# Bambu Filament

*Technical Data Sheet V1.0*

# TPU 85A

## • Basic Info

**Bambu TPU 85A –** The softest in Bambu's lineup, offering exceptional flexibility and resilience. Perfect for impact-absorbing parts such as protective cases, squishy fidget toys, and soft cushioning elements.

## • 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<br>Printer Heatbed: 75 - 85 °C，8 h |
| Printing and Storage Humidity | < 20% RH (Sealed, with desiccant) |
| Nozzle Size | 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 85A material, including physical, mechanical, and chemical properties. Typical values are listed as followed:

| Physical Properties | | |
|---|---|---|
| **Subjects** | **Testing Methods** | **Data** |
| Density | ISO 1183 | 1.18 g/cm³ |
| Melt Index | 210 °C, 2.16 kg | 8.76 ± 2.6 g/10 min |
| Melting Temperature | DSC, 10 °C/min | 177 °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 | 0.67% |

| Mechanical Properties | | |
|---|---|---|
| **Subjects** | **Testing Methods** | **Data** |
| Young's Modulus (X-Y) | ISO 527, GB/T 1040 | 6.8 ± 0.7 MPa |
| Young's Modulus (Z) | ISO 527, GB/T 1040 | 5.2 ± 0.6 MPa |
| Tensile Strength (X-Y) | ISO 527, GB/T 1040 | 12.0 ± 0.8 MPa |
| Tensile Strength (Z) | ISO 527, GB/T 1040 | 10.5 ± 0.6 MPa |
| Breaking Elongation Rate (X-Y) | ISO 527, GB/T 1040 | > 700% |
| 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 | 124.3 kJ/m² |
| Impact Strength (Z) | ISO 179，GB/T 1043 | 88.5 kJ/m² |

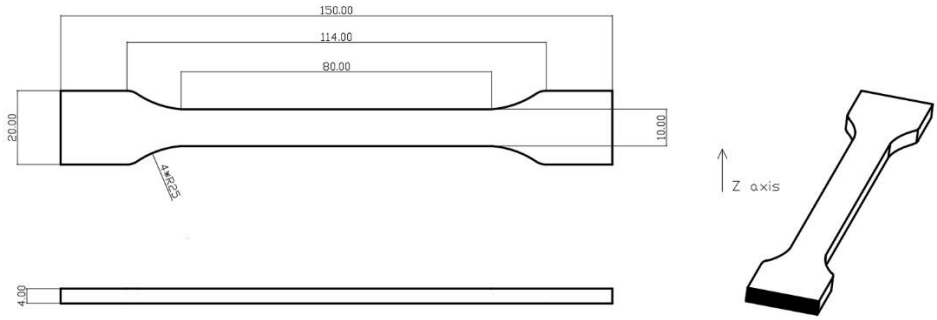
| Other Physical and Chemical Properties | |
|---|---|
| **Subjects** | **Data** |
| Odor | Odorless |
| Composition | Thermoplastic polyurethane |
| Skin Hazards | No hazard |
| Chemical Stability | Stable under normal storage and handling conditions |
| Solubility | Insoluble in water |
| Resistance 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**

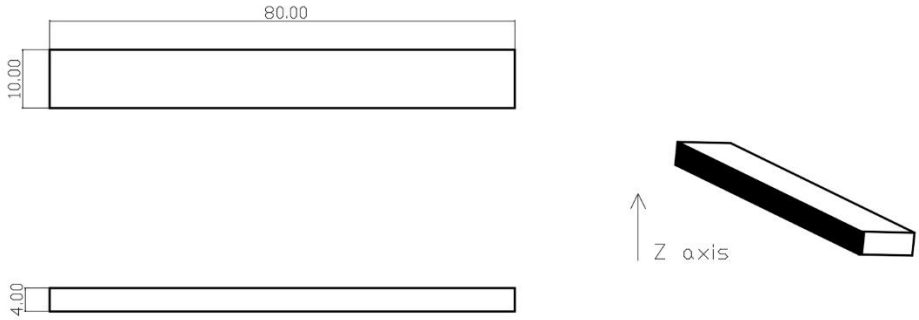
| Specimen Printing Conditions | |
|---|---|
| **Subjects** | **Data** |
| Nozzle Temperature | 225 °C |
| Bed Temperature | 35 °C |
| Printing Speed | 34 mm/s |
| Infill Density | 100% |

** 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.*

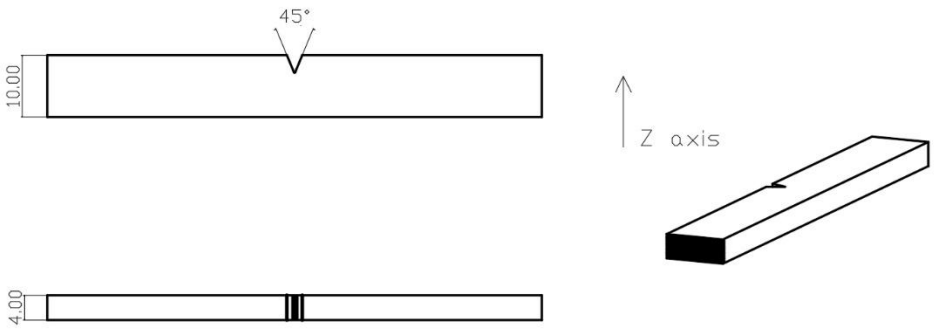
## 1.Tensile Testing




## 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.