# PLA Basic

## • 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 Basic is designed for high-speed printing. Compared to general PLA, it can easily achieve printing speeds up to 250-300 mm/s and has excellent toughness and Z-layer strength.

## • 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 |
| Retraction Speed | 20 - 40 mm/s |
| Chamber Temperature | 25 - 45 °C |
| Max Overhang Angle | 55° |

| Subjects | Data |
|---|---|
| Max Bridging Length | 30 mm |
| Support Material | Support for PLA |

## • Properties

Bambu Lab has tested the differing aspects in the performance of PLA Basic 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 | 42.4 ± 3.5 g/10 min |
| Melting Temperature | DSC, 10 °C/min | 160 °C |
| Glass Transition Temperature | DSC, 10 °C/min | 60 °C |
| Crystallization Temperature | DSC, 10 °C/min | N / A |
| Vicar Softening Temperature | ISO 306, GB/T 1633 | 57 °C |
| Heat Deflection Temperature | ISO 75 1.8 MPa | 54 °C |
| Heat Deflection Temperature | ISO 75 0.45 MPa | 57 °C |
| Saturated Water Absorption Rate | 25 °C, 55% RH | 0.43% |

| Mechanical Properties（Dry state） | | |
|---|---|---|
| Subjects | Testing Methods | Data |
| Young's Modulus (X-Y) | ISO 527, GB/T 1040 | 2680 ± 130 MPa |
| Young's Modulus (Z) | ISO 527, GB/T 1040 | 2160 ± 90 MPa |
| Tensile Strength (X-Y) | ISO 527, GB/T 1040 | 39 ± 2 MPa |
| Tensile Strength (Z) | ISO 527, GB/T 1040 | 35 ± 3 MPa |
| Breaking Elongation Rate (X-Y) | ISO 527, GB/T 1040 | 12.2 ± 0.4% |
| Breaking Elongation Rate (Z) | ISO 527, GB/T 1040 | 7.5 ± 0.3% |
| Bending Modulus (X-Y) | ISO 178, GB/T 9341 | 2750 ± 60 MPa |
| Bending Modulus (Z) | ISO 178, GB/T 9341 | 2370 ± 50 MPa |
| Bending Strength (X-Y) | ISO 178, GB/T 9341 | 76 ± 3 MPa |
| Bending Strength (Z) | ISO 178, GB/T 9341 | 68 ± 2 MPa |
| Impact Strength (X-Y) | ISO 179, GB/T 1043 | 26.6 ± 2.8 kJ/m²; 7.9 ± 1.2 kJ/m² (notched) |
| Impact Strength (Z) | ISO 179, GB/T 1043 | 13.8 ± 0.9 kJ/m² |

| 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

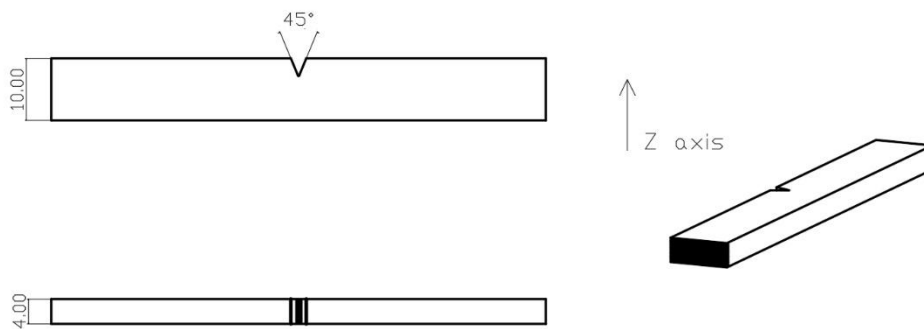| Specimen Printing Conditions | |
|---|---|
| Subjects | Data |
| Nozzle Temperature | 220 °C |
| Bed Temperature | 35 °C |
| Printing Speed | 200 mm/s |
| Infill Density | 100% |
| *All the specimens were annealed and dried at 55 °C for 8 hours before testing. | |

## 1. Tensile Testing
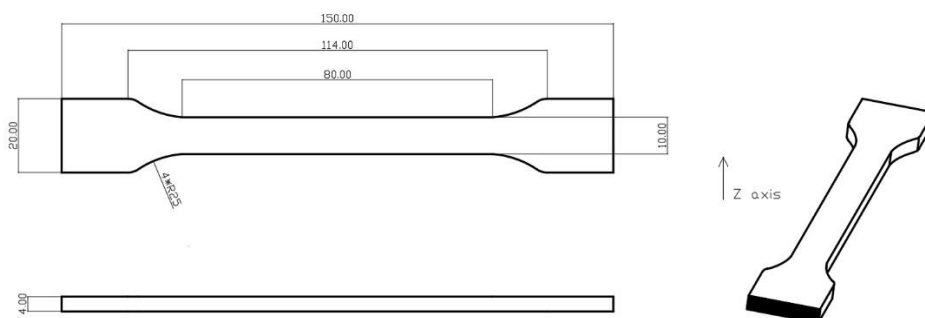
## 2. Bending Testing
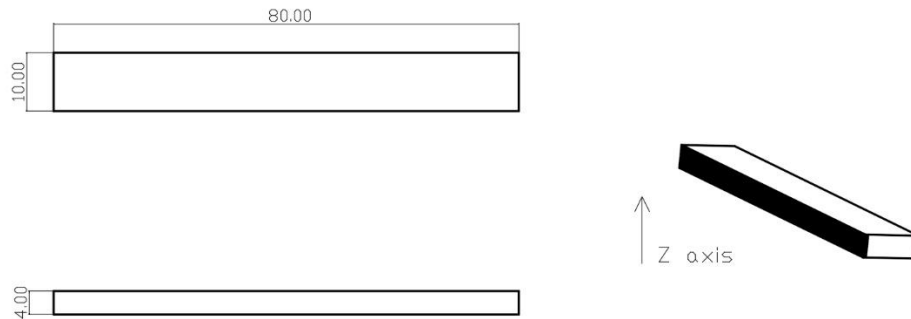


## 3. Impact Testing



# • 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.