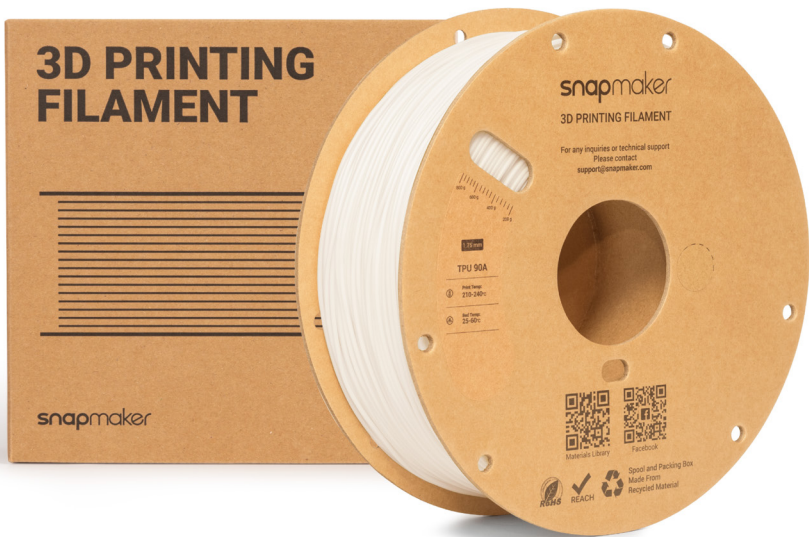


snapmaker | TPU 90A

Technical Data Sheet



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1 Filament Introduction

Snapmaker TPU 90A is a soft and durable flexible filament engineered for reliable cushioning and long-lasting performance. With excellent elasticity and fast shape recovery, it effectively absorbs impact while maintaining structural support, making it ideal for wearables, protective padding, ergonomic accessories, and other comfort-focused applications. It also supports rigid-flex co-printing with PLA, PETG, and TPU 95A, enabling prints that combine rigidity and flexibility in a single design.

2 Specifications

Subjects	Data
Diameter	1.75 ± 0.05 mm
Net Filament Weight	1 kg
Length	339 m
Spool Material	Cardboard Spool
Spool Size	Diameter: 200 mm; Height: 66 mm

3 Recommended Printing Settings

Subjects	Data
Drying Settings Before Printing	70°C , 6 h
Printing and Storage Humidity	< 20% RH (Sealed, with Desiccant)
Nozzle Size	0.4 / 0.6 / 0.8 mm
Nozzle Temperature	210–240°C
Bed Type	Smooth PEI Plate / Textured PEI Plate
Bed Surface Preparation	Glue Stick / Liquid Glue
Bed Temperature	25–60°C
Cooling Fan	ON
Printing Speed	30–50 mm/s
Retraction Length	1–1.5 mm
Retraction Speed	10–20 mm/s

(continued)

Subjects	Data
Chamber Temperature	25–45°C
Max Overhang Angle	40°
Max Bridging Length	≤ 10 mm
Support Material	PVA

Printing Tips

1. Drying & Storage

- **Pre-Drying:** TPU is extremely hygroscopic and must be dried before use. Dry the filament at 70°C for 6 hours.
- **Storage:** When not in use, keep the filament away from direct sunlight in a sealed container with desiccant.
- **Recommended Solution:** We highly recommend using SnapDryer, which serves as an all-in-one solution to perfectly dry and store your filament. Watch our [video guide](#) to get started with SnapDryer.

2. Printing

- **Nozzle Selection:** Printing with a 0.2 mm nozzle is not recommended.
- **Loading & Unloading:** TPU is a flexible filament that demands precise control during loading and unloading. Improper handling may lead to issues such as loading problems or nozzle clogs. To minimize the risk of print failures, the filament must be loaded and unloaded manually. Do not use the automatic filament feeder. We strongly recommend watching our [video guide](#) before your first print.
- **Drying While Printing:** For optimal print quality, we recommend using SnapDryer while printing.

- **Removal:** TPU tends to over-stick to the build plate, which may damage the print during removal. We recommend spraying alcohol at the interface between the model and the bed during removal.

- **Optimizing First-Layer Adhesion:** If first-layer adhesion fails, please check the bed levelling and clean the build plate. If the issue persists, apply a glue stick or liquid glue to improve adhesion.

- **Fixing Bubbles & Stringing:** If you notice bubbles or heavy stringing, dry your filament thoroughly first. If stringing continues, try reducing the distance between models, increasing the retraction length or speed, and decreasing the travel speed.

- **Fixing Model Collapse:** If the model collapses during printing, first ensure the cooling fan speed is set to 100%. Additionally, you can rotate the model so the affected area faces the cooling fan and position it closer to the fan. This enhances localized cooling and improves print quality.

4 Properties

Physical Properties

Subjects	Testing Methods	Data
Density	ISO 1183, GB/T 1033	1.12 g/cm ³ at 23°C
Melt Index	185°C, 1.2 kg	6.1 g/10 min
Saturated Water Absorption Rate	25°C, 55% RH	0.67%

Mechanical Properties

Subjects	Testing Methods	Data
Shore Hardness	ISO 7619-1, GB/T 531.1	90A
Tensile Strength (Z)	ISO 37, GB/T 528	30.1 ± 2.4 MPa
Breaking Elongation Rate (X-Y)	ISO 37, GB/T 528	592.1 ± 32.9%
Stress at 100% elongation	ISO 37, GB/T 528	7.1 ± 0.3 MPa
Stress at 200% elongation	ISO 37, GB/T 528	9.0 ± 0.9 MPa
Stress at 300% elongation	ISO 37, GB/T 528	13.2 ± 0.6 MPa
Stress at 400% elongation	ISO 37, GB/T 528	19.0 ± 0.9 MPa

Other Physical and Chemical Properties

Subjects	Data
Odor	Odorless
Composition	Thermoplastic Polyurethane
Skin Hazards	Non-Hazardous
Chemical Stability	Stable under normal storage and handling conditions
Solubility	Insoluble in Water
Resistance to Acid	Non-Resistant
Resistance to Alkali	Non-Resistant
Resistance to Organic Solvent	Moderate (Non-Resistant to Some Solvents)
Resistance to Oil and Grease	Good
Flammability	Flammable
Combustion Products	Water, Carbon Oxides, Nitrogen Oxides
Odor of Combustion Products	Pungent Odor

5 Specimen Test

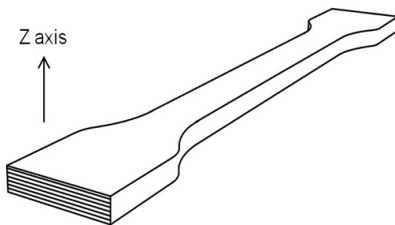
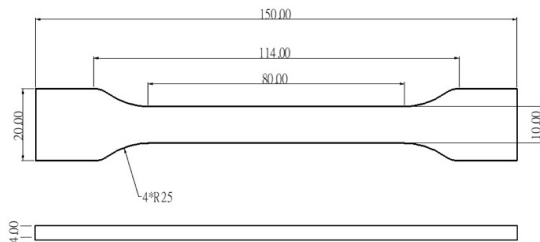
Specimen Printing Conditions

Subjects	Data
Nozzle Temperature	220°C
Bed Temperature	50°C
Printing Speed	50 mm/s
Infill Density	100%



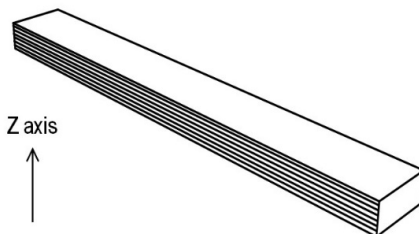
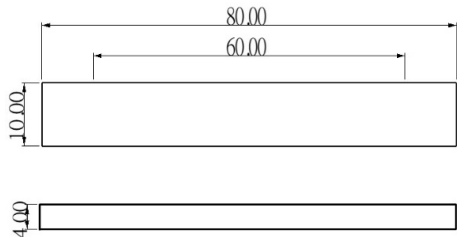
Based on 0.4 mm nozzle. Printing conditions may vary with different nozzle diameters.

Tensile Testing Specimen



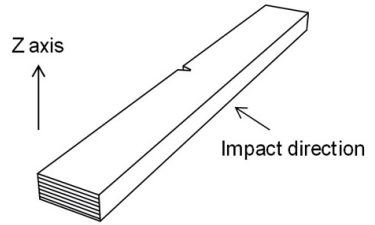
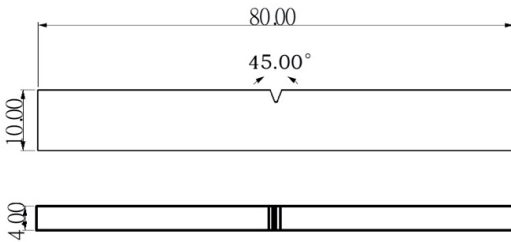
ISO 527, GB/T 1040

Flexural Testing Specimen



ISO 178, GB/T 9341

Impact Testing Specimen



ISO 179, GB/T 1043

6 Disclaimer

The performance and printing parameters of the aforementioned filaments are obtained by Snapmaker through testing filament samples with sample 3D printers. All data provided is for reference and comparison purposes only, and does not constitute design specifications or any warranty of quality. Actual 3D printing quality and final part performance are subject to various factors including, but not limited to, printer equipment, model design, environmental conditions, and printing parameters. Users shall independently evaluate the compliance and safety of printed models and finished parts, including legal compliance, application safety, and structural reliability. Snapmaker shall not be held liable for any direct or indirect losses arising from the use of the aforementioned filaments, including equipment damage, print failure, personal injury, and property damage.

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