Bambu Filament

Technical Data Sheet V1.0

TPU 90A

• Basic Info

Bambu TPU 90A – With a higher hardness, it provides greater structural integrity, making it ideal for shoe soles, RC tires, and functional components that require both flexibility and strength. Bambu TPU 90A deliver outstanding wear resistance, ensuring long-lasting performance even after repeated bending—making them the go-to choice for high-demand applications.

• Specifications

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

• Recommended Printing Settings

Subjects	Data
Drying Settings before Printing	Blast Drying Oven: 70 °C，8 h Printer Heatbed: 75 - 85 °C，8 h
Printing and Storage Humidity	< 20% RH (Sealed, with desiccant)
Nozzle Size	0.4, 0.6, 0.8 mm
Nozzle Temperature	200 - 250 °C
Build Plate Type	Smooth PEI Plate, Textured PEI Plate
Glue	Bambu Liquid Glue / Glue Stick
Bed Temperature	30 - 35 °C
Cooling Fan	Turn on
Printing Speed	< 200 mm/s
Retraction Length	0.4 - 0.8 mm
Retraction Speed	10 - 30 mm/s
Chamber Temperature	25 - 45 °C

Max Overhang Angle	~ 40 °
Max Bridging Length	10 mm
Support Material	Turn on

• Properties

Bambu Lab has tested the differing aspects in the performance of TPU 90A material, including physical, mechanical, and chemical properties. Typical values are listed as followed:

Physical Properties		
Subjects	**Testing Methods**	**Data**
Density	ISO 1183	1.24 g/cm³
Melt Index	210 °C, 2.16 kg	9.36 ± 2.6 g/10 min
Melting Temperature	DSC, 10 °C/min	180 °C
Glass Transition Temperature	DSC, 10 °C/min	N / A
Crystallization Temperature	DSC, 10 °C/min	N / A
Vicar Softening Temperature	ISO 306, GB/T 1633	N / A
Heat Deflection Temperature	ISO 75 1.8 MPa	N / A
Heat Deflection Temperature	ISO 75 0.45 MPa	N / A
Saturated Water Absorption Rate	25 °C, 55% RH	0.61%

Mechanical Properties		
Subjects	**Testing Methods**	**Data**
Young's Modulus (X-Y)	ISO 527, GB/T 1040	5.3 ± 0.7 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	4.4 ± 0.6 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	12.5 ± 0.8 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	10.1 ± 0.6 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	> 650%
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	> 350%
Bending Modulus (X-Y)	ISO 178, GB/T 9341	N / A
Bending Modulus (Z)	ISO 178, GB/T 9341	N / A
Bending Strength (X-Y)	ISO 178, GB/T 9341	N / A
Bending Strength (Z)	ISO 178, GB/T 9341	N / A
Impact Strength (X-Y)	ISO 179, GB/T 1043	124.2 kJ/m²
Impact Strength (Z)	ISO 179，GB/T 1043	87.3 kJ/m²

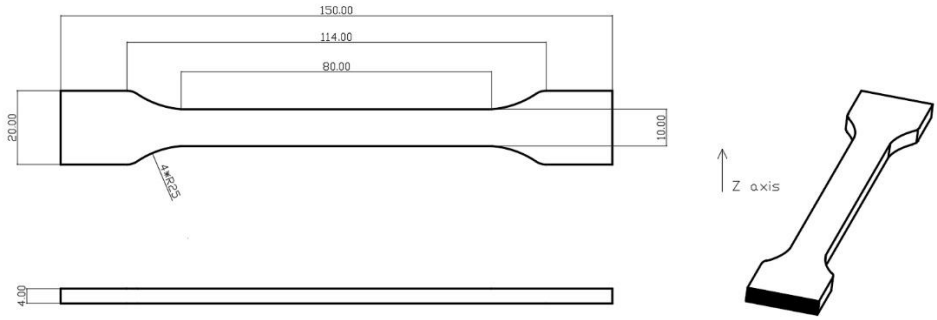
Other Physical and Chemical Properties	
Subjects	**Data**
Odor	Odorless
Composition	Thermoplastic polyurethane
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not resistant
Resistance to Alkali	Not resistant
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
Combustion Products	Water, carbon oxides, nitrogen oxides
Odor of Combustion Products	Pungent odor

- **Specimen Test**

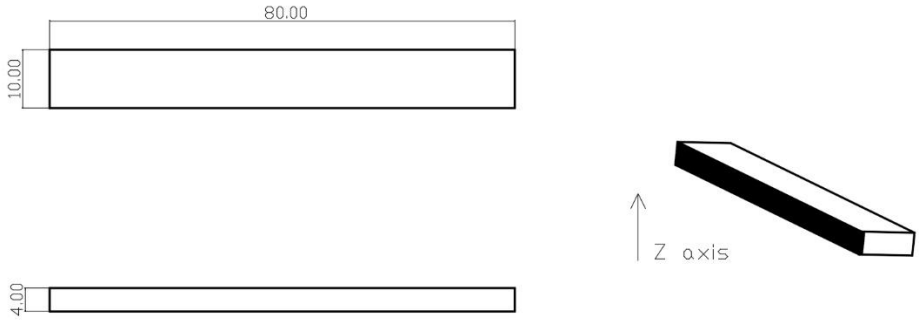
Specimen Printing Conditions	
Subjects	**Data**
Nozzle Temperature	225 °C
Bed Temperature	35 °C
Printing Speed	34 mm/s
Infill Density	100%

** All the specimens were printed at the following settings: Nozzle Temperature = 225 °C, Printing Speed = 34 mm/s, Bed Temperature = 35 °C, Infill Density= 100%. All the specimens were dried at 70 °C for 12 h before testing. It's not recommended to anneal prints of TPU, or prints with not very simple shape and structure can deform obviously. When drying the filament, it's required to use an oven that has big enough inside volume and can provides even temperature distribution, such as a blast drying oven (forced-air drying oven), the filament and prints need to be away from the heater, and a micro-wave oven or kitchen oven is not compatible, otherwise the filament and prints can get damaged.*

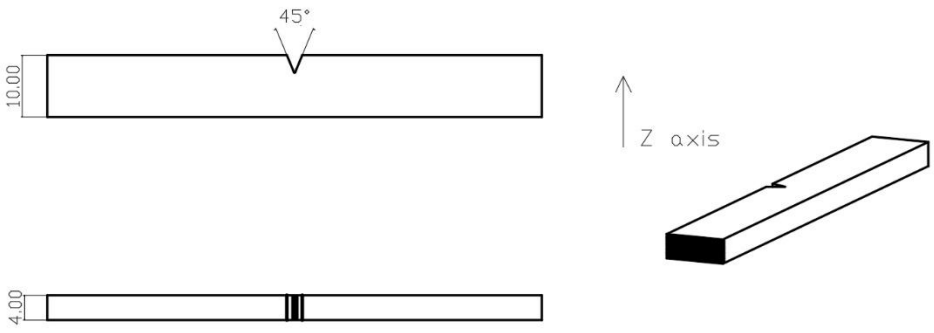
1.Tensile Testing



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.