



# BEDROCK 3D TPU 85A

Our First Flexible Filament. For Precise Elasticity.  
Biocompatible.

## Technical Documentation Sheet

version 1.0





## Technical Data Sheet

### TPU 85A

Our First Flexible Filament. For Precise Elasticity. Biocompatible.

BEDROCK 3D TPU 85A is a versatile thermoplastic polyurethane filament based on BASF's Elastollan®. Which stands for maximum reliability, consistent product quality and cost efficiency. TPU 85A offers the perfect balance of flexibility, strength, and durability for a wide range of industrial and consumer applications where precise elasticity is essential. A flexible filament manufactured with highest precision, meaning constant diameters.

#### Filament Properties

Filament Diameter	1.75 mm	2.85 mm
Diameter Tolerance	±0.050 mm	±0.1 mm
Roundness	±0.050 mm	±0.05 mm
Available Spool size	750 g	750 g
Available colors	Natural	

#### Spool Properties

Available Spool size	750 g
Outer diameter	200 mm
Inner diameter	50.5 mm
Width	55 mm

#### Recommended 3D-Print processing parameters

#### Used for test specimens

Printer	FFF printer	German RepRap X400
Nozzle Temperature <sup>1)</sup>	200 – 220°C / 392 – 428°F	210°C / 410°F
Build Chamber Temperature	-	-
Bed Temperature	40°C / 104°F	40°C / 104°F

<sup>1</sup> Fast printing might require an additional increase of the nozzle temperature; the stated printing speed is based on current validations. As equipment and technology continues to evolve, it is possible that even higher printing speeds may be attainable in the future.



Bed Material	Glass	Glass
Nozzle Diameter	≥ 0.4 mm	0.4 mm
Print Speed	15 – 40 mm/s	25 mm/s
Max Volumetric Speed <sup>2)</sup>	12 mm <sup>3</sup> /s	//

Please check your standard and/or high speed print profile availability for an easy start at [www.bedrock3d.com](http://www.bedrock3d.com).

#### Further Recommendations

Drying recommendations to ensure printability and best mechanical properties<sup>3)</sup> BEDROCK 3D TPU85A - 70°C in a hot air dryer or vacuum oven for at least 5 hours Please note: To ensure constant material properties the material should always be kept dry.

Support material compatibility Single material breakaway, BEDROCK 3D TPU 85A

Warehousing BEDROCK 3D TPU 85A filament should be stored at 15 - 25°C in its originally sealed package in a clean and dry environment. If the recommended storage conditions are observed the products will have a minimum shelf life of 12 months.

General Properties	Standard	Average Values
Filament Density <sup>4)</sup>	ISO 1183-1	1114 kg/m <sup>3</sup> / 70 lb/ft <sup>3</sup>

<sup>2)</sup> Based on Bambu Lab X1C with a nozzle diameter of 0.4 mm

<sup>3)</sup> Please note: To ensure constant material properties the material should always be kept dry.

<sup>4)</sup> measured on filament



Tensile Properties <sup>5)</sup>	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Tensile strength <sup>6)</sup>	ISO 527	34 MPa	-	10 MPa
Elongation at Break <sup>6)</sup>	ISO 527	600%	-	320%
Young's Modulus <sup>7)</sup>	ISO 527	20 MPa	-	27 MPa
Stress at 50% Elongation <sup>6)</sup>	ISO 527	7.2 MPa	-	6.2 MPa
Stress at 100% Elongation <sup>6)</sup>	ISO 527	8.7 MPa	-	7.5 MPa
Stress at 200% Elongation <sup>6)</sup>	ISO 527	10.1 MPa	-	9 MPa

Impact Properties <sup>6)</sup>	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Impact Strength Charpy (notched)	ISO 179-2	No break	No break	16.8 kJ/m <sup>2</sup>
Impact Strength Charpy (notched), -30°C	ISO 179-2	47.3 kJ/m <sup>2</sup>	95.4 kJ/m <sup>2</sup>	9.3 kJ/m <sup>2</sup>
Impact Strength Izod (notched)	ISO 180	No break	No break	No break
Tensile Notched Impact Strength	ISO 8256/1	No break	No break	111 kJ/m <sup>2</sup>

Thermal Properties <sup>6)</sup>	Standard	Average Values
Vicat softening point at 50 N	ISO 306	35°C / 95°F
Vicat softening point at 10 N	ISO 306	114°C / 237°F
Glass Transition Temperature	ISO 11357-2	-44°C / -47°F
Melt Volume-Flow Rate (MVR)	ISO 1133	10.7 cm <sup>3</sup> /10 min / 0.7 in <sup>3</sup> /10 min (190°C, 2.16 kg)

<sup>5)</sup> Samples were conditioned in standard climate (23°C, 50% RH 72h)

<sup>6)</sup> Testing speed: 200 mm/min

<sup>7)</sup> Testing speed: 1 mm/min



Electrical Properties <sup>6)</sup>	Standard	Average Values		
		X-Direction	Z-Direction	Y-Direction
Dielectric Strength	IEC 60243-1	21 kV/mm	-	17 kV/mm
Volume Resistivity	IEC 62631-3-1	2.6E+11 $\Omega$ cm	-	2.1E+11 $\Omega$ cm

Mechanical Properties <sup>6)</sup>	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Tear Strength	ISO 34-1, A	80 kN/m	18 kN/m	30 kN/m

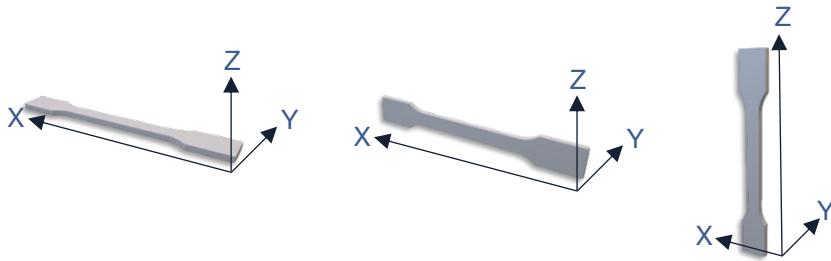
Hardness and Abrasion	Standard	Typical Values
Shore Hardness A (3s)	DIN ISO 7619-1	85
Shore Hardness D (15s)	DIN ISO 7619-1	29
Abrasion Resistance	DIN ISO 4649	82 mm <sup>3</sup> / 0.005 in <sup>3</sup>
Compression Set at 23°C, 72 h	ISO 815	26%
Compression Set at 70°C, 24 h	ISO 815	52%

Biocompatibility	Standard	Typical Values
Cytotoxicity - XTT	-	PASS <sup>8</sup>
In Vitro Skin Irritation Testing	OECD Guideline No. 439	PASS <sup>7)</sup>
In Vivo Sensitization Testing- Local Lymph Node Assay	ISO 10993-10 (2013); OECD Guideline No. 429	PASS <sup>7)</sup>



### Print direction explanation

The orientation of the 3D printed part in the printer is always aligned with the longest axis first. The print direction is consistently along the Z-axis.





The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. Values in this document are average values, measured and calculated according to the instructions in the listed standards. The used specimens are produced with the Fused Filament Fabrication method. Measured values can vary depending on used print orientation and print parameters.

Please contact us for further product information, like for example REACH, RoHS, FCS.

The safety data given in this publication is for informational purposes only and does not constitute a legally binding MSDS. The relevant MSDS can be obtained upon request from your supplier or you may contact Forward AM Technologies Netherlands B.V. directly at [customerservice@bedrock3d.com](mailto:customerservice@bedrock3d.com)

Process materials in a well-ventilated room, or use professional extraction systems.