

TECAPEEK® natural polyetheretherketone - Stock Shapes (rods, plates, tubes)

Chemical Designation

PEEK (Polyetheretherketone)

Colour

beige opaque

Density

1.31 g/cm³

Main features

- excellent chemical resistance
- high thermal resistance
- good heat deflection temperature
- good machinability
- very good slide and wear properties
- hydrolysis and superheated steam resistant

Target Industries

- aircraft and aerospace technology
- food technology
- oil and gas industry
- chemical plant engineering
- semiconductor technology
- food engineering
- medical technology
- automotive industry
- process engineering
- mechanical engineering

Mechanical properties	condition	value	unit	test method	comment
Modulus of elasticity (tensile test)	1% Sec, 73 °F	650,000	psi	ASTM D 638	(1) Data obtained from public source
Tensile strength at yield	@ 73 °F	16000	psi	ASTM D 638	(2) Injection molded specimen data obtained from public source
Tensile strength at break	@ 73 °F	9000	psi	ASTM D 638	(3) injection molded specimen, data obtained from public source
Elongation at yield (tensile test)	@ 73 °F	4.9	%	ASTM D 638	
Elongation at break (tensile test)	@ 73 °F	> 30	%	ASTM D 638	
Flexural strength	@ 73 °F	26,000	psi	ASTM D 790	
Modulus of elasticity (flexural test)	@ 73 °F	600,000	psi	ASTM D 790	
Compression strength	@ 73 °F 10% strain	20,000	psi	ASTM D 695	
Compression strength	@ 73 °F 5% strain	16,000	psi	ASTM D 695	
Compression strength	@ 73 °F 1% strain	3,400	psi	ASTM D 695	
Compression modulus	@ 73 °F	493,000	psi	ASTM D 695	1)
Notched impact strength (Izod)	@ 73 °F	0.90	ft-lbs/in	ASTM D 256	
Rockwell hardness	M Scale	100		ASTM D 785	
Rockwell hardness	R scale	125		ASTM D 785	
Shore hardness	D scale	88		ASTM D 2240	
Coefficient of friction	@ 68 °F Static, 40 psi	0.20		ASTM D 3702	2)
Coefficient of friction	@ 68 °F, Dynamic 40 psi 50 fpm	.25		ASTM D 3702	3)
Wear (K) factor	40 psi, 50 fpm	200x 10 ⁻⁷	in ³ -min/ft-lbs-hr	ASTM D 3702	
Thermal properties	condition	value	unit	test method	comment
Melting temperature		633	°F	-	(1) Injection molded specimen
Deflection temperature	@264 psi	320	°F	ASTM D 648	(2) Injection molded specimen
Service temperature	Long Term	480	°F	-	(3) Data obtained from public source
Service temperature	short term	572	°F	-	(4) Injection molded specimen from public source
Thermal expansion (CLTE)	73 F to 140 F	2.7	*10 ⁻⁵ in/in/°F	ASTM E 831	
Thermal expansion (CLTE)	73 F to 212 F	2.82	*10 ⁻⁵ in/in/°F	ASTM E 831	
Thermal expansion (CLTE)	212 F to 302 F	3.35	*10 ⁻⁵ in/in/°F	ASTM E 831	
Thermal conductivity		2.01	BTU-in/hr-ft ² -°F	ISO 22007-4:2008	4)
Electrical properties	condition	value	unit	test method	comment
surface resistivity		1.0*10 ¹⁶	Ω/square	ASTM D 257	1) (1) Injection molded specimen
volume resistance	@ 73 °F	4.9*10 ¹⁶	Ω*cm	ASTM D 149	2) (2) Injection molded specimen
Dielectric strength	0.1" thick IEC 60243-1	630	V/mil	-	3) (3) Injection molded specimen
Dissipation factor	@ 73 °F, 1 MHz	0.003		DIN IEC 60250	4) (4) Injection molded specimen from public source
Dielectric constant	@ 73 °F, 1 kHz	2.8		DIN IEC 60250	5) (5) injection molded data from public source
Other properties	condition	value	unit	test method	comment
Limiting PV		69000	psi-fpm	ASTM D 3702	1) (1) publicly sourced data
Moisture absorption	@ saturation, 73 °F	0.45	%	DIN EN ISO 62	2) (2) injection molded data, publicly sourced data
Moisture absorption	@ 24 hrs, 73 °F	0.03	%	ASTM D 570	3) (3) Injection molded specimen 3.0mm
Flammability (UL94)		V0		-	3) (4) 3 mm test specimen
Flammability	3 mm	pass		FAR 25.853	4)

→ Resin specification:
ASTM D4000-11 PEEK; MIL-P-46183 Ty. I
Shapes specification:
ASTM D6262-12 S-PAEK0111

→ TECAPEEK products may be based on Victrex® PEEK or Solvay KetaSpire® polymer

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