TECHNICAL DATA SHEET

V1.0

FIBERON
By polymaker

FIBERON™ PET-GF15

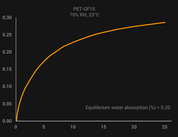
FIBERON™ PET-GF15 is the bridge of the gap between every-day usability and industrial performance, offering a strong, heat-resistant, and user-friendly filament for both professional and hobbyist applications.

WWW.FIBERON3D.COM

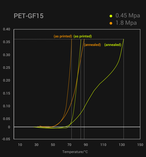
PHYSICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Density	ISO1183, GB/T1033	1.43 g/cm³ at 23°C
Melt index	270°C, 2.16kg	36.9 g/10min
Flame retardancy	UL 94, 1.5mm	HB
Surface Resistivity (Ω)	ANSI ESD S11.11	OL, >10¹² Ω

MOISTURE ABSORPTION CURVE



HDT CURVE



THERMAL PROPERTIES

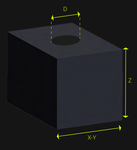
PROPERTY	TESTING METHOD	TYPICAL VALUE
Glass transition temp.	DSC, 10°C/min	59.5°C
Melting temperature	DSC, 10°C/min	231.6°C
Crystallization temp.	DSC, 10°C/min	201.4°C
Decomposition temp.	GA, 20°C/min	422.8°C
Vicat softening temp.	ISO 306, GB/T 1633	232.6°C
Heat deflection temp.	ISO 75 1.8MPa	87.3°C (annealed)
Heat deflection temp.	ISO 75 0.45MPa	133.7°C (annealed)
Heat deflection temp.	ISO 75 1.8MPa	71.8 (as printed)
Heat deflection temp.	ISO 75 0.45MPa	81.6 (as printed)

MECHANICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y)	ISO 527, GB/T 1040	4144.2 ± 133.3 MPa
Young's modulus (Z)		3428.9 ± 257.2 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	59.9 ± 0.8 MPa
Tensile strength (Z)		48.2 ± 0.3 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	4.0 ± 0.5%
Elongation at break (Z)		2.6 ± 0.1%
Bending modulus (X-Y)	ISO 178, GB/T 9341	3705.4 ± 84.5 MPa
Bending modulus (Z)		2998.4 ± 92.3 MPa
Bending strength (X-Y)	ISO 306, GB/T 1633	104.2 ± 2.4 MPa
Bending strength (Z)		80.3 ± 2.5 MPa
Charpy impact strength (X-Y) notched	ISO 179, GB/T 1043	8.7 ± 0.6 kJ/m²
Charpy impact strength (X-Y) un-notched		27.2 ± 2.0 kJ/m²
Charpy impact strength (Z) un-notched		13.9 ± 1.6 kJ/m²

*All specimens were annealed at 120°C for 16h.

SHRINKAGE TESTING



	MODEL SIZE	AFTER PRINTING	AFTER ANNEALING
X-Y	40mm	39.85mm	39.67mm
Z	40mm	39.82mm	39.50mm
Diameter	10mm	9.90mm	9.88mm

*Model infill 30%

RECOMMENDED PRINTING CONDITIONS

Nozzle temperature	280-310°C	Printing speed	Up to 250mm/s
Build plate temperature	70-80°C	Drying temp. and time	100°C/10H
Chamber temperature	Room temp.	Annealing temp. and time	120°C/16H
Cooling fan	OFF		

NOTE

Abrasion of the brass nozzle happens frequently when printing Fiberon™ PET-GF15. Normally, the life of a brass nozzle would be approximately 5h. A wear-resistance nozzle, such as hardened steel and ruby nozzle, is highly recommended to be used with Fiberon™ PET-GF15.

Fiberon™ PET-GF15 is sensitive to moisture and should always be stored and used under dry conditions (relative humidity below 20%).

In the case of large differences in layer time/cooling, or in the case of any parameter that significantly affects the degree of crystallinity at the time of printing, there may be a 'slight discolouration' of the surface of the print, which is a natural phenomenon of the crystalline material itself (i.e. crystallisation affects the transmittance of the material) and is not a quality issue.

It is recommended to use Fiberon™ PET-GF15 directly without annealing in cases where temperature resistance of PET-GF15 above 80°C is not required. If annealing is required, please refer to the following tips:

1. During annealing, do not touch the sample with your hands or apply any additional load to the sample.

2. During annealing, ensure that the temperature in the oven is uniform and there are no obvious obstructions that cause uneven temperature of the sample.

3. For prints with a bridge length of more than 3cm, or a thick layer on the upper part of the bridge; prints with large overhangs or small overhangs; all need to add supports and anneal in the oven together with the supports.

4. For thin-walled areas with a wall thickness of less than 4mm, you can try to add reinforcing ribs or increase the wall thickness to avoid possible annealing deformation.

5. In principle, the sample placement method needs to be consistent with that during printing, and it is best to enter the oven directly together with the base plate.

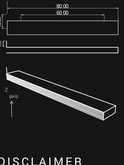
6. The color of the printing parts will become slightly lighter after annealing due to the change in crystallinity, which is a normal phenomenon.

HOW TO MAKE SPECIMENS

Printing temperature	300°C	Infill	100%
Bed temperature	80°C	Shell	2
Top & bottom layer	3	Cooling fan	OFF

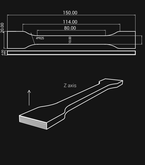
FLEXURAL TESTING SPECIMEN

ASTM D638 (ISO 527, GB/T 1040)



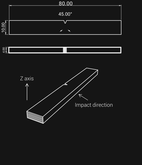
TENSILE TESTING SPECIMEN

ASTM D638 (ISO 527, GB/T 1040)



IMPACT TESTING SPECIMEN

ASTM D638 (ISO 179, GB/T 1043)



DISCLAIMER

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End- use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc.
Product specifications are subject to change without notice. Each user is responsible for determining the safety, lawfulness, technical suitability, and disposal/ recycling practices of Polymaker materials for the intended application. Polymaker makes no warranty of any kind, unless announced separately, to the fitness for any use or application. Polymaker shall not be made liable for any damage, injury or loss induced from the use of Polymaker materials in any application.

FIBERON

MATERIALS COMPARISON

Heat resistance - Stiffness