

Same Day. Strong Parts.

Designed to print parts with the strength of metal, the Mark Two Industrial Strength 3D Printer™ is the world's first 3D printer capable of printing continuous carbon fiber, Kevlar®, and fiberglass. Using a patent pending Continuous Filament Fabrication (CFF™) print head alongside a Fused Filament Fabrication (FFF) print head, the Mark Two can create functional parts by combining our specially tuned nylon with continuous fiber filaments.

3D Print Parts:

- With a higher strength-to-weight ratio than 6061-T6 Aluminum
- Up to 27x stiffer than ABS
- Up to 24x stronger than ABS



Mechanical Properties

Property	Test Standard	Nylon	Fiber CFF	Kevlar® CFF	Fiberglass
Tensile Strength (MPa)	Fiber: ASTM D3039 Nylon: ASTM D638	53.8	700	610	590
Tensile Modulus (GPa)	Fiber: ASTM D3039 Nylon: ASTM D638	0.94	50	26	20
Tensile Strain at Break (%)	Fiber: ASTM D3039 Nylon: ASTM D638	260	1.5	5.5	5.5
Flexural Strength (MPa)	ASTM D790*	32	470	190	210
Flexural Modulus (GPa)	ASTM D790*	0.84	48	24	21
Flexural Strain at Break (%)	ASTM D790*	N/A	12	2.1	2.1
Compressive Strength (MPa)	ASTM D6641	N/A	320	97	140
Compressive Modulus (GPa)	ASTM D6641	N/A	50	26	20
Compressive Strain at Break (%)	ASTM D6641	N/A	0.7	1.5	0.7
Heat Deflection Temperature (C°)	ASTM D648 Method B	44-50	105	105	105

*Measured by a method similar to ASTM D790

Dimensions and Construction of Test Specimens

- Test plaques used in this data are fiber reinforced unidirectionally [0° Plies]
- Tensile test specimens:
9.8 in (L) x 0.5 in (H) x 0.048 in (W) [CF composites],
9.8 in (L) x 0.5 in (H) x 0.08 in (W) [GF and aramid composites]
- Compressive test specimens: 5.5 in (L) x 0.5 in (H) x 0.085 in (W) [CF composites], 5.5 in (L) x 0.5 in (H) x 0.12 in (W) [aramid and GF composites]
- Flexural test specimens: 3-pt. Bending, 4.5 in (L) x 0.4 in (W) x 0.12 in (H)
- Heat-deflection temperature at 0.45 MPa, 66 psi [ASTM D648-07 Method B]

The Mark Two Industrial Strength 3D Printer is capable of printing a wide variety of fiber reinforcement patterns creating both anisotropic and quasi-isotropic ply constructions. This data sheet gives reference and comparison material properties using one possible set of standards-compliant ASTM plaques printed with a production Mark Two 3D printer.

However, part and material performance will vary by ply design, part design, end-use conditions, test conditions, build conditions, and the like.

Tensile, Compressive, Strain at Break, and Heat Deflection Temperature data were provided by an accredited 3rd party test facility. Flexural data was prepared by MarkForged, Inc. The above specifications were met or exceeded.

This representative data was tested, measured, or calculated using standard methods and is subject to change without notice. MarkForged makes no warranties of any kind, express or implied, including, but not limited to, the warranties of merchantability, fitness for a particular use, or warranty against patent infringement; and assumes no liability in connection with the use of this information. The data listed here should not be used to establish design, quality control, or specification limits, and is not intended to substitute for your own testing to determine suitability for your particular application. Nothing in this sheet is to be construed as a license to operate under or a recommendation to infringe upon any intellectual property right.

© MarkForged, Inc. 2016. All rights reserved. Kevlar® is a registered trademark of DuPont E.I. du Pont de Nemours and Company or its affiliates.