

TECHNICAL DATA SHEET

PET-CF

15% chopped carbon fiber reinforced Polyethylene Terephthalate FDM material

BRIEF INTRODUCTION

PET-CF is specially developed for FDM 3D printing process, and its substrate material is PET engineering plastic with low moisture absorption, high strength, creep resistance, excellent chemical resistance and high heat resistance. With good dimensional stability, no warpage and no shrinkage and no smell, no heating chamber are required during the printing process. It can be used with S-PET Quick-Remove Support Material to solve the problem of poor molding effect of supporting surface of complex model.

CHARACTERISTIC

Intelligent fiber reinforcement technology

controlling the dispersion and distribution of chopped carbon fibers within the material matrix during the extrusion process, the fibers form a mesh skeleton structure within the material and bear most of the load transferred by the material matrix. Smart Fiber Reinforced Technology greatly improves the mechanical properties and heat resistance of the material, and releases the internal stress during the printing process through the fiber mesh structure, resulting in good dimensional stability of the printed part and no warpage.

Low creep

The molecular chain structure of PET is highly regular and has a rigid benzene ring structure, so that PET has better mechanical properties and less deformation under long-term load. Compared with PA and PC materials, PET has better creep-resistance.

IDENTIFICATION OF THE MATERIAL

Trade name	PET-CF
Application	3D PRINTING

GUIDELINE FOR PRINT SETTINGS

Nozzle temperature	280-320°C
Bed temperature	60~80°C
Bed material	PEI or PVP solid glue
Active cooling fan	OFF
Recommend nozzle size	0.4mm-1.0mm
Raft distance	0.08-0.12mm
Print speed	30-90mm/s
Retraction Distance	1-3mm
Retraction Speed	1800-3600mm/min
Recommended support material	S-PET

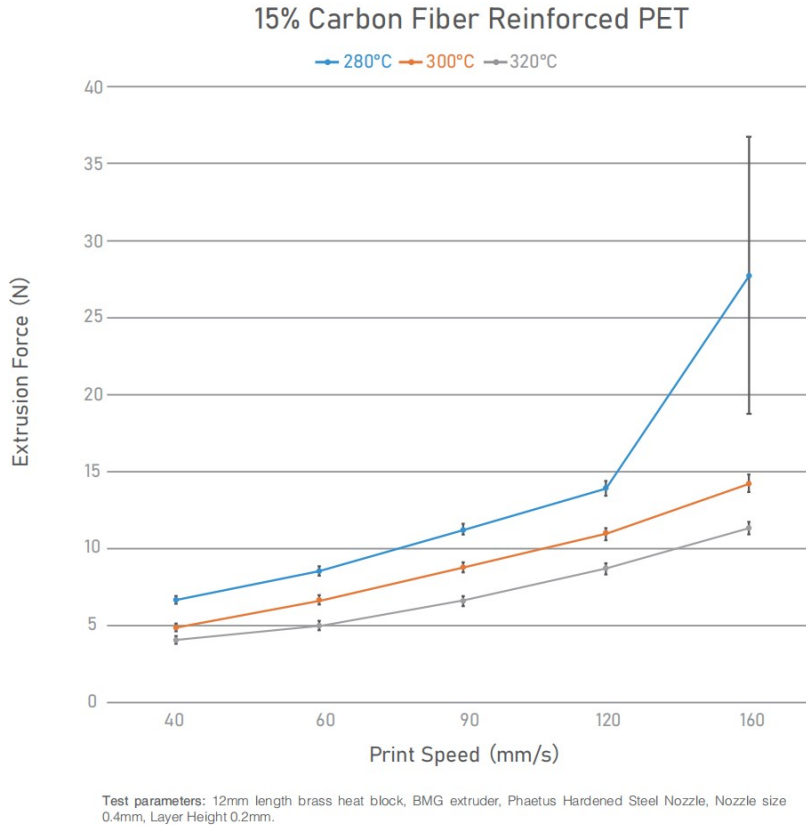
Settings are based on Nozzle temp.:320°C, Bed temp.:80°C, Printing speed:45mm/s, filling rate:100%, filling angle: +/-45°
 Annealing conditions:100°C 8hrs.

MATERIAL PROPERTIES	Typical value	Test Method
Melt index	4.7	270°C 2.16kg
Density	1.3g/cm ³	ISO 1183
Thermal deformation temperature	112.1°C (1.80MPa) /148.8°C (0.45MPa)	ISO 75, Method A/ISO 75, Method B
Tensile strength(X-Y)	87.41+/-3.57 MPa	ISO527
Tensile modulus	6025.53+/-355.46Mpa	ISO527
Elongation at break 100% (X-Y)	1.99+/-0.18%	ISO527
The bending strength	122.69+/-5.19Mpa	ISO178
Bending modulus	5313.21+/-197.89Mpa	ISO178
Notch impact strength	5.57+/-0.58KJ/m ²	ISO179
Tensile strength (Z)	33.61 ± 1.74 MPa	ISO 527

Young's modulus (Z)
Elongation at break (Z)

3194.73 ± 74.46 MPa
1.25 ± 0.09 %

Extrusion Force vs Print Speed Test



Other Suggestions

1. Although the moisture absorption of PET material is very low, it is very sensitive to moisture. Printing after absorbing moisture will result in oozing, extruding with bubbles and rough surface appearance, thus reducing print quality. It is recommended that put the filament into a dry box (humidity below 15%) immediately after opening the PET-CF vacuum bag for printing.
2. After the material is damp, there will be more printing oozing, bubbles extruded and rough printing surface. Please dry the filament in an oven at 100-120°C for 4-6h to restore the printing quality of PET-CF.
3. Hardened steel and above grade nozzles shall be selected, which can effectively improve the print quality. Besides, it is recommended that the thickness of the heating block should no less than 12mm.
4. After the printing, the printed part can be annealed to further improve the strength of PET-CF print part. Annealing conditions: place the printed part at 80-100 for 4-8 hours and cool to room temperature naturally.

Suzhou Melovy Technology CO., Ltd

Tel: +86-0-512-6580-8834

NO.68, Nantiancheng Road, Xiangcheng Dist.

Email: info@melovy3d.com

Suzhou City, Jiangsu Prov. China

Website: www.melovy3d.com