PEEK (Polyetheretherketone)

High performance plastic that is used in bearing and structural applications due to its strength, high temperature resistance, V-0 flammability, and FDA approval.

General Information

Chemical Designation:

PEEK (Polyetheretherketone)

Fillers:

None

Color:

Tan

Specific Gravity:

1.31

PEEK is a high-performance thermoplastic used in many medical and pharmaceutical applications. Unreinforced grades of PEEK (polyetheretherketone) offer high elongation and toughness. All grades of PEEK offer excellent chemical and hydrolysis resistance similar to PPS (polyphenylene Sulfide), but can operate at higher temperatures. With a V-O flammability rating PEEK can be used continuously to 480 degrees F. in hot water and/or steam without permanent loss of physical properties.

PEEK offers steam and wear resistance and is now available black making ideal for instrument components where aesthetics are important. Carbon fiber, Graphite and PTFE reinforced grades provide excellent dimensional stability and increased bearing and wear properties at higher loads. A new bearing grade; PEEK PVX offers superior bearing and wear performance at elevated pressure and velocity (PV) levels. PEEK PVX is an excellent alternative to bearing grade fluoropolymers, it also works well for seal components where ductility and inertness are important.

Technical Information

Specification	Test	Value	Units
Specific Gravity, 73°F	D792	1.31	–
Tensile Strength @ Yield, 73°F	D638	16,000	psi
Tensile Modulus of Elasticity, 73°F	D638	630,000	psi
Tensile Elongation (at break), 73°F	D638	40	%
Flexural Strength, 73°F	D790	25,000	psi
Flexural Modulus of Elasticity	D790	600,000	psi
Shear Strength, 73°F	D732	8,000	psi
Compressive Strength – Ultimate		16,000	psi
Compressive Strength at 2% Deformation	D695		psi
Compressive Strength at 10% Deformation	D695	20,000	psi
Deformation Under Load			%
Compressive Modulus of Elasticity, 73°F	D695	500,000	
Compressive Strength to Laminate (Modulus)			psi
Compressive Strength to Laminate (Yield)			psi
Compressive Strength to Laminate (Ultimate)			psi
Hardness, Durometer (Shore "D" scale)	D2240	D85	
Hardness, Rockwell (Scale as noted)	D785	M100 (R126)	Rockwell M
Izod Impact, Notched @ 73°F	D256 Type A	.6	ft.lbs/in. of notch
Coefficient of Friction (Dry vs Steel) Static	PTM55007		
Coefficient of Friction (Dry vs Steel) Dynamic	PTM55007	0.32	
Maximum Static Bearing Load (P)	PTM55007	1,000	psi
Maximum Unlubricated No Load Bearing Velocity (V)	PTM55007	400	ft/minute
Maximum Limiting PV (Unlubricated)	PTM55007	8,500	psi x ft/min.
Wear Factor "K" x 10-10	PTM55010	375	Cubic in.-min/ft.lbs.hr
Sand Wheel Wear/Abrasion Test			UHMW=100
Minimum Mating Surface Hardness			Rockwell (Brinnell)
Coefficient of Linear Thermal Expansion	E-831(TMA)	2.6	in/in/°F x 10-5
Coefficient of Thermal Expansion // to Laminates	E-831(TMA)	2.6	in/in/°F x 10-5
Coefficient of Thermal Expansion l to Laminates	E-831(TMA)	2.6	in/in/°F x 10-5
Softening Point			°F
Heat Deflection Temperature 264 psi	D648	320	°F
Embrittlement Temperature			°F Min.
Continuous Service Temperature in Air		480	°F Max.
Short Term Service Temperature			°F Max.
Tg-Glass Transition (Amorphous)	D3418	N/A	°F
Melting Point (Crystalline) Peak	D3418	644	°F
Thermal Conductivity	F433	1.75	BTU-in/(hr/ft2°F)
Dielectric Strength Short Term	D149	480	Volts/mil
Surface Resistivity	D257	>1013	ohm/cm
Volume Resistivity	D257		ohm/cm
Dielectric Constant, 106 Hz	D150	3.30	
Dissipation Factor, 106 Hz	D150	0.003	
Flammability @ 3.1mm(1/8 in.) UL94	UL94	V-O	
Arc Resistance			seconds
Water Absorption, Immersion 24 Hours	D570 (2)	0.10	%
Water Absorption, Immersion Saturation	D570 (2)	0.50	%
Machinability Rating		5	1=easy, 10=difficult
Rod Diameter Availability (Off the Shelf)		.250 – 4.0	inches
Sheet Thickness Availability (Off the Shelf)		.250 – 2.5	inches
Characteristics / Attributes	Excellent Chemical Resistance / 480 degrees F. Continuous Service Temp / Fair Bearing and Wear Properties.		