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

Chemical Designation
PEEK (Polyetheretherketone)

Colour
beige opaque

Density
1.31 g/cm^3

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 (2) Injection molded specimen data obtained from public source (3) injection molded specimen, data obtained from public source
Tensile strength at yield	@ 73 °F	16000	psi	ASTM D 638		
Tensile strength at break	@ 73 °F	9000	psi	ASTM D 638		
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^{-10}	in³-min/ft-lbs-hr	ASTM D 3702		

Thermal properties	condition	value	unit	test method		comment
Melting temperature		633	°F	-		(1) Injection molded specimen (2) Injection molded specimen (3) Data obtained from public source (4) data from injection molded specimen (5) data from injection molded specimen (6) data from injection molded specimen (7) Injection molded specimen from public source
Deflection temperature	@264 psi	320	°F	ASTM D 648	1)	
Service temperature	Long Term	480	°F	-	2)	
Service temperature	short term	572	°F	-	3)	
Thermal expansion (CLTE)	73 F to 140 F	2.1	*10^{-5} in/in/°F	ASTM E 831	4)	
Thermal expansion (CLTE)	140 F to 212 F	2.33	*10^{-5} in/in/°F	ASTM E 831	5)	
Thermal expansion (CLTE)	212 F to 302 F	3.1	*10^{-5} in/in/°F	ASTM E 831	6)	
Thermal conductivity		2.01	BTU-in/hr-ft^2-°F	ISO 22007-4:2008	7)	

Electrical properties	condition	value	unit	test method		comment
surface resistivity		1.0*10^{16}	Ω/square	ASTM D 257	1)	(1) Injection molded specimen (2) Injection molded specimen (3) Injection molded specimen (4) Injection molded specimen from public source (5) injection molded data from public source
volume resistance	@ 73 °F	4.9*10^{16}	Ω*cm	ASTM D 149	2)	
Dielectric strength	0.1" thick IEC 60243-1	630	V/mil	-	3)	
Dissipation factor	@ 73 °F, 1 MHz	0.003		DIN IEC 60250	4)	
Dielectric constant	@ 73 °F, 1 kHz	2.8		DIN IEC 60250	5)	

Other properties	condition	value	unit	test method		comment
Limiting PV		69000	psi-fpm	ASTM D 3702	1)	(1) publicly sourced data (2) injection molded data, publicly sourced data (3) Injection molded specimen 3.0mm (4) 3 mm test specimen
Moisture absorption	@ saturation, 73 °F	0.45	%	DIN EN ISO 62	2)	
Moisture absorption	@ 24 hrs, 73 °F	0.03	%	ASTM D 570		
Flammability (UL94)		V0		-	3)	
Flammability	3 mm	pass		FAR 25.853	4)	

- Resin specification:
  ASTM D8033-22 PEEK0121,ASTM D4000-13 PEEK; MIL-P-46183 Ty. I
  Shapes specification:
  ASTM D6262-23 S-PAEK0111

- TECAPEEK products may be based on Victrex® PEEK or Syensqo KetaSpire® polymer

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