Polymaker Industrial

L1001/L1001U

Technical Data Sheet (Ver. 1.0, last updated: Dec., 2017)

L1001/L1001U is a PLA filament specifically engineered for 3D printing. L1001 is featured with Polymaker's Jam-Free™ technology (currently available for 1.75 mm only)

Physical Properties[1]

Property	Testing Method	Typical Value
Density (g/cm^3 at 21.5 °C)	ASTM D792 (ISO 1183, GB/T 1033)	1.2
Melt index (g/10 min)	210 °C, 2.16 kg	7.0 – 11.0
Glass transition temperature (°C)	DSC, 10 °C/min	61
Crystallization temperature (°C)	DSC, 10 °C/min	114
Softening temperature of filament (°C)	Custom method	129- 132
Melting temperature (°C)	DSC, 10 °C/min	150

1. Tested with 3D printed specimen of 100% infill

Mechanical Properties[1]

Property	Testing Method	Typical Value
Young's modulus (MPa) (X - Y)	ASTM D638 (ISO 527, GB/T 1040)	2636 ± 330
Tensile strength (MPa) (X - Y)	ASTM D638 (ISO527, GB/T 1040)	46.6 ± 0.9
Elongation at break (%) (X - Y)	ASTM D638 (ISO527, GB/T 1040)	1.9 ± 0.2
Bending modulus (MPa) (X - Y)	ASTM D790 (ISO 178, GB/T 9341)	3283 ± 132
Bending strength (MPa) (X - Y)	ASTM D790 (ISO 178, GB/T 9341)	85.1 ± 2.9
Charpy Impact strength (kJ/m^2) (X - Y)	ASTM D256 (ISO 179, GB/T 1043)	2.7 ± 0.2

1. All testing specimens were printed under the following conditions:

Nozzle temperature = 205 °C, printing speed = 60 mm/s

Recommended Printing Conditions[1]

Parameter	Recommended Setting
Nozzle temperature (°C)	190 - 220
Recommended build surface	BuildTak®, Blue Tape
Build plate temperature (°C)	40 - 55
Model cooling fan	Turned on
Printing speed (mm/s)	50 - 70
Raft separation distance (mm)	0.1 - 0.2
Retraction distance (mm)	1 - 3
Retraction speed (mm/s)	20 - 40
Recommended environmental temperature (°C)	Room temperature - 45
Threshold overhang angle (°)	45
Recommended support materials	PolySupport™, S01 (PI)
Other Comments	
• L1001/L1001U can be printed under conditions similar to most other PLA filaments	

1. Based on 0.4 mm nozzle and Simplify 3D v4.0. Printing conditions may vary with different nozzle diameters

Appendix: Testing Geometries

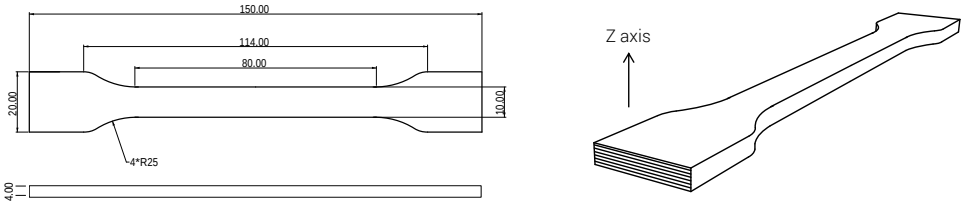

Fig 1. Tensile testing specimen

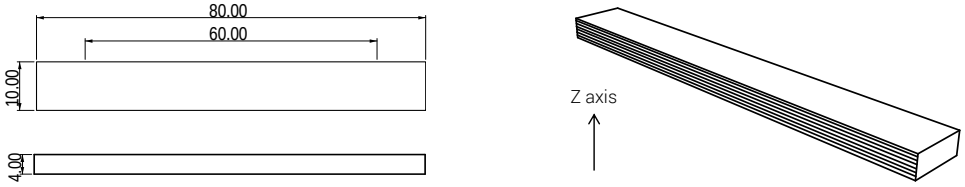

Fig 2. Flexural testing specimen

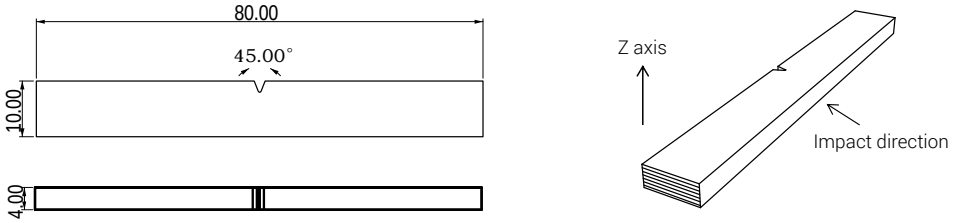

Fig 3. Impact testing specimen

Disclaimer

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End-use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc. Product specifications are subject to change without notice.

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