BEDROCK 3D
make anything

BEDROCK 3D PLA

Print Easy. Print Fast. Print Anything.

Technical Documentation Sheet

version 1.0

Technical Data Sheet

PLA

Print Easy. Print fast. Print Anything.

Our prime-quality PLA (Polyactic Acid) filament is the ideal choice for both beginners and experienced users. Thanks to its ease of printing, minimal risk of warping, and excellent layer adhesion PLA delivers sharp, precise prints every time.

Filament Properties		
Filament Diameter	1.75 m	2.85 mm
Average diameter Tolerance	±0.050 mm	±0.1 mm
Average ovality	<0.050 mm	<0.050 mm
Available Spool size	750 g, 2.5 kg, 4.5 kg, 8.5 kg	750 g, 2.5 kg, 4.5 kg, 8.5 kg
Available colors	Natural, Black, White, Blue, Light Blue, Bronze, Gold, Green, Army Green, Grey, Orange, Pearl White, Magenta, Red, Silver, Yellow	

Spool Properties				
Spool size	750 g	2.5 kg	4.5 kg	8.5 kg
Outer diameter	200 mm	300 mm	350 mm	355 mm
Inner diameter	50.5 mm	51.5 mm	51.7 mm	36 mm
Width	55 mm	103 mm	103 mm	167 mm

Recommended 3D-Print processing parameters		Used for test specimens
Printer	FFF printer	UltiMaker 3
Nozzle Temperature	210 – 230 °C / 410 – 446 °F	220 °C / 428 °F
Build Chamber Temperature	-	Closed chamber, passively heated
Bed Temperature	50 – 70 °C / 122 – 158 °F	60 °C / 140 °F
Bed Material	Glass, PEI, Magnetic Flex, Glue	Glass+3DLac
Nozzle Diameter	≥ 0.4 mm	0.4 mm

Print Speed[1)]	40 - 159 mm/s	40 mm/s
Max Volumetric Speed[2)]	12 mm^3/s	//

Please check your standard and/or high speed print profile availability for an easy start at www.bedrock3d.com.

Further Recommendations	
Drying recommendations to ensure printability and best mechanical properties[3)]	PLA is in a printable condition, drying is not necessary
Support material compatibility	Single material breakaway, BEDROCK 3D BVOH
Warehousing	BEDROCK 3D PLA 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[4)]	ISO 1183-1	1252 kg/m^3
Printed Part Density	ISO 1183-1	1248 kg/m^3
Poisson-Number	ISO 527	0.35 (XY)

[1] Fast printing might require an additional increase of the nozzle temperature; the stated printing speed of 159 mm/s 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.
[2] Based on Bambu Lab X1C with a nozzle diameter of 0.4 mm and 0.2 layer height.
[3] Please note: To ensure constant material properties the material should always be kept dry.
[4] measured on filament

Tensile Properties[5]	Standard	Average Values		
		XY-Direction[6]	XZ-Direction[7]	ZX-Direction[8]
Tensile strength[9]	ISO 527	34.7 MPa	-	21.2 MPa
Elongation at Break[9]	ISO 527	4.2%	-	1.2%
Young's Modulus[10]	ISO 527	2308 MPa	-	2131 MPa

Flexural Properties[6] [11]	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Flexural Strength	ISO 178	98 MPa	105 MPa	54.9 MPa
Flexural Modulus	ISO 178	1860 MPa	1708 MPa	1715 MPa
Flexural Elongation at Break	ISO 178	4.8%	4.2%	1.9%

Impact Properties[6]	Standard	Average Values		
		XY-Direction	XZ-Direction	ZX-Direction
Impact Strength Charpy (notched)	ISO 179-2	2.5 kJ/m^2	1.9 kJ/m^2	1.7 kJ/m^2
Impact Strength Charpy (unnotched)	ISO 179-2	13.2 kJ/m^2	14.3 kJ/m^2	4.3 kJ/m^2
Impact Strength Izod (notched)	ISO 180	3.3 kJ/m^2	2.1 kJ/m^2	1.6 kJ/m^2

[5] Samples were conditioned in standard climate (23°C, 50% RH 72h)

6 

7 

8 

[9] Testing speed: 5 / 200 mm/min
[10] Testing speed: 1 mm/min
[11] Testing speed: 2 mm/min
Measured on milled specimens

Impact Strength Izod (unnotched)	ISO 180	11 kJ/m^2	9.6 kJ/m^2	4.7 kJ/m^2

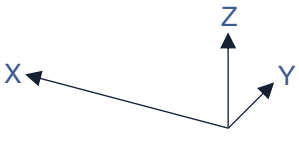
Thermal Properties[6)]	Standard	Average Values
HDT A at 1.8 MPa	ISO 75-2	55°C (ZX) 55.5°C (XZ)
HDT A at 1.8 MPa (annealed)	ISO 75-2	-
HDT B at 0.45 MPa	ISO 75-2	65°C (ZX) 57.4°C (XZ)
HDT B at 0.45 MPa (annealed)	ISO 75-2	-
Vicat softening point at 50 N	ISO 306	56.9°C (XY)
Vicat softening point at 50 N (annealed)	ISO 306	-
Vicat softening point at 10 N	ISO 306	59.5°C (XY)
Vicat softening point at 10 N (annealed)	ISO 306	-
Glass Transition Temperature	ISO 11357-2	61°C
Melting Temperature	ISO 11357-3	151°C
Melt Volume-Flow Rate (MVR)	ISO 1133	21.2 cm3/10 min / 1.29 in3/10 min (220 °C, 5 kg)
Melt Mass-Flow Rate (MFR)	ISO 1133	-
Coefficient of Thermal Expansion	ISO 11359-2	-

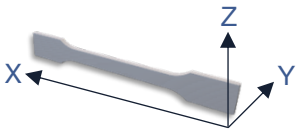
Hardness and Abrasion	Standard	Typical Values
Shore Hardness A (30s)	DIN ISO 7619-1	97
Shore Hardness D (15s)	DIN ISO 7619-1	73
Abrasion Resistance	DIN ISO 4649	-
Compression Set at 23°C, 72 h	ISO 815	-
Compression Set at 70°C, 24 h	ISO 815	-

Biocompatibility	Standard	Typical Values
Cytotoxicity - Neutral Red	ISO 10993-5 (2009)	-
In Vivo Sensitization - Local Lymph Node Assay	ISO 10993-10 (2013)	-
In Vitro Skin Irritation	ISO 10993-10 (2013)	-
Food Contact Certification (FCC)	The used raw materials comply with food contact regulations of the European Parliament and the Food and Drug Administration	EU 10/2011 FDA 21 CFR

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.




Z
X
Y

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

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