



# Bambu Filament

## Technical Data Sheet V3.0

# PAHT-CF

## • Basic Info

Bambu PAHT-CF is a high-temperature engineering-grade carbon-fiber reinforced aromatic nylon that is designed for applications where high strength, stiffness, and temperature resistance are required. It is easy to print, has enhanced Z-bonding, a high-degree of dimensional stability, and has been optimized to retain excellent mechanical properties when wet. Suggested uses are: functional prototypes, machining fixtures, injection molds, jigs, and low-volume production parts.

## • 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 Textured 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 - 40%
Printing Speed	≤ 100 mm/s
Retraction Length	0.8 - 1.4 mm
Retraction Speed	20 - 40 mm/s

Chamber Temperature	45 - 60 °C
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Subjects	Data
Max Overhang Angle	~ 70°
Max Bridging Length	~ 40 mm
Support Material	Bambu Support for PA/PET

## • Properties

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

Physical Properties		
Subjects	Testing Methods	Data
Density	ISO 1183	1.06 g/cm <sup>3</sup>
Melt Index	280 °C, 2.16 kg	14.4 ± 2.0 g/10 min
Melting Temperature	DSC, 10 °C/min	225 °C
Glass Transition Temperature	DSC, 10 °C/min	70 °C
Crystallization Temperature	DSC, 10 °C/min	140 °C
Vicar Softening Temperature	ISO 306, GB/T 1633	220 °C
Heat Deflection Temperature	ISO 75 1.8 MPa	170 °C
Heat Deflection Temperature	ISO 75 0.45 MPa	194 °C
Saturated Water Absorption Rate	25 °C, 55% RH	0.89%

Mechanical Properties (Dry state)		
Subjects	Testing Methods	Data
Young's Modulus (X-Y)	ISO 527, GB/T 1040	3860 ± 230 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	2180 ± 130 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	88 ± 7 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	64 ± 3 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	10.4 ± 0.7%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	5.2 ± 0.5%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	4120 ± 290 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	1680 ± 140 MPa
Bending Strength (X-Y)	ISO 178, GB/T 9341	140 ± 8 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	68 ± 5 MPa
Impact Strength (X-Y)	ISO 179, GB/T 1043	57.5 ± 3.4 kJ/m <sup>2</sup> ; 22.8 ± 1.8 kJ/m <sup>2</sup> (notched)

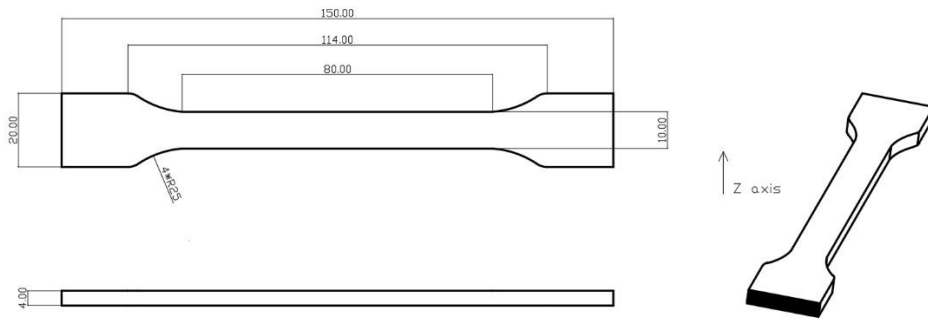
Impact Strength (Z)	ISO 179, GB/T 1043	13.3 ± 0.8 kJ/m <sup>2</sup>
Other Physical and Chemical Properties		
Subjects	Data	
Odor	Odorless	
Composition	PA 12 and other long-chain PA, carbon fiber	
Skin Hazards	No hazard	
Chemical Stability	Stable under normal storage and handling conditions	
Solubility	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

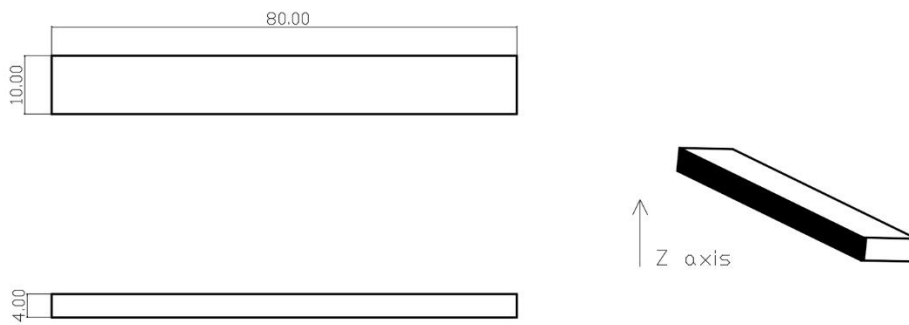
Specimen Printing Conditions	
Subjects	Data
Nozzle Temperature	290 °C
Bed Temperature	100 °C
Printing Speed	100 mm/s
Infill Density	100%

\*All the specimens were annealed and dried at 80 °C for 12 hours before testing. And the suggested annealing temperature of models printed with Bambu PAHT-CF is 80 to 130 °C, and the time is 5 to 12 hours. The annealing effect depends on the annealing temperature, time and the model itself: size, structure, infill and other printing settings.

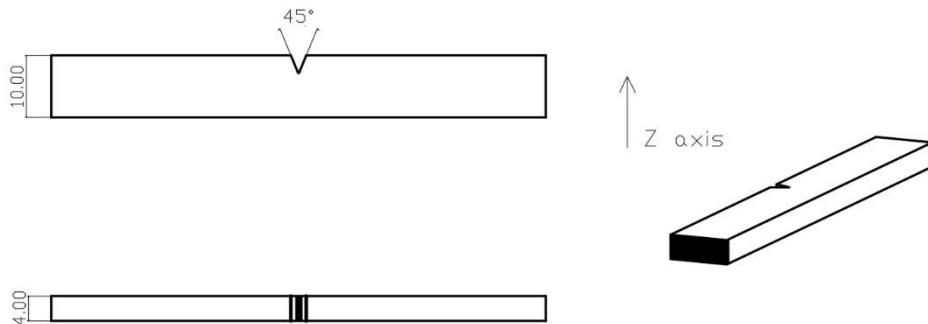
## 1. Tensile Testing



## 2. Bending 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.