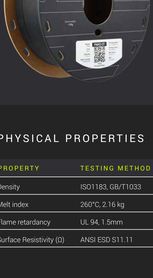
TECHNICAL DATA SHEET

V1.0

FIBERON
By polymaker



FIBERON™ PA612-CF15

Fiberon™ PA612-CF15 is a carbon fiber reinforced long chain copolyimide filament. Thanks to its chemical structure, this product has lower moisture sensitivity compared to PA6/66 and PA6-based materials, and better mechanical properties than PA12-based materials. In addition, the carbon fiber reinforcement and Warpfree™ technology enhance the size stability of the prints produced with this material.

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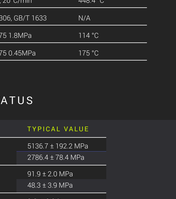
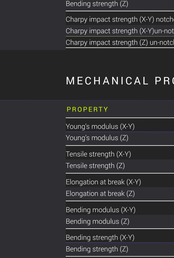
PHYSICAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Density	ISO1183, GB/T1033	1.03 g/cm³ at 23°C
Melt index	260°C, 2.16 kg	9.9 g/10min
Flame retardancy	UL 94, 1.5mm	HB
Surface Resistivity (Ω)	ANSI ESD S11.11	OL, >10^{13} Ω

MOISTURE ABSORPTION CURVE



HDT CURVE



THERMAL PROPERTIES

PROPERTY	TESTING METHOD	TYPICAL VALUE
Glass transition temp.	DSC, 10°C/min	N/A
Melting temperature	DSC, 10°C/min	210 °C
Crystallization temp.	DSC, 10°C/min	180 °C
Decomposition temp.	TGA, 20°C/min	448.4 °C
Vicat softening temp.	ISO 306, GB/T 1633	N/A
Heat deflection temp.	ISO 75 1.8MPa	114 °C
Heat deflection temp.	ISO 75 0.45MPa	175 °C

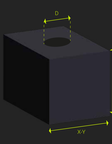
MECHANICAL PROPERTIES - DRY STATUS

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y) Young's modulus (Z)	ISO 527, GB/T 1040	5136.7 ± 192.2 MPa 2786.4 ± 78.4 MPa
Tensile strength (X-Y) Tensile strength (Z)	ISO 527, GB/T 1040	91.9 ± 2.0 MPa 48.3 ± 3.9 MPa
Elongation at break (X-Y) Elongation at break (Z)	ISO 527, GB/T 1040	2.6 ± 0.2 % 2.1 ± 0.2 %
Bending modulus (X-Y) Bending modulus (Z)	ISO 178, GB/T 9341	4583.5 ± 62.7 MPa N/A
Bending strength (X-Y) Bending strength (Z)	ISO 306, GB/T 1633	138.0 ± 2.2 MPa N/A
Charpy impact strength (X-Y) notched Charpy impact strength (X-Y)un-notched Charpy impact strength (Z) un-notched	ISO 179, GB/T 1043	8.1 ± 0.8 kJ/m² 29.9 ± 1.6 kJ/m² N/A

MECHANICAL PROPERTIES - WET STATUS

PROPERTY	TESTING METHOD	TYPICAL VALUE
Young's modulus (X-Y) Young's modulus (Z)	ISO 527, GB/T 1040	3990.8 ± 136.5 MPa 2386.8 ± 150.2 MPa
Tensile strength (X-Y) Tensile strength (Z)	ISO 527, GB/T 1040	83.1 ± 2.2 MPa 35.6 ± 3.0 MPa
Elongation at break (X-Y) Elongation at break (Z)	ISO 527, GB/T 1040	4.1 ± 0.3 % 1.7 ± 0.2 %
Bending modulus (X-Y) Bending modulus (Z)	ISO 178, GB/T 9341	3888.3 ± 56.3 MPa N/A
Bending strength (X-Y) Bending strength (Z)	ISO 306, GB/T 1633	118.1 ± 1.6 MPa N/A
Charpy impact strength (X-Y) notched Charpy impact strength (X-Y)un-notched Charpy impact strength (Z) un-notched	ISO 179, GB/T 1043	7.7 ± 0.5 kJ/m² N/A N/A

SHRINKAGE TESTING



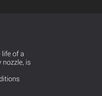
	MODEL SIZE	AFTER PRINTING	AFTER ANNEALING
X-Y	40mm	40.05mm	40.04mm
Z	40mm	39.92mm	39.66mm
Diameter	10mm	9.84mm	9.78mm

*Model infill 30%

RECOMMENDED PRINTING CONDITIONS

Nozzle temperature	250-300 °C
Build plate temperature	40-50 °C
Chamber temperature	Room Temp.
Cooling fan	OFF

Printing speed	Up to 300mm/s
Drying temp. and time	100 °C/10H
Annealing temp. and time	100 °C/16H



PolySupport™ for PA12
PolyDissolve™ S1

Recommended support material

NOTE

Abrasion of the brass nozzle happens frequently when printing Fiberon™ PA612-CF15. 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™ PA612-CF15.
Fiberon™ PA612-CF15 is sensitive to moisture and should always be stored and used under dry conditions (relative humidity below 20%).

HOW TO MAKE SPECIMENS

Printing temperature	300 °C
Bed temperature	50 °C
Top & bottom layer	3

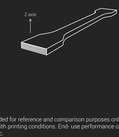
Infill	100%
Shell	2
Cooling fan	OFF

FLEXURAL TESTING SPECIMEN

ASTM D638 (ISO 527, GB/T 1040)

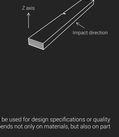
TENSILE TESTING SPECIMEN

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.
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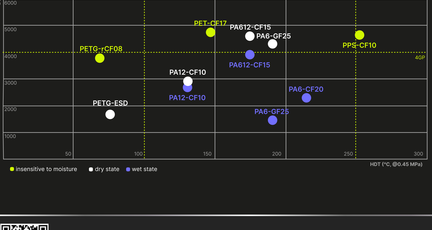
FIBERON

MATERIALS COMPARISON

Heat resistance - Stiffness



FIBERON WEBSITE