Raise3D Hyper Speed ABS V2 Technical Data Sheet

Hyper Speed ABS V2 filament is specifically designed to be used with the Hyper FFF™ solution from the Hyper Speed filament line. When printing at high speeds, the regular ABS filament is rapidly fed into the heat block, and the polymer has very little time to go from a solid to a molten state, which can cause nozzle clogging and poor bonding quality between layers. Additionally, the regular ABS filament can be subject to warpage and delamination of the printed part during high-speed printing without a heated chamber.

With optimized molecular weight and stiffness, Hyper Speed ABS V2 filament is capable of printing at the speed of up to 300 mm/s thanks to its faster melting and homogenous cooling, which results in a lower temperature gradient and lower inner stress of printed part. Hyper Speed ABS V2 filament exhibits superior heat resistance compared to Hyper Speed ABS filament. With almost no warpage and improved interlayer bonding, Hyper Speed ABS V2 filament is also perfectly suitable for many functional prototyping parts, tools and fittings with many different possibilities for post-processing and finishing methods (e.g., polishing and acetone vapor smoothing).

General Properties

Property	Testing Method	Typical Value
Density (g/cm^3)	ASTM D792	1.04
Water absorption (%)	ISO 62: Method 1	0.27
Diameter (mm)	/	1.75
Net weight (kg)	/	1.0
Color	/	Black, Grey
Odor	/	Almost odorless
Solubility	/	Insoluble in water

Mechanical Properties

Property	Testing Method	Typical Value (XY, Flat)	Typical Value (ZX, Upright)
Young's modulus (MPa)	ISO 527, GB/T 1040	2040 ± 58	2051 ± 82
Tensile strength (MPa)	ISO 527, GB/T 1040	26 ± 2	23 ± 3
Elongation at break (%)	ISO 527, GB/T 1040	7.63 ± 3.3	1.38 ± 0.03
Bending modulus (MPa)	ISO 178, GB/T 9341	2072 ± 35	/
Bending strength (MPa)	ISO 178, GB/T 9341	44 ± 2	/

Izod impact strength (kJ/m^2)	ISO 180, GB/T 1843	16.1 ± 0.9	/

Note:
All testing specimens were printed under the following conditions:
Nozzle diameter = 0.4 mm, nozzle temperature = 250°C, printing speed = 300 mm/s, build plate temperature = 90°C, infill = 100%
All specimens were conditioned at room temperature for 24 h prior to testing.

Thermal Properties

Property	Testing Method	Typical Value
Melt flow index (g/10 min)	220°C, 5 kg	21
Heat distortion temperature (°C)	ISO 75@0.45 MPa	77
	ISO 75@1.8 MPa	72

Other Information

Color	Color Code
Black	RAL 7021
Grey	RAL 7045

Testing Geometries

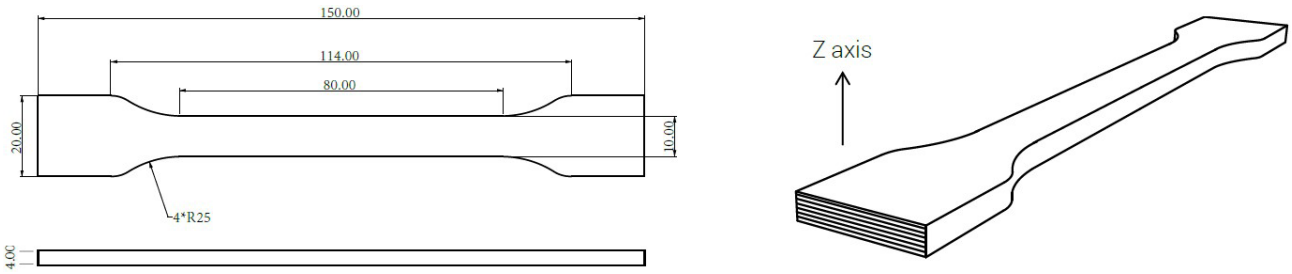


Fig 1. Tensile testing specimen

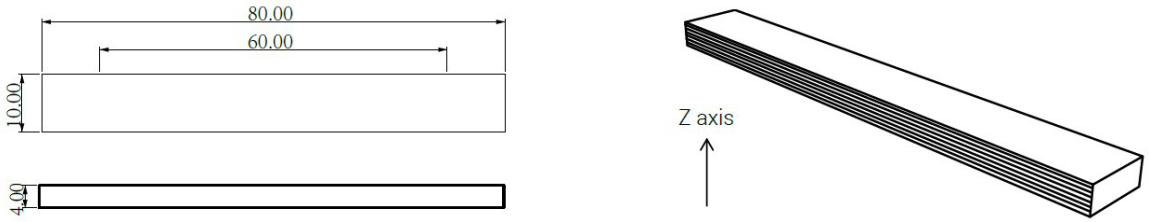


Fig 2. Flexural testing specimen

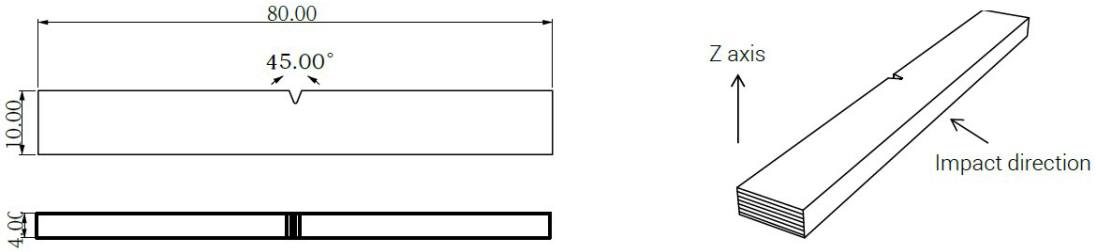
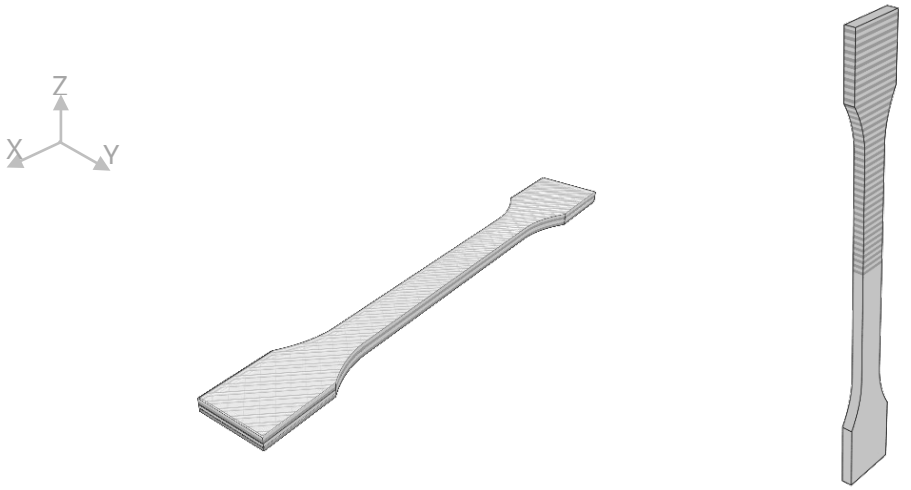


Fig 3. Impact testing specimen



XY, Flat **ZX, Upright**

Fig 4. Print Orientation

Fused filament fabrication (FFF)/fused deposition modeling is a layer-by-layer process allows thermoplastic to be printed in various orientations relative to the print direction. Due to anisotropy, the performance has a gap between the different orientation.

Note: All samples are printed with 100% infill; the lines in the Fig 4. indicate typical directionality of infill and walls in a printed part.

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.