Bambu Filament

Technical Data Sheet V1.0

PA-CF

• Basic Info

Bambu PA-CF is a family of Bambu 3D printing engineering filaments, mainly consisting of PA6, PA12 and carbon fiber. PA12 helps to reduce water absorption, while PA6 helps to improve stiffness, strength, and temperature resistance. **Bambu PA-CF** mixes the two in optimal proportions, helping to take full advantage of them. It retains its mechanical properties even after absorbing water.

• Specifications

Subjects	Data
Diameter	1.75 mm
Net Filament Weight	0.5 kg, 1 kg
Spool Material	PC + ABS (Temperature resistance 90 °C)
Spool Size	Diameter: 200 mm; Height: 67 mm

• Recommended Printing Settings

Subjects	Data
Drying Settings before Printing	80 °C, 8 - 12 hours
Printing and Storage Humidity	< 20% RH (Sealed with desiccant)
Bed Type	Engineering Plate, High Temperature Plate or Texture PEI Plate
Nozzle Size	0.4, 0.6(recommended), 0.8 mm
Nozzle Temperature	260 - 290 °C
Bed Surface Preparation	PVP Glue
Bed Temperature	80 - 100 °C
Cooling Fan	0 - 60%
Printing Speed	≤100 mm/s
Retraction Length	0.8 - 1.4 mm
Retraction Speed	20 - 40 mm/s
Chamber Temperature	45 - 60 °C

Subjects	Data
Max Overhang Angle	~ 70°
Max Bridging Length	~ 40 mm
Support Material	Bambu Support G

• Properties

Bambu Lab has tested the differing aspects in the performance of PA-CF material, including physical, mechanical, and chemical properties. Typical values are listed as followed:

Physical Properties		
Subjects	**Testing Methods**	**Data**
Density	ISO 1183	1.09 g/cm³
Melt Index	280 °C, 2.16 kg	36.2 ± 1.8 g/10 min
Melting Temperature	DSC, 10 °C/min	220 °C
Glass Transition Temperature	DSC, 10 °C/min	60 °C
Crystallization Temperature	DSC, 10 °C/min	130 °C
Vicar Softening Temperature	ISO 306, GB/T 1633	210 °C
Heat Deflection Temperature	ISO 75 1.8 MPa	160 °C
Heat Deflection Temperature	ISO 75 0.45 MPa	180 °C
Saturated Water Absorption Rate	25 °C, 55% RH	1.70%

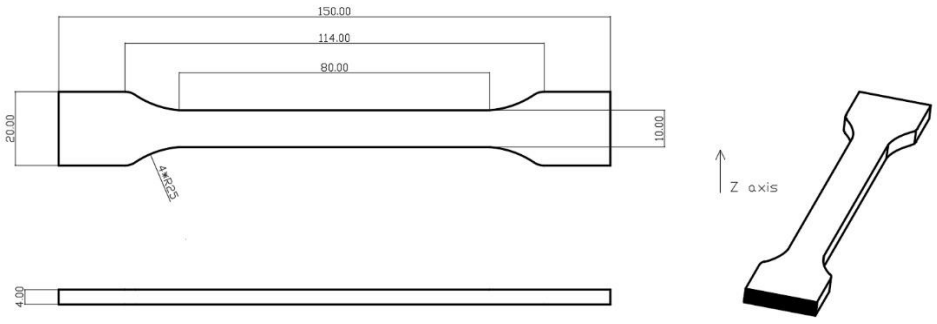
Mechanical Properties（Dry state）		
Subjects	**Testing Methods**	**Data**
Young's Modulus (X-Y)	ISO 527, GB/T 1040	4080 ± 280 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	2450 ± 160 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	96 ± 5 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	50 ± 5 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	6.2 ± 0.3%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	3.3 ± 0.3%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	4420 ± 360 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	1820 ± 160 MPa
Bending Strength (X-Y)	ISO 178, GB/T 9341	142 ± 5 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	52 ± 3 MPa
Impact Strength (X-Y)	ISO 179, GB/T 1043	29.1 ± 2.3 kJ/m²; 10.2 ± 1.4 kJ/m² (notched)

Other Physical and Chemical Properties	
Subjects	**Data**
Odor	Odorless
Composition	Nylon 6, Nylon 12, carbon fiber
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not resistant
Resistance to Alkali	Not resistant
Resistance to Organic Solvent	Not resistant to some organic solvents
Resistance to Oil and Grease	Resistant to most kinds of oil and grease
Flammability	Flammable and self-extinguishing in the air
Combustion Products	Water, carbon oxides, nitrogen oxides
Odor of Combustion Products	Pungent odor

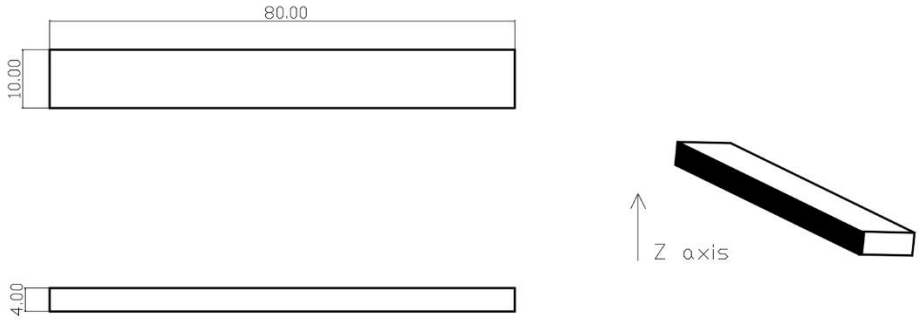
- **Specimen Test**

Specimen Printing Conditions	
Subjects	**Data**
Nozzle Temperature	280 °C
Bed Temperature	100 °C
Printing Speed	100 mm/s
Infill Density	100%
**All the specimens were annealed and dried at 80 °C for 12 hours before testing.*	

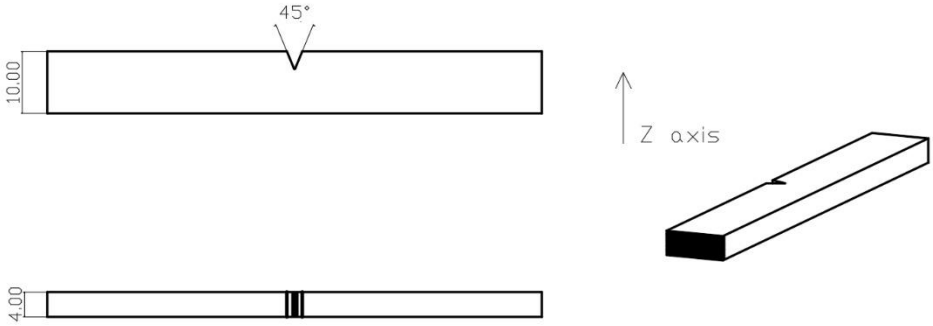
1.Tensile Testing



2.Flexural Testing



3.Impact Testing



- **Disclaimer**

The performance values are tested by standard samples at Bambu Lab, and the values are for design reference and comparison only. Actual 3D printing model performance is related to many other factors, including printers, printing conditions, printing models, printing parameters, etc.

In the process of using Bambu Lab 3D printing filaments, users are responsible for the legality, safety, and performance indicators of printing. Bambu Lab is not responsible for the use of materials and scenarios and is not responsible for any damage that occurs in the process of using our filaments.