

Fused Deposition Modeling

PLA

Polylactic Acid



Product Description

PLA is a very tough material with low UV and temperature resistance. PLA is ideal for detailed models, figures, and quick prototypes that do not require high mechanical, chemical or temperature resistance.

Applications

Its use is universal but especially suitable for detailed models, figures, and quick prototypes.

Tolerances

For well-designed parts, tolerances of ± 0.012 in. plus ± 0.002 in./in. for each additional inch can typically be achieved depending on part geometry. Note that tolerances may change depending on part geometry.



Key Material Benefits

- Good Strength and Rigidity
- Shiny and Smooth Appearance
- Minimal Warping
- Biodegradability



INTEGRATED MATRIX SOLUTIONS

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All of the figures contained on this datasheet are approximate and dependent on a number of factors, including but not limited to, machine and process parameters. The information provided is therefore, not binding and not deemed to be certified.

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Properties

PLA (Polylactic Acid)

Material Properties	Value	Test Method
Colors	Black, White, Grey, Clear, Yellow, Red, Orange, Green, Blue, Brown, Pink	-
Density [g/cm ³]	1.24	ISO 1183
Moisture Absorption in 24 hours [%] 24 °C; humidity 22 %	0.13	Supplier Tested
Moisture Absorption in 7 days [%] 24 °C; humidity 22 %	0.19	Supplier Tested
Heat Deflection Temperature (0.45 MPa) [°C]	55	ISO 75
Heat Deflection Temperature (1.80 MPa) [°C]	55	ISO 75
Tensile Yield Strength for Filament [MPa]	57 ± 1	ISO 527
Hardness – Shore D	81	Supplier Tested

Mechanical Properties	Value (X-Y)	Value (X-Z)	Test Method
Tensile Yield Strength [MPa]	51 ± 3	59 ± 2	ISO 527-1
Tensile Modulus [GPa]	2.3 ± 0.1	2.4 ± 0.1	ISO 527-1
Elongation at Yield Point [%]	2.9 ± 0.1	3.2 ± 1	ISO 527-1
Flexural Strength [MPa]	83 ± 2	99 ± 1	ISO 178
Flexural Modulus [GPa]	3.1 ± 0.1	3.2 ± 0.1	ISO 178
Deflection at Flexural Strength [mm]	7.4 ± 0.2	8.3 ± 0.2	ISO 178
Impact Strength Charpy [kJ/m ²] - Charpy Unnotched	13 ± 1	14 ± 1	ISO 179-1
Impact Strength Charpy Notched [kJ/m ²] - Charpy Notched	N/A	N/A	ISO 179-1

PLA Blended (Polylactic Acid blended with Polymers)

Material Properties	Value	Test Method
Colors	Black, White, Grey, Clear, Yellow, Red, Orange, Green, Blue, Brown, Pink	-
Density [g/cm ³]	1.24	ISO 1183
Moisture Absorption in 24 hours [%] 24 °C; humidity 22 %	0.13	Supplier Tested
Moisture Absorption in 7 days [%] 24 °C; humidity 22 %	0.19	Supplier Tested
Heat Deflection Temperature (0.45 MPa) [°C]	55	ISO 75
Heat Deflection Temperature (1.80 MPa) [°C]	52.5	ISO 75
Tensile Yield Strength for Filament [MPa]	45.3 ± 0.4	ISO 527
Hardness – Shore D	72 ± 1.5	Supplier Tested

Mechanical Properties	Value (X-Y)	Value (X-Z)	Test Method
Tensile Yield Strength [MPa]	32 ± 2	42 ± 1	ISO 527-1
Tensile Modulus [GPa]	1.6 ± 0.1	1.9 ± 0.1	ISO 527-1
Elongation at Yield Point [%]	3 ± 0.2	3.5 ± 1	ISO 527-1
Flexural Strength [MPa]	47 ± 1	60 ± 1	ISO 178
Flexural Modulus [GPa]	2 ± 0.1	1.6 ± 0.1	ISO 178
Deflection at Flexural Strength [mm]	7.5 ± 0.1	6.7 ± 0.1	ISO 178
Impact Strength Charpy [kJ/m ²] - Charpy Unnotched	13 ± 1	15 ± 1	ISO 179-1
Impact Strength Charpy Notched [kJ/m ²] - Charpy Notched	N/A	N/A	ISO 179-1

*Technical Values from Supplier Data Sheet

