Filazoo Filament

Technical Data Sheet V1.0

TPU-90A Glossy

Flexible Thermoplastic Polyurethane — soft flex, glossy finish, Shore 90A

DOCUMENT NO.	REVISION	ISSUE DATE	DIAMETER	NET WEIGHT
FZ-TDS-TPU90GLOSSY-001	V1.0	01/09/26	1.75 mm	1 kg

1 Description

Filazoo TPU-90A Glossy is designed for softer flex and stronger cushioning than Shore 95A TPU, with a smooth glossy surface finish. It bends further under lower force while retaining good abrasion and tear resistance.

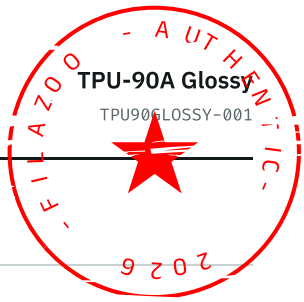
Typical applications — shoe soles and midsoles, RC tyres, cushioning components, protective sleeves, and functional parts needing more give than 95A TPU.

Processing summary — print slower than firmer TPU grades and with minimal retraction to avoid jamming; a direct-drive extruder is strongly recommended. Keep the filament dry, as TPU is moisture-sensitive.

2 Product Specification

Table 1 — Filament and packaging specification

PARAMETER	UNIT	VALUE
Filament diameter	mm	1.75
Diameter tolerance	mm	± 0.03
Net filament weight	kg	1
Spool material	—	*ABS (heat resistance 70 °C)*
Spool dimensions (ø × H)	mm	*ø 200 × 67 mm*
Colour range	—	*Black, White, Yellow, Green, Red + additional standard colours*



3 Recommended Printing Parameters

Table 2 — Recommended starting parameters

PARAMETER	UNIT	VALUE
Drying before printing	°C / h	*70 °C for 8 – 12 h*
Printing and storage humidity	—	`Dry storage; sealed with desiccant`
Nozzle size	mm	*≥ 0.4*
Nozzle type	—	`Brass or hardened steel`
Nozzle temperature	°C	`210 – 230`
Build plate type	—	*Cool Plate, Engineering Plate or Textured PEI*
Bed surface preparation	—	*Clean; light adhesive if needed*
Bed temperature	°C	`30 – 35`
Part cooling fan	—	`Medium to high`
Printing speed	mm/s	`< 60 (outer wall ~ 40)`
Enclosed chamber	—	`Not required`
Chamber temperature	°C	*25 – 45*
Retraction length / speed	mm / mm·s⁻¹	*0.6 – 1.2 mm / 20 – 35 mm·s⁻¹*
Max overhang angle	°	*~ 60*
Max bridging length	mm	*~ 15*

Values are starting points; a direct-drive extruder is strongly recommended for reliable TPU feeding.

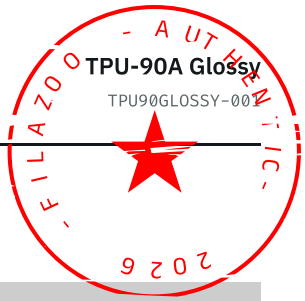
4 Material Properties

Values are typical results measured on standard printed specimens and are intended for design reference and comparison. They are not guaranteed minima.

4.1 Physical and thermal properties

Table 3 — Physical and thermal properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Density	ISO 1183	g/cm³	*~ 1.19*
Melt flow rate (MFR)	210 °C, 2.16 kg	g/10 min	`~ 6 ± 1`
Melting temperature	DSC	°C	`~ 175`
Glass transition temperature	DSC	°C	`~ -35`
Vicat softening temperature	ISO 306	°C	`~ 75`
Heat deflection temperature	ISO 75, 0.45 MPa	°C	`N/A (elastomer)`
Heat deflection temperature	ISO 75, 1.8 MPa	°C	`N/A (elastomer)`
Saturated water absorption	25 °C, 55 % RH	%	*~ 0.7*



4.2 Mechanical properties

Table 4 — Mechanical properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Tensile strength	ISO 527	MPa	~ 30 ± 3
Elongation at break	ISO 527	%	~ 550 ± 50
Tear strength	ISO 34-1	kN/m	~ 60 ± 8
Shore hardness	ISO 868	—	90A
Compression set (23 °C, 72 h)	ISO 815	%	~ 20
Abrasion resistance (DIN)	DIN 53516	mm³	~ 40
Rebound resilience	ISO 4662	%	~ 45
Flexural modulus	ISO 178	MPa	N/A (elastomer)
Impact strength, notched	ISO 179	kJ/m²	No break (highly flexible)
Impact strength, unnotched	ISO 179	kJ/m²	No break (highly flexible)

4.3 Chemical and physical characteristics

Table 5 — General characteristics of TPU-90A Glossy

PARAMETER	VALUE
Composition	Thermoplastic polyurethane (TPU), Shore 90A hardness
Odour	Mild odour when printing
Skin hazard	No hazard in solid filament form
Chemical stability	Stable under normal storage and handling
Solubility	Insoluble in water
UV and weathering resistance	Moderate — not UV-stabilised
Acid resistance	Limited resistance
Alkali resistance	Limited resistance
Organic solvent resistance	Resistant to many oils; limited resistance to strong solvents
Oil and grease resistance	Good resistance to oils and greases
Flammability	Flammable
Combustion products	Carbon oxides, nitrogen oxides

5 Test Conditions

5.1 Specimen printing conditions

Table 6 — Conditions used to produce test specimens

PARAMETER	UNIT	VALUE
Nozzle temperature	°C	*220*
Bed temperature	°C	*32*
Printing speed	mm/s	*40*
Infill density	%	*100*
Layer height	mm	*0.2*
Specimen conditioning / annealing	°C / h	*23 °C / 50 % RH for 24 h (ISO 291)*

5.2 Specimen geometry

Test specimens follow the geometry defined by the referenced standards. All dimensions in millimetres.

Figure 1 — Tensile specimen

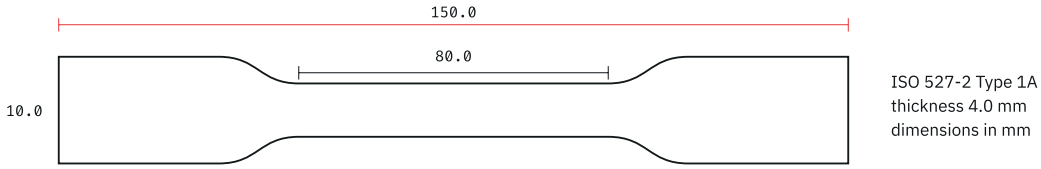


Figure 2 — Flexural specimen

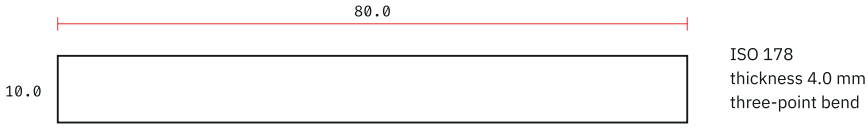
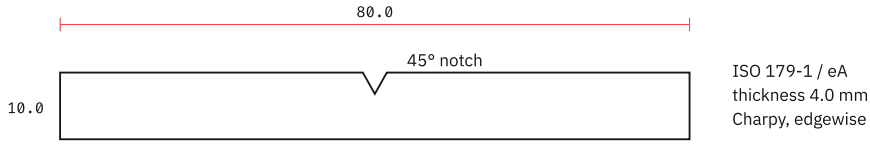


Figure 3 — Impact specimen



6 Disclaimer

The performance values in this document are typical values obtained from standard printed specimens. They are provided for design reference and comparison only and do not constitute a specification or a warranty of performance. Actual printed part performance depends on many further factors, including the printer, hotend and nozzle, slicer settings, part geometry, wall count and infill, build orientation, and ambient conditions.

Users are responsible for the legality, safety and suitability of anything they print. Filazoo accepts no responsibility for the use of its materials in any particular application, or for any damage arising in the course of using them.