



Bambu Filament

Technical Data Sheet V3.0

PLA Tough+

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	Blast Drying Oven: 55 °C, 8 h X1 Series & H2D Series Printer Heatbed: 65 - 75 °C, 12 h AMS 2 Pro & AMS HT : 55 °C, 8 h
Printers Compatibility	All Bambu 3D printers
AMS Compatibility	AMS, AMS 2 PRO, AMS HT, AMS Lite
Printing and Storage Humidity	< 20% RH (Sealed, with desiccant)
Nozzle Size	0.2, 0.4, 0.6, 0.8 mm
Nozzle Temperature	220 - 250 °C
Build Plate Type	Textured PEI Plate / Smooth PEI Plate/Cool Plate Supertack
Bed Temperature	35 - 65 °C
Cooling Fan	Turn on
Printing Speed	< 300 mm/s
Retraction Length	0.6 - 1.0 mm
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
Glue	Recommended(Glue Stick/Liquid Glue)

• 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	1.21 g/cm ³
Melt Index	210 °C, 2.16 kg	18.0 ± 2.5 g/10 min
Melting Temperature	DSC, 10 °C/min	151 °C
Glass Transition Temperature	DSC, 10 °C/min	61 °C
Crystallization Temperature	DSC, 10 °C/min	/
Vicat Softening Temperature	ISO 306, GB/T 1633	62 °C
Heat Deflection Temperature	ISO 75 1.8 MPa	58 °C
Heat Deflection Temperature	ISO 75 0.45 MPa	61 °C
Saturated Water Absorption Rate	25 °C, 55% RH	0.27%

Mechanical Properties		
Subjects	Testing Methods	Data
Young's Modulus (X-Y)	ISO 527, GB/T 1040	1860 ± 70 MPa
Young's Modulus (Z)	ISO 527, GB/T 1040	1920 ± 20 MPa
Tensile Strength (X-Y)	ISO 527, GB/T 1040	34.9 ± 1 MPa
Tensile Strength (Z)	ISO 527, GB/T 1040	20.9 ± 1 MPa
Breaking Elongation Rate (X-Y)	ISO 527, GB/T 1040	9.4 ± 2.3 %
Breaking Elongation Rate (Z)	ISO 527, GB/T 1040	9.3 ± 3 %
Bending Modulus (X-Y)	ISO 178, GB/T 9341	2140 ± 80 MPa
Bending Modulus (Z)	ISO 178, GB/T 9341	2066 ± 100 MPa
Bending Strength (X-Y)	ISO 178, GB/T 9341	65 ± 1 MPa
Bending Strength (Z)	ISO 178, GB/T 9341	54 ± 4 MPa
Impact Strength (X-Y)	ISO 179, GB/T 1043	80.6 ± 9.5 kJ/m ² ; 72.3 ± 6.1 kJ/m ² (notched)
Impact Strength (Z)	ISO 179, GB/T 1043	25.9 ± 3.3 kJ/m ² 18.6 ± 2.3 kJ/m ² (Silver)

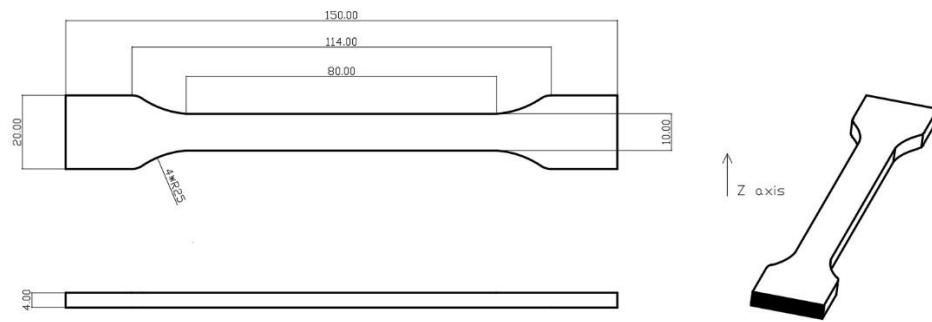
Other Physical and Chemical Properties	
Subjects	Data
Odor	Odorless
Composition	Polylactic acid
Skin Hazards	No hazard

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
Odor of Combustion Products	Odorless

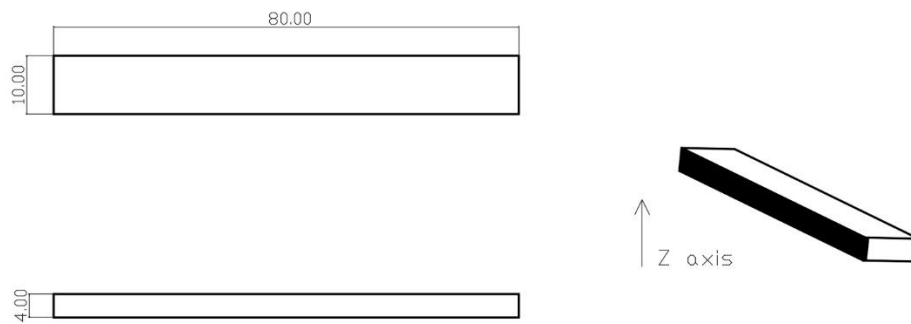
• Specimen Test

Specimen Printing Conditions	
Subjects	Data
Nozzle Temperature	245 °C
Bed Temperature	55 °C
Printing Speed	150 mm/s
Infill Density	100%
<i>All the specimens were annealed and dried at 50 °C for 8 h before testing. And the suggested annealing temperature of models printed with Bambu PLA Tough+ is 50 to 60 °C, and the time is 6 to 12 hours. The annealing effect depends on the annealing temperature, time and the model itself: size, structure, infill and other printing settings; some prints may deform and warp after annealing. When drying the filament and annealing the prints, 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), and 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.</i>	

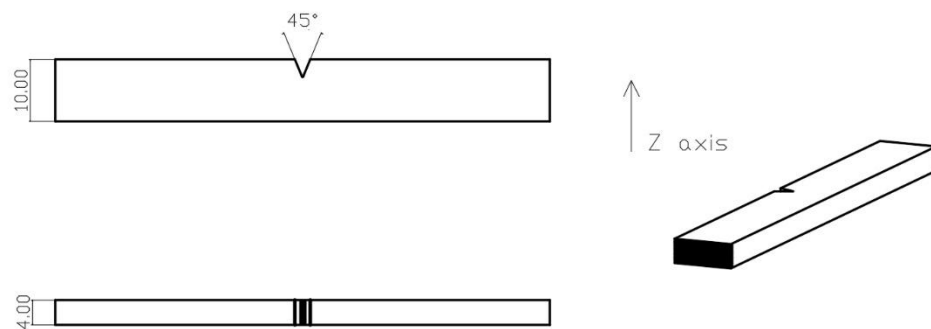
1. Tensile Testing



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.