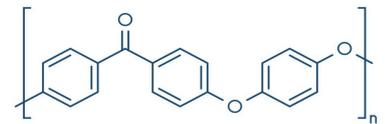


MR TEK Ltd
 Room 06, 13A/F., South Tower, World
 Finance Center, Harbour City, 17
 Canton Road | Tsim Sha Tsui, Kowloon,
 Hong Kong | China
 www.Libertia-performance.com



Polyether-ether-ketone (PEEK)



Description

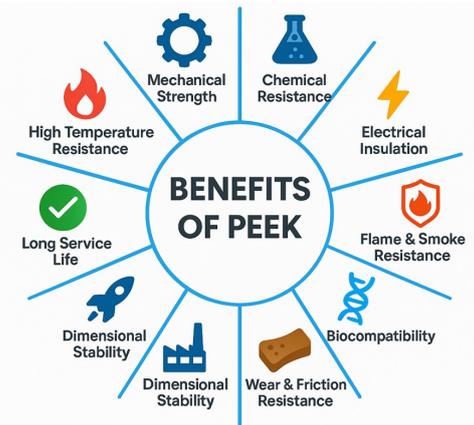
PEEK (polyether-ether-ketone) is a high-performance thermoplastic often used in demanding engineering applications. PEEK has a track record of unmatched performance wherever components must retain excellent mechanical and chemical resistance properties at high temperatures.

This versatile, heat-resistant polymer comes at a higher price point than many other engineering thermoplastics. However, its exceptional thermal stability combined with excellent mechanical performance and chemical compatibility make PEEK a material that delivers tremendous value in the form of lightweight, long-lasting parts that can withstand especially challenging operating conditions.



Benefit	Details
---------	---------

High Temperature Resistance	Continuous use up to 250 °C, short-term up to 300 °C
Mechanical Strength	High tensile, impact, and fatigue resistance
Chemical Resistance	Resistant to acids, bases, solvents, hydrocarbons, and steam
Electrical Insulation	High dielectric strength, stable at high temps
Flame & Smoke Resistance	UL 94 V-0, low smoke/toxic gas emission
Wear & Friction Resistance	Low friction, good for sliding parts like bushings, seals
Biocompatibility	Suitable for medical implants, FDA and ISO 10993 compliant
Dimensional Stability	Low thermal expansion, creep resistance, easily machined
Radiation Resistance	Withstands gamma/X-ray – suitable for aerospace/nuclear/medical
Long Service Life	Durable in harsh environments with minimal maintenance



Application

Medical & bioprocessing
 Suitable for many sterilization methods, medical grade PEEK can be found in healthcare applications ranging from surgical instruments and tool handles to orthopedic implants and dental abutments.



Chemical processing & advanced fluid management

With wide-ranging resistance to chemicals and heat, PEEK is an ideal material for components in chemically corrosive applications such as labyrinth seals, gaskets, o-rings, and pumps.



Food, beverage, pharma, and packaging

With a low wear rate and suitability for clean-in-place, food grade PEEK materials are great candidates for high-wear, high-impact components in food and pharma processing, such as conveyor components, scrapers, wear strips, guide rails, rollers, gears, slide plates, and more.



Aerospace, automotive, and mobility

PEEK exhibits a far superior strength-to-weight ratio vs. metals, making it an excellent material for transportation applications where high performance must also be balanced with lightweighting for fuel efficiency.



The information contained in this document is based on trials carried out by our Research Centers and data selected from the literature, but shall in no event be held to constitute or imply any warranty, undertaking, expressed or implied commitment from our part. Our formal specifications define the limit of our commitment. No liability whatsoever can be accepted by Mr Tek Ltd with regard to the handling, processing, or use of the product or products concerned - which must in all cases be employed in accordance with all relevant laws and/or regulations in force in the country or countries concerned.

PEEK Material Properties

Item	Standard	Condition	Unit	Pure PEEK Resin Test Result			
				VAT001	VAT002	VAT003	VAT004
Mechanical Properties							
Tensile Strength	ISO 527	23°C Break	-	-	-	-	-
		23°C Yield	Mpa	100	100	100	100
Tensile Elongation	ISO 527	23°C Break	%	45	40	40	25
		23°C Break	-	-	-	-	-
Flexural Strength	ISO 178	23°C Yield	MPa	165	170	170	175
Flexural Modulus	ISO 178	23°C	GPa	4.1	4.2	4.2	4.3
Compressive Strength	ISO 604	23°C	Mpa	125	125	125	130
Charpy Impact Strength	ISO 179/1eA	Notched	kJ m-2	7	6	6	4
	ISO 179/1U	Unnotched	kJ m-2	-	-	-	-
Izod Impact Strength	ISO 180/A	Notched	kJ m-2	7.5	6	6	5
	ISO 180/U	Unnotched	kJ m-2	-	-	-	-
Mould Shrinkage	ISO 294-4	Along Flow	%	1	1	1	1
		Across Flow	%	1.3	1.3	1.3	1.3
Thermal properties							
Melting Point	ISO 11357	-	°C	343	343	343	343
Glass Transition (Tg)	ISO 11357	onset	°C	143	143	143	143
Special Heat Capacity	DSC	23°C	kJ kg-1 °C-1	2.2	2.2	2.2	2.2
Coefficient of thermal expansion	ISO11359	Below Tg	ppm K-1	45	45	45	50
		above Tg	ppm K-1	120	120	120	120
Heat Deflection Temperature	ISO 75A-f	1.8 Mpa	°C	152	152	152	156
Thermal Conductivity	ISO22007-4	23°C	W m-1 K-1	0.29	0.29	0.29	0.29
Flow							
Melting Index	ISO 1133	380°C,5kg	g 10min-1	11	15	20	80
Miscellaneous							
Density	ISO 1183	Crystalline	g cm-3	1.3	1.3	1.3	1.3
		Amorphous	g cm-3	1.26	1.26	1.26	1.26
Shore D Hardness	ISO 868	23°C	-	85	85	85	85
Water Absorption (3.2mm Thick Tensile Bar)	ISO 62-1	24h, 23°C	%	0.07	0.07	0.07	0.07
		23°C Equilibrium	%	0.4	0.4	0.4	0.4
Electrical Data							
Dielectric Strength	IEC 60243-1	2mm	kV mm-1	23	23	23	23
Comparative Tracking Index	IEC 60112	-	V	150	150	150	150
Dielectric Constant	IEC 60250	23°C, 1kHz	-	3	3.2	3.2	3.2
		23°C, 50Hz	-	3	4.5	4.5	-
Loss Tangent	IEC 60250	23°C, 1MHz	-	0.004	0.003	0.003	0.004
Volume Resistivity	IEC 60093	23°C, 1V	Ω cm	10 ^{16*}	10 ^{16*}	10 ^{16*}	10 ^{16*}
		275°C	Ω cm	10 ^{9*}	10 ^{9*}	10 ^{9*}	10 ^{9*}

Anti-Faction And anti-Wear	
VAT001FC30	VAT004FC30
150	140
-	-
2	2.2
220	230
-	-
11.5	11.5
170	170
4	5
30	35
5	6
30	35
0.3	0.3
0.7	0.7
343	343
143	143
1.8	1.8
12	15
15	20
315	315
0.87	0.87
1.4	2.5
1.45	1.45
-	-
83	83
0.04	0.04
0.3	0.3
-	-
-	-
-	-
-	-
10 ^{8*}	10 ^{10*}
-	-

Carbon Fiber Reinforced Grades				
004CA30	003CA30	001CA30	004CA20	003CA20
260	250	250	210	205
-	-	-	-	-
1.7	1.6	1.5	2.1	2
380	370	360	310	310
-	-	-	-	-
23	22	21	16	16
300	300	300	-	-
7	7	6	7	7
45	45	40	45	45
9	9	8	8	8
45	45	40	40	40
0.1	0.1	0.1	0.2	0.2
0.5	0.5	0.5	0.7	0.7
343	343	343	343	343
143	143	143	143	143
1.8	1.8	1.8	1.8	1.8
5	5	5	8	8
6	6	6	8	8
336	336	339	325	325
0.95	0.95	0.95	0.95	0.95
2.3	5	27	4	7
1.4	1.4	1.4	1.37	1.37
-	-	-	-	-
88	88	88	86	86
0.04	0.04	0.04	0.05	0.05
0.3	0.3	0.3	0.4	0.4
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
10 ^{5*}	10 ^{5*}	10 ^{5*}	10 ^{7*}	10 ^{7*}
-	-	-	-	-

Glass Fiber Reinforced Grades						
004GL30	003GL30	001GL30	001GL30H	004GL20	003GL20	001GL20
175	175	185	185	155	155	145
-	-	-	-	-	-	-
2.7	2.7	2.5	2.4	3.3	3.3	2.4
265	265	275	265	245	245	235
-	-	-	-	-	-	-
11.3	11.3	11.5	11.5	8.8	8.8	8.5
250	250	250	250	-	-	-
8	8	7.5	7.5	7	7	6
55	55	50	50	45	45	35
10	10	9	9	7.5	7	6
60	60	50	50	60	60	35
0.3	0.3	0.3	0.3	0.3	0.3	0.3
0.8	0.8	0.8	0.8	0.8	0.8	0.8
343	343	343	343	343	343	343
143	143	143	143	143	143	143
1.7	1.7	1.7	1.7	1.7	1.7	1.7
18	18	20	20	20	20	25
18	18	20	20	22	22	25
328	328	335	335	315	315	323
0.3	0.3	0.3	0.3	0.3	0.3	0.3
4.5	6	28	40	6.5	11	40
1.51	1.51	1.52	1.52	1.43	1.43	1.43
-	-	-	-	-	-	-
88	88	87	87	86	86	86
0.04	0.04	0.04	0.04	0.05	0.05	0.05
0.3	0.3	0.3	0.3	0.4	0.4	0.4
-	-	-	-	-	-	-
25	25	23	21.5	24	24	23
150	150	150	150	150	150	150
3.2	3.2	3.3	3.4	3.1	3.1	3.2
-	-	-	-	-	-	-
0.005	0.005	0.004	0.004	0.05	0.05	0.04
10 ^{16*}	10 ^{16*}	10 ^{16*}	10 ^{15*}	10 ^{16*}	10 ^{16*}	10 ^{16*}
-	-	-	-	-	-	-