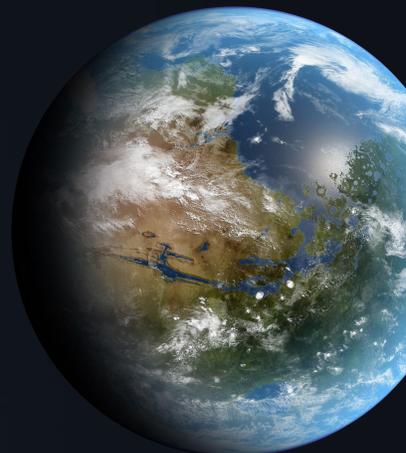


### Ultra PA12

Modified Polyamide 12 with 25% Carbon Fiber



- Easy and High Speed Printing (50-250 mm/s)
- High Strength & Stiffness
- Excellent Surface Finish
- Broadened Printer Compatibility

### Mechanical Information

Low Print Speed at 50 mm/s:

Property	Method	XY Orientation	ZX Orientation
Tensile Modulus	ISO 527-2 Type 1BA	15.0 GPa	1.6 GPa
Tensile Strength at Yield	ISO 527-2 Type 1BA	123.1 MPa	27.9 MPa
Tensile Strength at Break	ISO 527-2 Type 1BA	123.1 MPa	27.9 MPa
Strain at Yield	ISO 527-2 Type 1BA	0.8 %	1.3 %
Strain at Break	ISO 527-2 Type 1BA	3.3 %	3.9 %
Impact Data IZOD*	ISO 180	- kJ/m <sup>2</sup>	- kJ/m <sup>2</sup>

Medium Print Speed at 150 mm/s:

Property	Method	XY Orientation	ZX Orientation
Tensile Modulus	ISO 527-2 Type 1BA	12.0 GPa	1.5 GPa
Tensile Strength at Yield	ISO 527-2 Type 1BA	105.1 MPa	22.4 MPa
Tensile Strength at Break	ISO 527-2 Type 1BA	105.1 MPa	22.4 MPa
Strain at Yield	ISO 527-2 Type 1BA	0.8 %	1.2 %
Strain at Break	ISO 527-2 Type 1BA	3.1 %	2.9 %



## High Print Speed at 250 mm/s:

Property	Method	XY Orientation	ZX Orientation
Tensile Modulus	ISO 527-2 Type 1BA	11.7 GPa	1.3 GPa
Tensile Strength at Yield	ISO 527-2 Type 1BA	95.2 MPa	18.2 MPa
Tensile Strength at Break	ISO 527-2 Type 1BA	95.2 MPa	18.2 MPa
Strain at Yield	ISO 527-2 Type 1BA	0.8 %	1.1 %
Strain at Break	ISO 527-2 Type 1BA	2.9 %	2.4 %

## Thermal & Physical Properties

Property	Method	Value
Glass Transition Temperature (Tg)	ISO 11357-2	°C
Melting Temperature (Tm)	ISO 11357-3	°C
Density	ISO 1183-1	1.21 g/cm <sup>3</sup>
Filament Diameter (+/- 0.05 mm)	-	1.75 mm

## Recommended Processing Conditions

Category	Description
Drying Instruction for Filament	80 °C for 6-8 hours before printing
Nozzle Temperature	Recommended 275°C (270°C - 290°C)
Bed Temperature	Recommended 110°C (90°C - 120°C)
Chamber Temperature	Recommended 65°C (23°C - 90°C) ambient temp. possible
Bed Material	Glass, PEI Sheet, Carbon Plate
Adhesion Powder	Magigoo PA, VisionMiner Nanopolymer adhesive
Nozzle Diameter	≥ 0.4mm, hardened steel nozzle
Print Speed	50 - 250 mm/s
Max Volumetric Speed	22 mm <sup>3</sup> /s at 250 mm/s print speed
Annealing	Post print annealing is not required

### Print Information

Ultra PA12 samples were printed at 50mm/s, 150 mm/s, and 250 mm/s on a BambuLabs H2D printer. The chamber temperature was maintained at 90°C. XZ and ZX bars were cut out of 3D printed plates on edge and in Z-direction for testing mechanical properties.

