Gravity	ASTM D792	1.44	1.44
Tensile Strength, psi	ASTM D638	11,000	76 MPa
Tensile Modulus, psi	ASTM D638	850,000	5,861 MPa
Elongation, %	ASTM D638	2	2 %
Flexural Strength, ps	ASTM D790	27,500	190 MPa
Flexural Modulus, psi	ASTM D790	1,100,000	7,585 MPa
Compressive Strength, psi	ASTM D695, 10% Def.	26,700	184 MPa
Compressive Modulus, psi	ASTM D695	1,000,000	6,895 MPa
Hardness, Rockwell M	ASTM D785	85	85
Izod Impact (Notched), ft-lb/in	ASTM D256 Type A	0.7	37 J/m
Coefficient of Friction, Dynamic	Dry vs Steel, PTM55007	0.21	0.21
Limiting PV, psi-fpm	PTM55007	35,000	1.2 MPa -m/sec
k (wear) factor, 10-10in3-min/lb-ft-hr	PTM55007	100	100 10-10in3- min/lb-ft-hr

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