

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	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	8900 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	0.95 ft-lbs/in	ASTM D 256	
Rockwell hardness	M Scale	99	ASTM D 785	
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	test method	comment
Melting temperature		633 °F	-	(1) Injection molded specimen
Deflection temperature	@264 psi	320 °F	ASTM D 648	(2) Data obtained from public source
Service temperature	short term	572 °F	-	(3) Injection molded specimen
Service temperature	Long Term	480 °F	-	(4) Injection molded specimen from public source
Thermal expansion (CLTE)	< Tg, along flow	2.5 *10 ⁻⁵ in/in/°F	DIN EN ISO 11359-1;2	(5) Injection molded specimen from public source
Thermal conductivity		2.01 BTU-in/hr-ft ² -°F	ISO 22007-4:2008	

Electrical properties	condition	value	test method	comment
surface resistivity		1.0*10 ¹⁶ Ω/square	ASTM D 257	1) (1) Injection molded specimen
Volume resistivity	@ 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	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	0.02 %	ASTM D 570	3) 3 mm test specimen
				4) Injection molded

Flammability	3 mm	pass	FAR 25.853	3)	specimen 3.0mm
Flammability (UL94)		V0	-	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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