



Bambu Filament

Technical Data Sheet V1.0

PLA Tough

• Basic Info

PLA is the most common material in 3D printing as it's easy to print and inexpensive. Meanwhile, its stiffness and strength can meet most printing needs. It is worth mentioning that it can biodegrade in some artificial composting conditions. Bambu PLA Tough is a premium quality 3D printing filament that combines the benefits of regular PLA with added durability and strength. With 20% greater toughness and strength compared to regular PLA, Bambu PLA Tough is the ideal choice for applications that require enhanced mechanical properties. It also offers a more glossy and smooth finish compared to regular PLA, which means that it can be used for creating visually appealing objects and models.

• Specifications

Subjects	Data
Diameter	1.75 mm
Net Filament Weight	1 kg
Spool Material	ABS (Temperature resistance 70 °C)
Spool Size	Diameter: 200 mm; Height: 67 mm

• Recommended Printing Settings

Subjects	Data
Drying Settings before Printing	55 °C, 8 hours
Printing and Storage Humidity	< 20% RH (Sealed with desiccant)
Nozzle Temperature	190 - 230 °C
Bed Type	Cool Plate, High Temperature Plate or Textured PEI Plate
Bed Surface Preparation	PVP Glue
Bed Temperature	35 - 45 °C
Cooling Fan	100%
Printing Speed	< 300 mm/s
Retraction Length	0.6 - 1.0 mm

Subjects	Data
Retraction Speed	20 - 40 mm/s
Chamber Temperature	25 - 45 °C
Max Overhang Angle	55 °
Max Bridging Length	30 mm
Support Material	Support for PLA

• Properties

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

Physical Properties		
Subjects	Testing Methods	Data
Density	ISO 1183	1.26 g/cm ³
Melt Index	210 °C, 2.16 kg	44.2 ± 3.5 g/10 min
Melting Temperature	DSC, 10 °C/min	158 °C
Glass Transition Temperature	DSC, 10 °C/min	57 °C
Crystallization Temperature	DSC, 10 °C/min	/
Vicar Softening Temperature	ISO 306, GB/T 1633	58 °C
Heat Deflection Temperature	ISO 75 1.8 MPa	53 °C
Heat Deflection Temperature	ISO 75 0.45 MPa	55 °C
Saturated Water Absorption Rate	25 °C, 55% RH	0.45%

Mechanical Properties		
Subjects	Testing Methods	Data
Young's Modulus (X-Y)	ISO 527, GB/T 1040	2330 ± 240 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	2110 ± 170 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	44 ± 2 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	39 ± 2 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	8.2 ± 0.4 %
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	5.6 ± 0.6 %
Bending Modulus (X-Y)	ISO 178, GB/T 9341	2730 ± 170 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	2490 ± 110 MPa
Bending Strength (X-Y)	ISO 178, GB/T 9341	92 ± 3 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	71 ± 4 MPa
Impact Strength (X-Y)	ISO 179, GB/T 1043	31.2 ± 2.6 kJ/m ² ; 11.5 ± 3.4 kJ/m ² (notched)
Impact Strength (Z)	ISO 179, GB/T 1043	12.3 ± 0.6 kJ/m ²

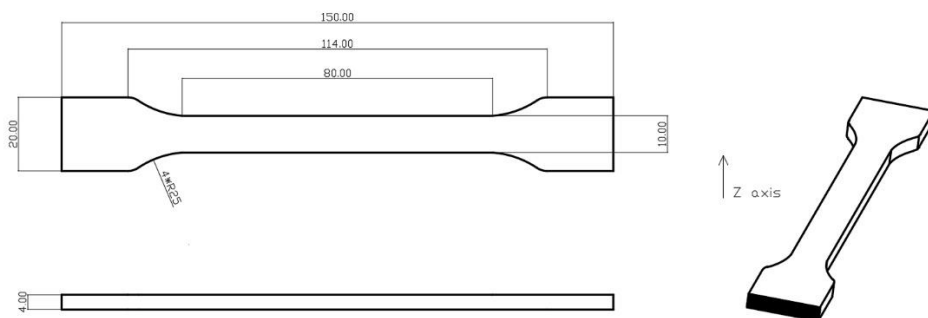
Other Physical and Chemical Properties	
Subjects	Data
Odor	Odorless
Composition	PLA
Skin Hazards	No hazard
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in water
Resistance to Acid	Not resistant
Resistance to Alkali	Not resistant
Resistance to Organic Solvent	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
Odor of Combustion Products	Odorless

- **Specimen Test**

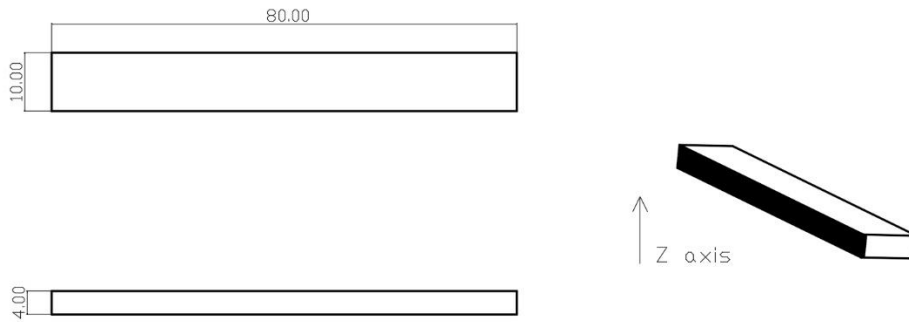
Specimen Printing Conditions	
Subjects	Data
Nozzle Temperature	220 °C
Bed Temperature	35 °C
Printing Speed	200 mm/s
Infill Density	100%

**All the specimens were annealed and dried at 55 °C for 8 hours before testing.*

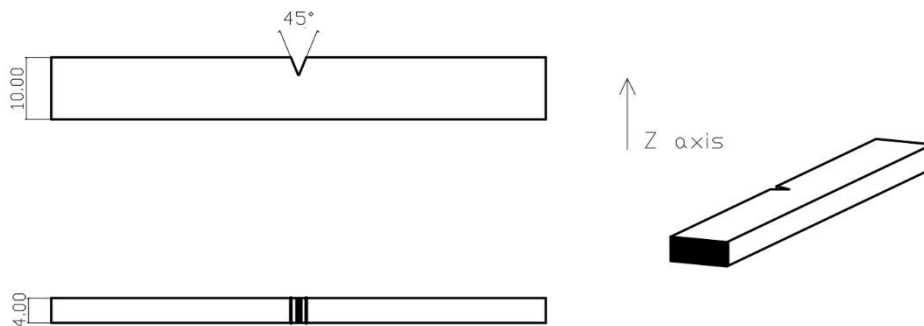
1. Tensile Testing



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.