Raise3D Hyper Speed PLA Technical Data Sheet

Hyper Speed PLA Filament is one of the specially developed high-speed filament line for FFF printing. During high-speed printing, the filament is rapidly fed into the heat block, and the polymer has very little time to melt itself from solid to a molten state, which can cause nozzle clogging and poor bonding quality between layers.

With optimized molecular weight and tunned flowability, Raise3D Hyper Speed PLA are able to achieve faster melting in the hot end and much prompter cooling after the material is extruded. As a result, the surface quality of parts printed by Hyper Speed filaments is smooth and most of the sharp details are kept. Most importantly, thanks to optimized molecular weight, Hyper Speed PLA shows excellent interlayer bonding quality and Z-direction strength. Therefore, Hyper speed PLA can be used for concept models and figures, prototyping, etc.

Physical Properties

Property	Testing Method	Typical Value
Density (g/cm^3)	ISO 1183, GB/T 1033	1.21
Heat Distortion Temperature (°C)	ISO 75 0.45MPa	53
Melt Flow Index (g/10 min)	190 °C, 2.16 kg	4.5
Water absorption (%)	ISO 62: Method 1	0.4
Odor	/	Almost odorless
Solubility	/	Insoluble in water

Mechanical Properties

Property	Testing Method	Typical Value
Young's modulus (X-Y)	ISO 527, GB/T 1040	2600 ± 215 MPa
Young's modulus (Z)	ISO 527, GB/T 1040	2475 ± 234 MPa
Tensile strength (X-Y)	ISO 527, GB/T 1040	48 ± 7 MPa
Tensile strength (Z)	ISO 527, GB/T 1040	39 ± 4 MPa
Elongation at break (X-Y)	ISO 527, GB/T 1040	9.6 ± 0.8 %

Elongation at break (Z)	ISO 527, GB/T 1040	3.8 ± 1.4 %
Bending modulus	ISO 178, GB/T 9341	2700 ± 154 MPa
Bending strength	ISO 178, GB/T 9341	81 ± 2 MPa
Impact strength	ISO 179, GB/T 1843	4.3 ± 1.3 KJ/m^2

Note:

All testing specimens were printed under the following conditions:

Nozzle diameter=0.4mm, nozzle temperature = 220 °C, printing speed = 200 mm/s, build plate temperature = 60 °C, infill = 100%

All specimens were conditioned at room temperature for 24h prior to testing.

Testing Geometries

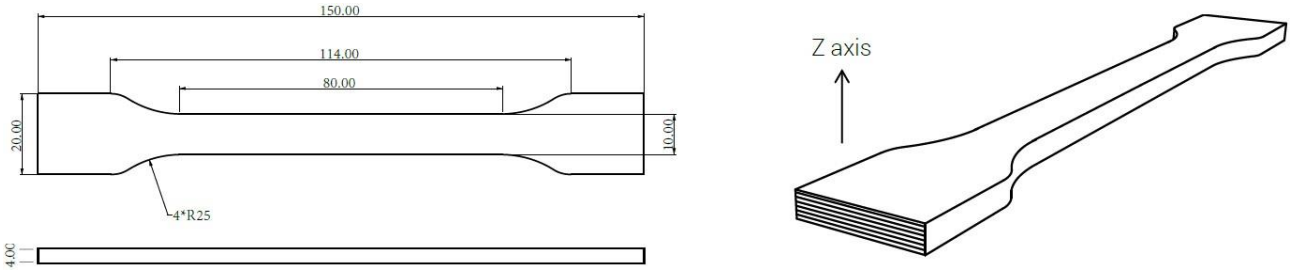

Fig 1. Tensile testing specimen

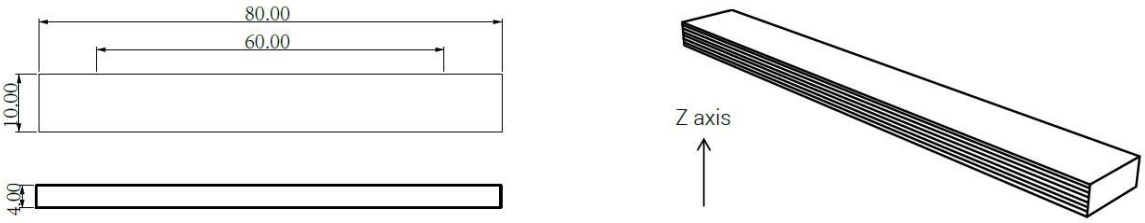

Fig 2. Flexural testing specimen

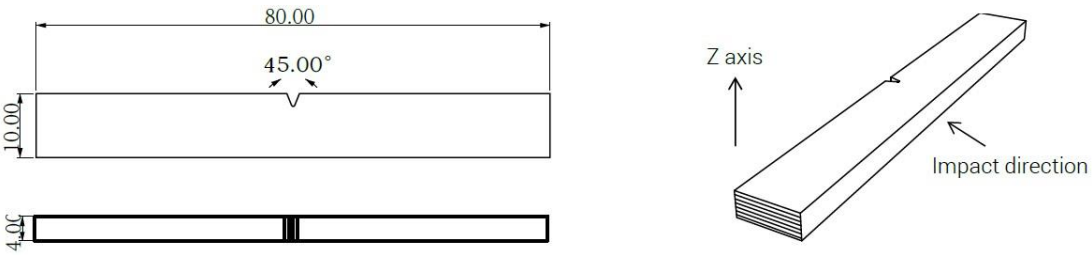

Fig 3. Impact testing specimen

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.

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