Raise3D Premium PLA Technical Data Sheet

Raise3D Premium PLA is a premium PLA designed for all desktop FDM/FFF printers. It ensures consistent extrusion and prevents nozzle jams.

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

Note:

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 (ISO 527, GB/T 1040)	46.6 ± 0.9
Elongation at break (%) (X - Y)	ASTM D638 (ISO 527, GB/T 1040)	1.90 ± 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

Note:

1. All testing specimens were printed using a Raise3D Pro2 under the following conditions: Printing temperature=205 ℃, printing speed=60 mm/s.

Recommended Printing Conditions[1]

Parameter	Recommended Setting
Nozzle temperature (°C)	190 - 220
Recommended build surface	BuildTak®, Blue Tap
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	Raise3D Premium PVA
Other Comments	
Premium PLA can be printed under conditions similar to most other PLA filaments	

Note:

1. Based on 0.4 mm nozzle and ideaMaker. Printing conditions may vary with different nozzle diameters.

Testing Geometries

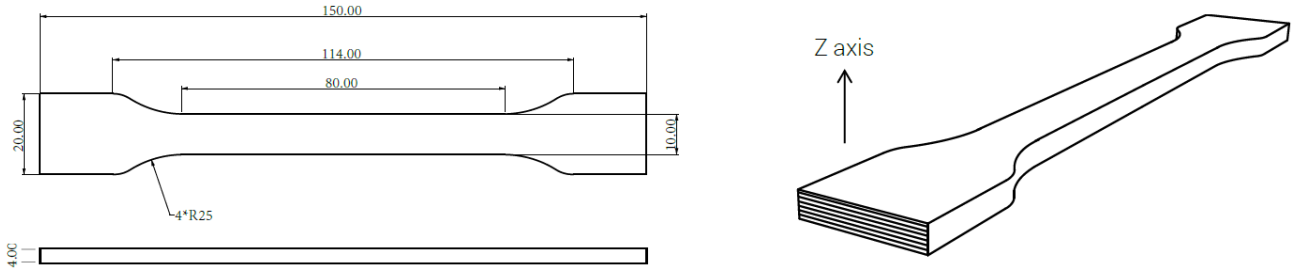

Fig 1. Tensile testing specimen

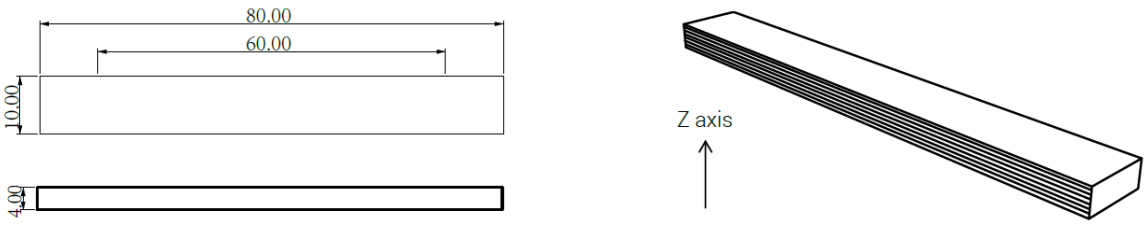

Fig 2. Flexural testing specimen

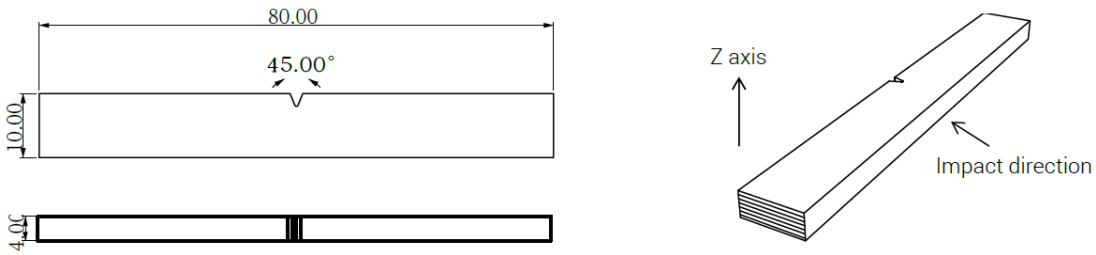

Fig 3. Impact testing specimen

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. Enduse 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.

Each user is responsible for determining the safety, lawfulness, technical suitability, and disposal/recycling practices of Raise3D materials for the intended application. Raise3D makes no warranty of any kind, unless announced separately, to the fitness for any particular use or application. Raise3D shall not be made liable for any damage, injury or loss induced from the use of Raise3D materials in any particular application.