

PEEK TECHNICAL DATA SHEET



INNOVATEFIL®
by smart materials 3D

Innovatefil PEEK is thermoplastic that offers a unique combination of high mechanical properties, temperature resistance and excellent chemical resistance. It is indicated for applications that need resistance and rigidity, as well as ductility. It is chemically resistant to aggressive environments and suitable for sterilization for medical and food contact applications. It has very good resistance to UV rays and external conditions, which is why it is recommended for outdoor use.

	CONDITIONS	TEST METHOD	UNITS	TYPICAL VALUE
MECHANICAL DATA				
Tensile Strength	Yield, 23°C	ISO 527	MPa	98
Tensile Elongation	Break, 23°C	ISO 527	%	45
Tensile Modulus	23°C	ISO 527	GPa	4.0
Flexural Strength	At 3.5% strain, 23°C	ISO 178	MPa	125
	At yield, 23°C			165
	125°C			85
	175°C			19
	275°C			12.5
Flexural Modulus	23°C	ISO 178	GPa	3.8
Compressive Strength	23°C	ISO 604	MPa	125
	120°C			70
Charpy Impact Strength	Notched, 23°C	ISO 179/1eA	kJ m-2	7.0
Izod Impact Strength	Notched, 23°C	ISO 180/A	kJ m-2	8.0
THERMAL DATA				
Melting Point	Yield, 23°C	ISO 11357	°C	343
Glass Transition (Tg)	Onset	ISO 11357	°C	143
Heat Deflection Temperature	As moulded, 1.8 MPa	ISO 75-f	°C	152
Thermal Conductivity	Average, 23°C	ISO 22007-4	W m-1 K-1	0.29
MISCELLANEOUS				
Density	Crystalline	ISO 1183	g cm-3	1.30
Shore D hardness	23°C	ISO 868		84.5
Water Absorption by immersion	Saturation, 23°C	ISO 62-1	%	0.45
ELECTRICAL PROPERTIES				
Dielectric Strength	2mm thickness	IEC 60243-1	kV mm-1	23
	50µm thickness			200
Comparative Tracking Index		IEC 60112	V	150
Loss Tangent	23°C, 1MHz	IEC 60250	n/a	0.004
Dielectric Constant	23°C, 1kHz	IEC 60250	n/a	165
	23°C, 50Hz			3.0
	200°C, 50Hz			4.5
Volume Resistivity	23°C	IEC 60093	Ω cm	10 ¹⁶
	125°C			10 ¹⁵
	275°C			10 ⁹
PRINTING PROPERTIES				
Print Temperature			°C	360-400
Close Chamber Temperature			°C	> 120

USE RECOMENDATIONS

PROTECT FROM MOISTURE

Innovatefil PEEK is delivered in a vacuum bag with a great barrier against moisture so that the filament cannot absorb humidity. Before bagging, the filament follows the strictest quality controls by dehumidifying the raw material until the moisture content is lower than 0.02%. During the process the filament is cooled down by dry air and next it is bagged to make sure the product is the highest quality.

Once the product is unpacked we recommend to keep it in a dry and dark environment. For an optimal use it is advisable to use a preheating and dehumidification system on the machine.

If not maintained in a suitable environment the material can absorb up to 0.5% of atmospheric humidity, this could create water vapour in the extrusion that will bring a poor surface finish, to eliminate this moisture it is recommended to dry the material in an oven at 120°C for 12 hours, although it is preferable to use dehumidifiers with a dew point of -40°C.

USE A SUITABLE DEVICE FOR PRINTING

PEEK is a material with a very high temperature resistance, requiring very demanding printing conditions, an extruder with a capacity of 400°C and a chamber environment higher than 120°C, make sure that your printer is suitable to print PEEK.

CONTROL THE TEMPERATURE

During printing it is very important to maintain a homogeneous and stable chamber temperature so that there are no temperature gradients that cause contractions in the printed part.

KEEP THE EXTRUDER IN GOOD CONDITION

Once printing is finished it is necessary to clean the nozzle eliminating the excess of material to avoid seals and defects unwanted, if several materials are used it is advisable to have a nozzle for each material to avoid being mixed.

