Raise3D Hyper Speed PETG CF Technical Data Sheet

Raise3D Hyper Speed PETG CF is a carbon fiber reinforced (8 wt.% recycled CF) Polyethylene Terephthalate Glycol modified (PETG) filament optimized for Hyper FFF® technology (up to L2, 300 mm/s). Hyper speed PETG CF retains not only the excellent overall printing performance of PETG, but also exhibits enhanced matt carbon-fiber texture and improved mechanical, thermal properties, and dimensional stability through the incorporation of recycled carbon fibers. Raise3D Hyper speed PETG CF is an ideal choice for prototyping and end-use functional applications with superior surface finishing, reliability and cost efficiency.

General Properties

Property	Testing Method	Typical Value
Density (g/cm³)	ISO 1183, GB/T 1033	1.30
Water absorption (%)	70% RH, 30 days	0.55
Diameter (mm)	/	1.75
Net weight (kg)	/	1.0
Color	/	Black
Odor	/	Almost odorless
Solubility	/	Insoluble in water
Flame retardancy	UL94, 1.5mm	HB
Surface resistivity (Ω)	ANSI ESD S11.11	OL, $>10^{12}$

Mechanical Properties

Property	Testing Method	Typical Value (XY, Flat)	Typical Value (ZX, Flat)
Young's modulus (MPa)	ISO 527	3700± 150	2600 ± 50.0
Tensile strength (MPa)	ISO 527	60 ± 0.3	40 ± 4.1
Elongation at break (%)	ISO 527	6.0 ± 1.0	2.0 ± 0.3
Bending modulus (MPa)	ISO 178	3800 ± 40.6	1700 ± 104.6
Bending strength (MPa)	ISO 178	95 ± 1.3	48 ± 2.4
Charpy impact strength (kJ/m²)	ISO 179	18.0 ± 1.1 (Un-notched) 4.0 ± 0.9 (Notched)	/

[1]All testing specimens were printed under the following conditions:
Nozzle temp. =270 ºC; Bed temp.= 60 ºC; Infill= 100%.

Thermal Properties

Property	Testing Method	Typical Value
Melt flow index (g/10 min)	230 °C, 2.16 kg	12
Heat distortion temperature (°C)	ISO 75 @0.45 MPa	69
	ISO 75 @1.8 MPa	65

Other Information

Color	Color Code
Black	6c

Note:
1. Abrasion of the brass nozzle happens frequently when printing Hyper Speed PETG CF. Normally, the life of a brass nozzle would be approximately 9h. A wear-resistance nozzle, such as hardened steel and ruby nozzle, is highly recommended to be used with Hyper Speed PETG CF.
2. Hyper Speed PETG CF is sensitive to moisture and should always be stored and used under dry conditions (relative humidity below 20%).

Testing Geometries

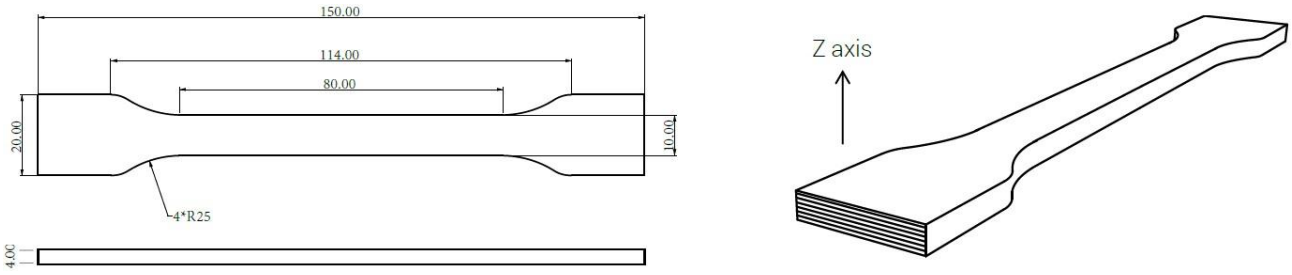


Fig 1. Tensile testing specimen

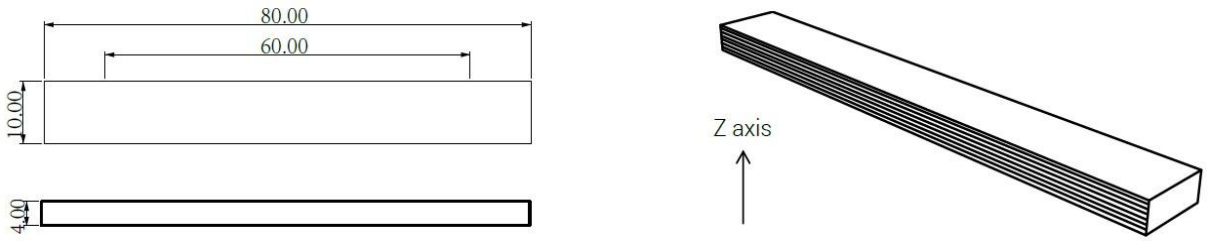


Fig 2. Flexural testing specimen

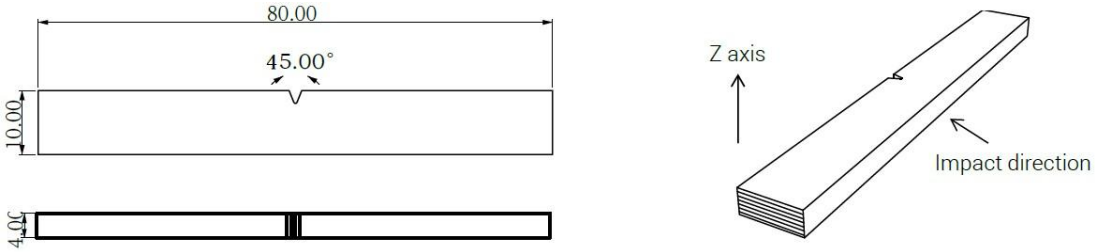
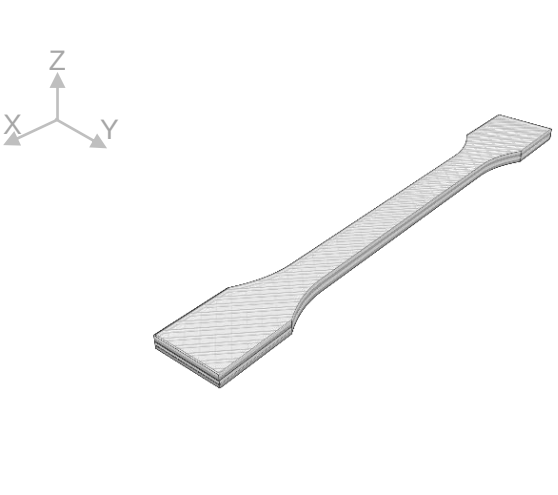


Fig 3. Impact testing specimen



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. 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.
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.