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# **BEDROCK 3D TPU 64D**

Our Hardest Flexible Filament. Rigid and Flexible.  
Impact and Wear Resistant.

## **Technical Documentation Sheet**

version 1.0





## Technical Data Sheet

### TPU 64D

Our Hardest Flexible Filament. Rigid and Flexible. Impact and Wear Resistant.

BEDROCK 3D TPU 64D is the hardest flexible material in our portfolio, based on BASF's Elastollan®. It's a high-performance thermoplastic polyurethane that combines rigidity with flexibility. Designed for industrial applications, it delivers impact wear and tear resistance while remaining flexible enough to replace parts traditionally made from rubber or ABS. BVOH water soluble support compatible. 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, 2.5 kg	750 g, 2.5 kg
Available colors	White, Black	

Spool Properties		
Available Spool size	750 g	2.5 kg
Outer diameter	200 mm	300 mm
Inner diameter	50.5 mm	51.5 mm
Width	55 mm	103 mm

Recommended 3D-Print processing parameters		Used for test specimens
Printer	FFF printer	Zaribo
Nozzle Temperature <sup>1)</sup>	230 - 255°C / 446 - 491°F	245°C / 473°F
Build Chamber Temperature	-	-
Bed Temperature	40 - 60°C / 104 - 140°F	55°C / 131°F
Bed Material	Glass	Glass

<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.



Nozzle Diameter	≥ 0.4 mm	0.4 mm
Print Speed	30 – 60 mm/s	50 mm/s
Max Volumetric Speed <sup>2)</sup>	8 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 TPU 64D - 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 BVOH

Warehousing BEDROCK 3D TPU 64D 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	1149 kg/m <sup>3</sup> / 72 lb/ft <sup>3</sup>

Tensile Properties <sup>5)</sup>	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Tensile strength <sup>6)</sup>	ISO 527	37 MPa	-	19 MPa
Elongation at Break <sup>6)</sup>	ISO 527	399%	-	115%
Young's Modulus <sup>7)</sup>	ISO 527	205 MPa	-	168 MPa
Stress at 50% Elongation <sup>6)</sup>	ISO 527	18 MPa	-	17 MPa

<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

<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



## BEDROCK 3D

Stress at 100% Elongation <sup>6)</sup>	ISO 527	21 MPa	-	19 MPa
Stress at 300% Elongation <sup>6)</sup>	ISO 527	32 MPa	-	-

Impact Properties <sup>6)</sup>	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Impact Strength Charpy (notched)	ISO 179-2	115 kJ/m <sup>2</sup>	103 kJ/m <sup>2</sup>	34 kJ/m <sup>2</sup>
Impact Strength Charpy (notched), -30°C	ISO 179-2	4.1 kJ/m <sup>2</sup>	4.8 kJ/m <sup>2</sup>	2.6 kJ/m <sup>2</sup>
Impact Strength Charpy (unnotched), -30°C	ISO 179-2	No break	No break	23.2 kJ/m <sup>2</sup>
Impact Strength Izod (notched)	ISO 180	No break	No break	43 kJ/m <sup>2</sup>
Tensile Notched Impact Strength	ISO 8256/1	No break	No break	No break

Thermal Properties <sup>6)</sup>	Standard	Average Values
Vicat softening point at 50 N	ISO 306	48°C / 118°F
Vicat softening point at 10 N	ISO 306	126°C / 259°F
Glass Transition Temperature	ISO 11357-2	-26°C / 15°F
Melt Volume-Flow Rate (MVR)	ISO 1133	40.4 cm <sup>3</sup> /10 min / 2.47 in <sup>3</sup> /10 min (210°C, 5 kg)



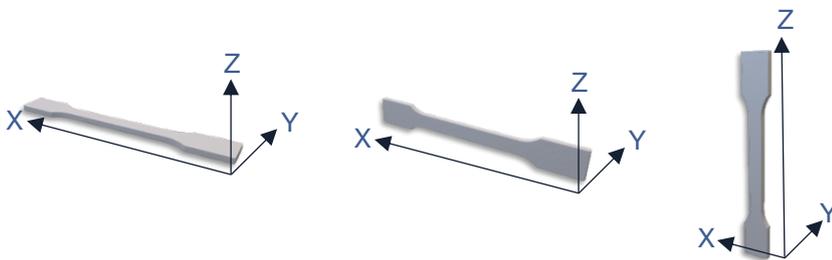
Mechanical Properties <sup>6)</sup>	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Tear Strength	ISO 34-1, A	66 kN/m	37 kN/m	79 kN/m

Hardness and Abrasion	Standard	Typical Values
Shore Hardness D (15s)	DIN ISO 7619-1	58
Abrasion Resistance	DIN ISO 4649	43 mm <sup>3</sup> / 0.003 in <sup>3</sup>
Compression Set at 23°C, 72 h	ISO 815	25%
Compression Set at 70°C, 24 h	ISO 815	55%

Biocompatibility	Standard	Typical Values
Cytotoxicity - Neutral Red	EN ISO 10993-5 (2009)	PASS <sup>8</sup>
Human Skin Irritation Test	EN ISO 10993-10 (2013)	PASS <sup>7)</sup>
In vitro Sensitization Testing- KeratinoSens™	prEN ISO 10993-10 (2020)	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.



<sup>8</sup> Conditioning of the specimens: Tempering (100°C, 20h), Standard climate (23°C, 50% RH 72h)



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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.