

PEEK (polyetheretherketone)

PEEK is a unique, semi-crystalline, high temperature engineering thermoplastic. It is an excellent material for a wide spectrum of applications where thermal, chemical,

and combustion properties are critical to performance. Especially significant in this regard is PEEK's ability to retain its flexural and tensile properties at very high tempera-

tures—in excess of 250°C (482°F). The addition of glass fiber or carbon fiber reinforcements enhances the mechanical and thermal properties of the basic PEEK material.

- **Excellent flexural, impact, and tensile characteristics**
- **Very high continuous working temperature**
- **Very high heat distortion temperature**
For unreinforced PEEK, the HDT @264 psi is 152°C (306°F). The addition of 30% reinforcement results in a dramatic increase to 315°C (599°F).
- **Exceptional chemical resistance**
PEEK is insoluble in all common solvents.
- **A superior dielectric at high temperatures and frequencies**
- **Good radiation resistance**
PEEK exhibits superior resistance to high doses of gamma radiation.
- **Outstanding wear and abrasion resistance**
- **Low smoke and toxic gas emissions**
- **Excellent hydrolysis resistance**
PEEK has an excellent resistance to hydrolysis in boiling water and superheated steam (sterilization/auto clavability) at temperatures in excess of 250°C (482°F).

PEEKs exceptional property profile enables it to be utilized in many of the most critical areas in general industry, as well as in the automotive, marine, nuclear, oil well, electronics, medical and aerospace fields.

TYPICAL PROPERTY VALUES

PROPERTIES	ASTM Test Method	Units	*PEEK™	*PEEK™ GF30 30% Glass Reinforced	**PEEK™ CF30 30% Carbon Reinforced	**PEEK™ PVX	
PHYSICAL	Density	D792	lbs/in ³	0.0477	0.0538	0.0520	.0536
	Specific Gravity (gm/cm ³)	D792	-	1.30	1.53	1.41	1.48
	Water Absorption, @24 hours, 73°F	D570	%	0.5	0.11	0.06	-
	@Saturation, 73°F	D570	%	0.5	-	-	-
MECHANICAL	Tensile Strength @ Yield, 73°F	D638	psi	14,000	22,800	27,000	17,300
	Tensile Modulus, 1% Sec, 73°F	D638	psi	522,100	1,406,800	1,885,400	-
	Elongation, Yield, 73°F	D638	%	4.9	-	-	-
	Elongation, Break, 73°F	D638	%	50.0	2.2	1.1	2.5
	Flexural Strength, 73°F	D790	psi	27,700	33,800	46,100	30,000
	Flexural Modulus, 73°F	D790	psi	530,000	1,495,200	1,850,000	1,400,000
	Compressive Strength, 73°F	D695	psi	17,100	31,200	34,800	22,000
	Shear Strength, Ultimate, 73°F	D3846	psi	7,600	14,100	14,100	-
	Izod Impact, Notched, 73°F	D256	ft-lbs/in	1.55	1.8	0.9	3.25
	Rockwell Hardness	D785	-	M99	M103	M107	-
	Limiting PV @ 68°F 1200 in/min	-	(psi) (ft/min)	170,000	-	385,000	515,000
	Coefficient of Friction, @ 68°F 1200 in/min, 155 lbs Load	-	-	0.18	0.30	0.22	0.19-0.21
	THERMAL	*Deflection Temperature @ 264 psi, 1/4" Maximum Continuous Use Temperature	D648	°F	320	600	600
Melting Point		-	°F	482	482	482	500
Coefficient of Linear Thermal Expansion		D696	in/in/°F	633	633	633	633
Thermal Conductivity		C177	Btu-in/hr-ft ² -°F	2.6 x 10 ⁻⁵	1.2 x 10 ⁻⁵	0.8 x 10 ⁻⁵	3.1 x 10 ⁻⁶
Flammability		UL94	-	1.7	3.0	6.37	-
ELECTRICAL	Volume Resistivity, 73°F	D149	ohm-cm	V-O	V-O	V-O	-
	Surface Resistivity	D257	ohm/square	4.9 x 10 ¹⁶	1 x 10 ¹⁶	-	-
	Dielectric Strength	D257	V/mil	1 x 10 ¹⁶	1 x 10 ¹⁶	-	10 ⁵ x 10 ⁸

This information is only to assist and advise you on current technical knowledge and is given without obligation or liability. All trade and patent rights should be observed. All rights reserved. *Data obtained from extruded shapes material. **Data based on injection molded samples.

MATERIAL AVAILABILITY

Rods: Diameters: 3/16" to 4-3/4" diameter, 10' Length
5" and greater diameter, 5' Length

Plates: 1/4" to 4" thickness inclusive are 2' x 4'

Primary Specification (Resin) (Typical)

PEEK™: MIL-P-46183, Type I
PEEK™ GF30: MIL-P-46183, Type II Class 3 (Except Elong.)

Shapes Specification (Typical)

ASTM-D-6262 S-PAEK0111
ASTM-D-6262 S-PAEK0122

Profiles, tubes, and special sizes are custom-produced on request.



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