

PLA



PLA is a renewable plastic material offered as a low-cost material option for fast-draft part iterations. Available on the office-friendly Stratasys F123™ Series 3D printers, PLA offers a higher stiffness than ABS and its low melting point and HDT mean less heat and power required to print parts.

PLA works well at high speeds, specifically fast- draft mode on the Stratasys F123 Series, for quick concept verification and design development. PLA offers good tensile strength and is available in a wide range of colors, including a variety of translucent colors. Ideal applications for PLA include fast, early concept modeling and low-cost prototyping.

Mechanical Properties ¹	Test Method	Value	
		XZ Axis	ZX Axis
Tensile Strength, Yield (Type 1, 0.125", 0.2"/min)	ASTM D638	45 MPa (6,580 psi)	26 MPa (3,790 psi)
Tensile Strength, Ultimate (Type 1, 0.125", 0.2"/min)	ASTM D638	48 MPa (6,990 psi)	26 MPa (3,830 psi)
Tensile Modulus (Type 1, 0.125", 0.2"/min)	ASTM D638	3,039 MPa (440,730 psi)	2,539 MPa (368,200 psi)
Elongation at Break (Type 1, 0.125", 0.2"/min)	ASTM D638	2.5% (2.5%)	1.0% (1.0%)
Elongation at Yield (Type 1, 0.125", 0.2"/min)	ASTM D638	1.5% (1.5%)	1.0% (1.0%)
Flexural Strength (Method 1, 0.05"/min)	ASTM D790	84 MPa (12,190 psi)	45 MPa (6,570 psi)
Flexural Modulus (Method 1, 0.05"/min)	ASTM D790	2,930 MPa (425,010 psi)	2,470 MPa (358,290 psi)
Flexural Strain at Break	ASTM D790	4.1% (4.1%)	1.9% (1.9%)
IZOD impact - notched (Method A, 23 °C)	ASTM D256	27 J/m (0.5 ft-lb/in)	N/A (N/A)
IZOD impact - unnotched (Method A, 23 °C)	ASTM D256	192 J/m (3.6 ft-lb/in)	N/A (N/A)

Thermal Properties	Test Method	Value
Heat Deflection (HDT) @ 66 psi	ASTM D648	53 °C (127 °F)
Heat Deflection (HDT) @ 264 psi	ASTM D648	51 °C (124 °F)
Vicat Softening Temperature (Rate B/50)	ASTM D1525	54 °C (129 °F)
Glass Transition Temperature (Tg)	DMA (SSYS)	63 °C (145 °F)
Coefficient of Thermal Expansion (flow)	ASTM E831	101x10-06 µm/(m·°C) (56x10-06 µin/(in·°F))
Coefficient of Thermal Expansion (xflow)	ASTM E831	102x10-06 µm/(m·°C) (57x10-06 µin/(in·°F))

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Other	Test Method	Value
Specific Gravity	ASTM D792	1.264 g/cc

System Availability	Layer Thickness Capability	Value	
		XY	ZX
Volume Resistivity	ASTM D257	2.9E+15 ohm-cm	3.24E+15 ohm-cm
Dielectric Constant	ASTM D150-98	1.51	2.33
Dissipation Factor	ASTM D150-98	0.003	0.005
Dielectric Strength	ASTM D149-09, Method A	154 V/mil	293 V/mil

System Availability	Layer Thickness Capability	Support Structure	Available Colors
F123 Series	0.010 in. (0.254 mm)	Breakaway	Black White Green Red Medium Gray Natural Trans Yellow Trans Light Gray Blue Red Trans

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