3D printing solutions for high performance materials

PLA Technical Data Sheet(TDS)

Polylactic Acid (PLA) is a plastic extract from starch (commonly from corn) which is low environmental impact. It is a derivative of starch, green and renewable, a biodegradable material (degrade by itself in the soil), which is environmentally friendly.

IEMAI 3D high performance PLA filament is based on FFF/FDM technology, with a commonly used diameter of 1.75 mm, 190-220ºC printing temperature,50ºC bed temperature (May not necessary), having excellent interlayer adhesion which greatly improve the strength and shock resistance of the prototype.

PLA can print large models without a heating platform and warping will not happen easily. It has a low shrinkage rate and performs well even when printing large-size models. PLA is widely used in education, home, machinery, electronic appliances, instrumentation, and other fields.

PHYSICAL PROPERTIES		
Property	Testing Method	Typical Value
Density	ISO1183, GB/T1033	1.17 g/cm^3 at 21 °C
Melt Index	210°C, 2.16 Kg	7-10g/10min
Light Transmission	N/A	N/A
Flame retardancy	UL94	V2

CHEMICAL RESISTANT DATA	
Effect of weak acids	Not Resistant
Effect of strong acids	Not Resistant
Effect of weak alkalis	Not Resistant
Effect of strong alkalis	Not Resistant
Effect of organic solvent	No data available
Effect of oils and grease	No data available
Effect of Sunlight	No data available

Thermal Properties		
Property	Testing Method	Typical Value
Glass transition	DSC, 10°C/min	61 °C
Melting temperature	DSC, 10°C/min	150 °C
Crystallization temperature	DSC, 10°C/min	113.5 °C
Decomposition temperature	TGA, 20°C/min	N/A
Vicat softening temperature	ISO 306 GB/T 1633	62.9 °C
Heat deflection temperature	ISO 75 1.8MPa	58.1 °C
Heat deflection temperature	ISO 75 0.45MPa	59.8 °C

Thermal conductivity	N/A	N/A
Heat shrinkage rate	N/A	N/A

Mechanical		
Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2636 ± 330 MPa
Young's modulus (Z)		N/A
Tensile strength (X-Y)	ISO 527, GB/T 1040	46.6 ± 0.9 MPa
Tensile strength (Z)		43.5 ± 3.1 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	1.90 ± 0.21 %
Elongation at break (Z)		N/A
Bending modulus (X-Y)	ISO 178, GB/T 9341	3283 ± 132 MPa
Bending modulus (Z)		N/A
Bending strength (X-Y)	ISO 178, GB/T 9341	85.1 ± 2.9 MPa
Bending strength (Z)		N/A
Charpy impact strength (X-Y)	ISO 179, GB/T 9343	2.68 ± 0.16 KJ/m^2
Charpy impact strength (Z)		N/A

Print Recommendation	
Printing temperature	190 -220 ℃
Bed temperature	0-50 ℃
Print Speed	30-70 mm/s
Chamber Temperature	0-40 ℃
Cooling fan	0-100%