

PEEK-HPV

Bearing Grade PEEK (Carbon + Graphite + PTFE Reinforced)

Material Overview

PEEK-HPV is a specialized bearing-grade PEEK modified with 10% carbon fiber, 10% graphite, and 10% PTFE lubricants. This unique composition provides the lowest coefficient of friction and the best machinability of all PEEK materials. It offers excellent tribological properties including low friction, long wear life, and high pressure-velocity capabilities.

Material Composition

Component	Percentage	Function
PEEK Base Resin	70%	Matrix material
Carbon Fiber	10%	Strength reinforcement
Graphite	10%	Solid lubricant
PTFE	10%	Friction reduction

Key Properties

Property	Value	Test Method
Density	1.44-1.46 g/cm ³	ISO 1183
Tensile Strength	76 MPa (11,000 psi)	ASTM D638
Tensile Modulus	5,860 MPa (850 ksi)	ISO 527
Elongation at Break	2-3%	ASTM D638
Flexural Strength	190 MPa (27,500 psi)	ASTM D790

Flexural Modulus	7,580 MPa (1,100 ksi)	ASTM D790
Compressive Strength	138 MPa (20,000 psi)	ASTM D695
Impact Strength (Notched)	0.7-0.9 ft-lb/in	ASTM D256
Hardness	M85-R119 Rockwell	ASTM D785
Water Absorption (24h)	0.02-0.05%	ASTM D570
Coefficient of Friction	0.20-0.21 (dry)	-

Thermal Properties

Property	Value	Test Method
Melting Temperature	340°C (644°F)	ISO 11357
Continuous Service Temperature	260°C (500°F)	-
Heat Deflection Temperature	274°C (530°F)	ASTM D648
Flammability Rating	V-0	UL 94
Linear Expansion Coefficient	3.11 x 10 ⁻⁵ in/in/°F	ASTM D696

Key Features & Benefits

- Lowest coefficient of friction of all PEEK grades
- Self-lubricating properties - no external lubricant required
- Excellent wear resistance at high loads and speeds
- High pressure-velocity (PV) capabilities
- Best machinability of all PEEK materials
- Superior chemical and hydrolysis resistance
- Can operate in hot water, steam, or hostile environments
- Low mating part wear
- Maintains properties in extreme temperatures

Typical Applications

- Bearings and bushings
- Thrust washers
- Valve seats and seals
- Pump wear rings
- Rollers and gears
- Electrical insulators
- Aerospace components
- Automotive components
- Textile industry machinery

Technical Data Sheet - PEEK-HPV Bearing Grade