PEEK-1000 Properties

Parameter table

Test Items	Test Criteria	IIW Test Conditions	Units	PEEK-1000	PEEK-FC1030	PEEK-G1030	PEEK-C1030
				Pure Resin	Graphite-ptfe (10%each)	30% Glass Fiber	30% Carbon Fiber
Density	ISO1183	Crystal	g/cm³	1.3	1.44	1.51	1.4
Water Absorption Rate(3.2mm Thick Tensile Bar , Soaking Test)	ISO62-1	24h,23℃	%	0.07	0.06	0.04	0.04
		Balance,23℃	%	0.4	0.3	0.4	0.3
Tensile Strength	ISO527	Yield,23℃	MPa	100	140	175	260
Elongation At Break	ISO527	Fracture,23℃	%	20	2.2	2.7	1.7
Bending Strength	ISO178	Yield,23℃	MPa	165	190	265	380
Bending Modulus	ISO178	23℃	GPa	4.1	7.8	11.3	23
Compressive Strength	ISO604	23℃	MPa	125	155	250	300
Impact Strength Of Simply Supported Beam	ISO179/1eA	There is a gap	KJ/㎡	7	5	8	7
	ISO179/1U	No gap	KJ/㎡			55	45
Impact Strength Of Cantilever Beam	ISO180/A	There is a gap	KJ/㎡	7.5	5	10	9
	ISO180/U	No gap	KJ/㎡	-		60	45
Shore D Hardness	ISO868	23℃		85	80	88	88
Nelting Point	ISO11357	-	℃	343	343	343	343
Glass Transition Temperature	ISO11357	Start	℃	143	143	143	143
Specific Heat Capacity	DSC	23℃	KJ/kg℃	2.2	1.7	1.7	1.8
Coefficient Of Thermal Expansion	ISO11359	Below Tg along the flow direction	Ppm/K	45		18	6
		Below Tg along the flow direction	Ppm/K	120		18	6
Heat Distortion Temperature	ISO75-f	1.8Mpa	℃	152	300	315	315
Thermal Conductivity	ISO2207-4	23℃	W/mK	0.29	0.3	0.3	0.95
Dielectric Strength	IEC60243-1	2mm	kV/mm	23		25	-
Dielectric Resistivity	IEC60093	23℃, 1V	Ω-cm	10^{16}		10^{16}	10^{5}
		275℃	Ω-cm	10^{9}		-	-

Note : This date is not a guaranteed value, but a typical value.

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PEEK-1000 Properties



PEEK is a special engineering plastic with excellent performance, which has more obvious advantages compared with other special engineering plastics, such as high temperature resistance of 260°C, excellent mechanical properties, good self-lubricating, chemical corrosion resistance, flame retardancy, Stripping resistance, wear resistance, strong nitric acid and concentrated sulfuric acid resistance, radiation resistance, super mechanical properties, etc., can be used in high-end machinery, nuclear engineering, petroleum and aviation and other high-tech fields.

Key features

◆ High temperature resistance

PEEK resin has high melting point(343℃) and glass transition temperature (143℃). Its continuous service temperature is 260℃,and the load heat distortion temperature of 30% glass fiber/carbon fiber reinforced grades is as high as 315℃.

◆ Mechanical properties

PEEK resin provides good toughness and rigidity, with excellent fatigue resistance to alternating stress, comparable to alloy materials.

◆ Self-lubricity (corrosion resistance)

PEEK resin offers excellent sliding characteristics, ideal for applications with requirements on low friction coefficient and high wear resistance.

◆ Chemical resistance

Its corrosion resistance is similar to nickel steel. PEEK is only dissolved by concentrated sulfuric acid and has excellent chemical resistance, being more acid and alkali resistant than polyimide, especially at high temperature.

◆ Flame retardancy

PEEK is a very stable polymer. A 1.45 mm thick sample reaches the high est flame retardant standard without any flame retardant additives.

◆ Radiation and peeling resistance

PEEK has good radiation and peeling resistance, and can be used to produce electromagnetic wires for special purposes.

◆ Fatigue resistance

PEEK resin shows excellent fatigue resistance among all resins.

◆ Hydrolysis resistance

Products made of PEEK resin and its composites maintain good performance during continuous use in high-temperature, high-pressure water.

◆ Workability

PEEK has good flowability and a high thermal decomposition temperature. It can be processed by injection molding, compression molding, extrusion molding, blow molding and melt spinning.

◆ Insulation stability

PEEK has good electrical insulation performance maintained over a very wide temperature range, and its dielectric loss is very small even at high frequency.

◆ Wear resistance

The good wear resistance of PEEK is equivalent to that of polyimide.

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