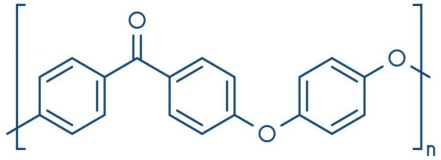
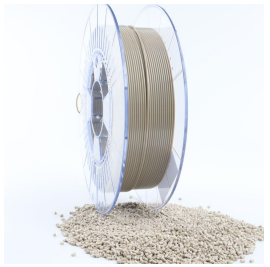
Polyether-ether-ketone (PEEK)



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.



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.

Physical properties	unit	Test standard	VAT10G	VAT20G	VAT80G	VAT130G	VAT170G
Density	g/cm^3	ISO 1183	1.3	1.3	1.3	1.3	1.3
Hardness(Shore D)	-	ISO 868	84.5	85	85	85	85
Mould Shrinkage(MD/TD)	%	ISO 2577,294-4	0.9/1.3	1.0/1.3	1.0/1.3	1.0/1.3	1.0/1.3
Water Absorption(Saturation, 23 ℃)	%	ISO 62	0.45	0.4	0.4	0.4	0.4
Melt Flow Rate (337℃, 6.7Kg)		ISO 1133	10	20	80	130	170
Flammability (1.6 mm)		IEC 60695					
Mechanical Properties							
Tensile Strength	MPa	ISO 527	100	100	100	105	110
Tensile Modulus	MPa	ISO 527	4000	4000	4000	4000	4100
Elongation at Break	%	ISO 527	45	45	25	20	10
Flexural Strength	MPa	ISO 178	165	170	175	175	180
Flexural Modulus	MPa	ISO 178	4000	4200	4300	4300	4400
Compressive Stress	MPa	ISO 604	125	125	130	130	130
Izod Notched Impact Strength	kJ/m^2	ISO 180	7.5	6.5	5	4.5	3.5
Thermal Properties							
Melting Temp.	℃	ISO 11357	343	343	343	343	343
Glass Transition Temp.	℃	ISO 11357	143	143	143	143	143
CLTE-Flow<Tg	ppm/℃	ISO 11359	45	45	50	50	50
CLTE-Flow>Tg	ppm/℃	ISO 11359	120	120	120	120	120
CLTE-Average<Tg	ppm/℃	ISO 11359	55	55	55	55	55
CLTE-Average>Tg	ppm/℃	ISO 11359	140	140	140	140	140
Thermal Conductivity	W/mK	ISO 22007	0.29	0.29	0.29	0.29	0.29
HDT (1.8 MPa)	℃	ISO 75	156	156	156	156	156
Electrical properties							
Dielectric Strength(Air, 2 mm)	KV/mm	IEC 60243-1	23	23	23	23	23
Comparative Tracking Index	V	IEC 60112	150	150	150	150	150
Dielectric Constant(1 kHZ)	-	IEC 60250	3.1	3.1	3.1	3.1	3.1
Dissipation Factor(1 MHZ)	-	IEC 60250	0.004	0.004	0.004	0.004	0.004
Volume resistivity(100V)	Ω·cm	IEC 60093	10^{16}	10^{16}	10^{16}	10^{16}	10^{16}
Surface Resistivity	Ω	IEC 60093					
Injection Molding							
Drying Temp. /Time	℃/h		150/>3	150/>3	150/>3	150/>3	150/>3
Hopper Temp.	℃		≤100	≤100	≤100	≤100	≤100
Rear Temp.	℃		340~350	180 ~ 210	340 ~ 350	340 ~ 350	340 ~ 350
Middle Temp.	℃		345 ~ 355		345 ~ 355	345 ~ 355	345 ~ 355
Front Temp.	℃		355 ~ 365		355 ~ 365	350 ~ 360	350 ~ 360
Nozzle Temp.	℃		365 ~ 375		365 ~ 375	360 ~ 370	360 ~ 370
Mould Temp.	℃		180 ~ 210		180 ~ 210	180 ~ 210	180 ~ 210
Gate	-		>2 mm/0.5*part thickness				