PEI
TECHNICAL DATA SHEET

Innovatefil® PEI is a filament made of ULTEM™ 9085 resin. Due to its high glass transition temperature, it offers excellent properties at very high temperatures. This high-performance polymer offers great thermal and mechanical resistance. An excellent dimensional stability and a very good resistance to a wide range of chemical products.

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	CONDITIONS	TEST METHOD	UNITS	TIPICAL VALUE
PHYSICAL PROPERTIES				
Chemical name				Polyetherimide
Water Absorpcion	23 ˚C / sat	ISO 62	%	0.39
Density		ISO 1183	g/cm³	1.34
Melt Volume Rate	MVR at 360˚C/5.0 kg	ISO 1133	cm³ / 10 min	65
MECHANICAL PROPERTIES				
Tensile Modulus	1 mm/min	ISO 527	MPa	3050
Tensile Stress, yield	5 mm/min	ISO 527	MPa	88
Tensile Stress, break	5 mm/min	ISO 527	MPa	71
Tensile Strain, yield	5 mm/min	ISO 527	%	6.7
Tensile Strain, break	5 mm/min	ISO 527	%	50
Flexural Stress, yield	2 mm/min	ISO 178	MPa	90
Flexural Modulus	2 mm/min	ISO 178	MPa	2750
Izod Impact, notched	23˚C	ISO 180 / 1A	kJ/m²	13
Charpy Impact, notched	23˚C	ISO 179 / 2C	kJ/m²	11
THERMAL PROPERTIES				
HDT/ Af	1.8 MPa	ISO 75/Af	˚C	152
Vicat Softening Temp	Rate B/120	ISO 306	˚C	173
FAA Flammability	FAR 25.853 A/B	FAR 25.853	-	<5
PRINTING PROPERTIES				
Print Temparature			˚C	350-380
Close Chamber Temperature			˚C	> 120
Bed Temparature			˚C	140-160
Fan Layer			%	0
Print Speed			mm/s	20
Adhesion to bed		PEI surface, polyamide surface, FR4 slightly sanded or perforated board		

USE RECOMENDATIONS

PROTECT FROM MOISTURE

Innovatefil® PEI This product is delivered in a vacuum bag with a great barrier protection against moisture so that the filament cannot absorb ambient humidity. Prior to bagging, the filament follows the strictest quality controls by dehumidifying the raw material until a moisture content of less than 0.1% is achieved.

Once the product is unpacked, it is recommended to keep it in a dry and dark environment. If it is not maintained in an ideal environment the material can absorb up to 0.4% of atmospheric humidity, this can create water vapor in the extrusion that will result in a poor surface finish.

To maintain optimum printing conditions it is recommended to dry the material before using it in a 3D printer. Many printing equipments already have built-in drying systems, to remove moisture. It is recommended to dry the material in an oven at 120 ° C for four to six hours, although it is preferable to use dehumidifiers with a dew point of -40 °C .

USE A SUITABLE DEVICE FOR PRINTING

Innovatefil® PEI is a material with a very high temperature resistance, which requires very demanding printing conditions, an extruder with a capacity of 400 °C with a close chamber that reaches up to 120 °C, make sure your printer is suitable for printing Innovatefil® PEI

ANNEALING PROCESS

Annealing of printed parts: if necessary, parts printed with Innovatefil® PEI can be annealed in a hot air oven to reduce the printed stresses that might be present in the working piece. Printed stresses can occur in all plastics and can result in mechanical properties lower than expected. If this is a problem with your working part, you can follow the simple 5-step gradual up / down process to anneal the Innovatefil® PEI working parts.

Step 1: Place the printed parts in a cold oven at room temperature.
Step 2. Set the temperature to 120 °C and allow it to stabilize for one hour.
Step 3: After one hour at 120 °C, increase the oven temperature to 150 °C and allow an additional one hour to stabilize.
Step 4: After one hour at 150 °C, reduce heat to 95 °C and allow it to stabilize for thirty minutes.
Step 5: After thirty minutes, turn off the oven and allow the printed parts to return to room temperature inside the oven while it cools down.

KEEP THE EXTRUDER IN GOOD CONDITION

Once printing is finished it is necessary to clean the nozzle by eliminating the excess material to avoid clogging and defects in unwanted printing, if several materials are used it is advisable to have a nozzle for each material so that they are not mixed.

MOISTURE PROTECT   SUITABLE DEVICE   ANNEALING PROCESS   EXTRUDER MAINTENANCE