

# POLIAMIDE CARBON FIBER

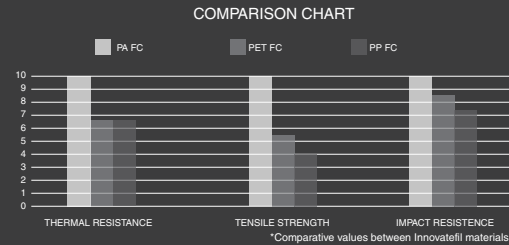


INNOVATEFIL®  
by smart materials 3D

## TECHNICAL DATA SHEET VERSION 1.0

Innovatefil® PA CF is a filament with a high mechanical strength and excellent performance at high temperatures, the combination of polyamide and carbon fiber allows large objects to be printed without deformation. This filament is especially indicated for a professional user who require a plus of quality in the printing pieces and they are required to be fit for end use.

- Ability to work at temperatures of 150 °C
- Great adhesion between layers (high resistance regardless of the printing position)



	TYPICAL VALUE	UNITS	TEST METHOD
<b>PHYSICAL PROPERTIES</b>			
Chemical name	Polyamide with Carbon Fiber		
Material density	1.25	g/cm³	ISO 1183
<b>MECHANICAL PROPERTIES</b>			
Tensile strength	170	MPa	ISO 527
Modulus of elasticity	15	GPa	ISO 527
Elongation	2	%	ISO 527
Charpy impact (notched at 23 °C)	47	KJ/m²	ISO 179 1eU
<b>THERMAL PROPERTIES</b>			
Continuous Service Temp	150	°C	UL 746B
Heat distortion temp. (HDT A)	240	°C	ISO 75
Maximum (short term) Use Temp	180	°C	
<b>ELECTRICAL PROPERTIES</b>			
Insulation Resistance	<=10²	Ω	DIN/IEC 60167
Surface Resistance	<10²	Ω	IEC 60093
<b>PRINTING PROPERTIES</b>			
Print temperature	240-260	°C	
Bed temperature	>60	°C	
Fan layer	0-50	%	
Print speed	30-50	mm/s	

# POLIAMIDE CARBON FIBER



INNOVATEFIL®  
by smart materials 3D

TECHNICAL DATA SHEET VERSION 1.0

## USE RECOMENDATIONS

### PROTECT FROM HUMIDITY

Innovatefil® PA CF is delivered in a vacuum bag, with a great barrier against moisture so that the filament can not absorb humidity. Prior to bagging, the filament follows the strictest quality controls by dehumidifying the raw material until the moisture content of less than 0.02%. During the process, the filament is cooled with dry air and then pocketed to ensure that the product is of the best quality.

Once unpacked, we recommend to keep it in a dry and dark environment. If it is not maintained in a suitable environment the material can absorb up to 0.5% of the atmospheric moisture, this can create water vapor in the extrusion that confers a poor surface finish.

To maintain optimal printing conditions, it is recommended to dry the material before using it in a 3D printer filament. Many printing equipments already have these drying systems incorporated.

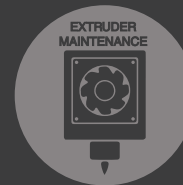
### KEEP THE EXTRUDER IN GOOD CONDITION

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

### RECOMMENDATIONS FOR THE USE OF CARBON FIBER

The carbon fiber makes the filament very abrasive so it is necessary to use hardened steel nozzles or similar to print, and thus avoid premature wear of the components.

To achieve a better finish and avoid printing problems, we recommend to use nozzles of 0.6 mm diameter, print layer height of 0.2 mm or greater, not following these recommendations could cause problems of nozzle clogging.



DISCLAIMER: The information provided in the data sheets is intended to be just a reference. It should not be used as design or quality control values. Actual values may differ significantly depending on the printing conditions. The final performance of the printed components does not only depend on the materials, also the design and printing conditions are important.

Smart Materials assumes no responsibility for any damage, injury or loss produced by the use of its filaments in any particular application.