



Filazoo Filament

Technical Data Sheet V1.0



TPU-80A Foam

Deep-Flex Foam Thermoplastic Polyurethane, Shore 80A base

DOCUMENT NO.	REVISION	ISSUE DATE	DIAMETER	NET WEIGHT
FZ-TDS-TPU80FOAM-001	V1.0	01/09/26	1.75 mm	1 kg

1 Description

Filazoo TPU-80A Foam is a foamed thermoplastic polyurethane that expands during printing to create a lightweight, cushioned texture rather than a solid fill. The foaming reduces density substantially compared with solid TPU, giving parts a soft, compressible feel with a pronounced soft-touch cushioning response while keeping the flexibility of Shore 80A TPU.

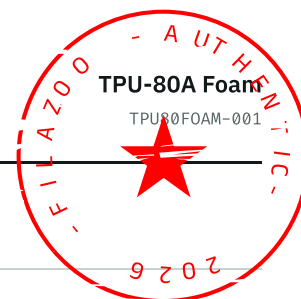
Typical applications — cushioned handles and grips, padded wearable parts, ergonomic inserts, and parts wanting a deep, soft-touch compression feel.

Processing summary — the foaming agent activates within a narrow temperature window, so hold nozzle temperature steady; a larger nozzle (0.6 mm or larger) and slower speeds give the most consistent foam cell structure. A direct-drive extruder is strongly recommended, and the filament must be kept dry.

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 ($\varnothing \times H$)	mm	$\varnothing 200 \times 67$ mm
Colour range	—	White, Yellow



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	≥ 0.6 (recommended for consistent foaming)
Nozzle type	—	Brass or hardened steel
Nozzle temperature	°C	200 – 220
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	—	Low to medium
Printing speed	mm/s	< 30 (outer wall ~ 20)
Enclosed chamber	—	Not required
Chamber temperature	°C	25 – 45
Retraction length / speed	mm / mm·s ⁻¹	0.5 – 1.0 mm / 15 – 25 mm·s ⁻¹
Max overhang angle	°	~ 40
Max bridging length	mm	~ 8

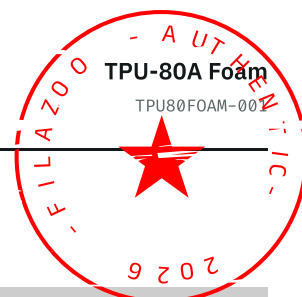
4 Material Properties

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 (foamed)	ISO 1183	g/cm ³	~ 0.45 – 0.60 (foamed; solid resin ~ 1.17)
Melt flow rate (MFR, base resin)	210 °C, 2.16 kg	g/10 min	~ 7 ± 1
Melting temperature	DSC	°C	~ 165
Glass transition temperature	DSC	°C	~ -35
Vicat softening temperature	ISO 306	°C	~ 70
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	%	~ 1.2 (higher than solid TPU)



4.2 Mechanical properties

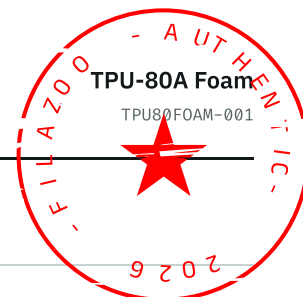
Table 4 — Mechanical properties

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Tensile strength	ISO 527	MPa	~ 5 ± 2
Elongation at break	ISO 527	%	~ 340 ± 60
Tear strength	ISO 34-1	kN/m	~ 15 ± 4 (reduced by cellular structure)
Shore hardness (apparent, foamed)	ISO 868	—	~ 50A (apparent)
Compression set (23 °C, 72 h)	ISO 815	%	~ 15 (good recovery)
Abrasion resistance (DIN)	DIN 53516	mm ³	~ 90 (lower than solid TPU)
Rebound resilience	ISO 4662	%	~ 60 (high cushioning response)
Flexural modulus	ISO 178	MPa	N/A (elastomer)
Impact strength, notched	ISO 179	kJ/m ²	No break (highly flexible)
Impact strength, unnotched	ISO 179	kJ/m ²	No break (highly flexible)

4.3 Chemical and physical characteristics

Table 5 — General characteristics of TPU-80A Foam

PARAMETER	VALUE
Composition	Foamed thermoplastic polyurethane (TPU), Shore 80A base 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; open-cell structure absorbs more moisture than solid TPU
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	210
Bed temperature	°C	32
Printing speed	mm/s	20
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

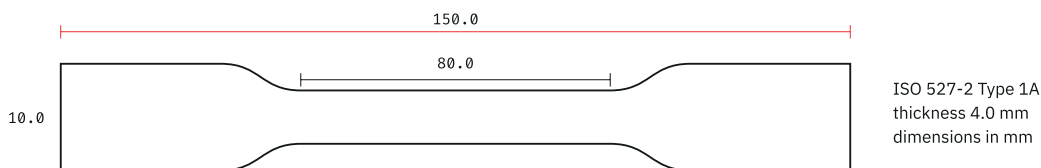


Figure 2 — Flexural specimen

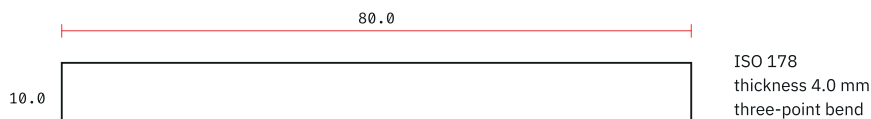
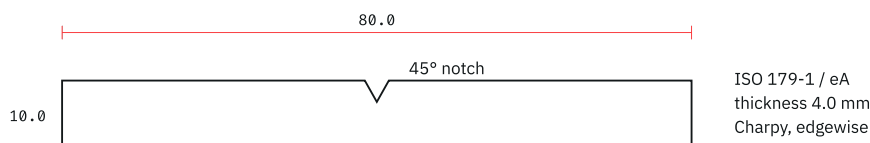


Figure 3 — Impact specimen



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.