



# Composite Printer Comparison

## Desktop Series

Reliable entry-level machines. Accurate parts with good surface finish. Prints with standard materials.

## Industrial Series

Industrial-grade machines with large build envelope. Superior accuracy, resolution, and speed. Full industrial material portfolio.

## Production Series

Production-grade machine with largest build envelope and Blacksmith. Maximum speed printing, highest accuracy, and integrated material storage. Full material portfolio, including ULTEM™ 9085 filament<sup>1</sup>.

[markforged.com](http://markforged.com)

	Onyx One™	Onyx Pro™	Mark Two™	X3™	X5™	X7™	FX20™
<b>Process</b>							
Fused Filament Fabrication	x	x	x	x	x	x	x
Continuous Fiber Reinforcement		x	x		x	x	x
<b>Base Materials<sup>3</sup></b>							
Onyx™ (Micro carbon fiber filled nylon)	x	x	x	x	x	x	x
Onyx ESD™				x	x	x	x
Onyx FR™ <sup>2</sup>				x	x	x	x
Nylon			x	x	x	x	x
ULTEM™ 9085 Filament <sup>1</sup> (including dedicated support material)							x
<b>Continuous Fibers<sup>3</sup></b>							
Continuous Fiberglass		x	x		x	x	x
Continuous Carbon Fiber			x			x	x
Continuous Carbon Fiber FR <sup>2</sup>						x	x
Continuous Carbon Fiber for ULTEM™ Filament <sup>1</sup>							x
Continuous HSHT Fiberglass			x			x	x
Continuous Aramid Fiber (Kevlar®) <sup>4</sup>			x			x	x
<b>Advanced Features</b>							
Out-of-Plastic Detection	x	x	x	x	x	x	x
Out-of-Fiber Detection					x	x	x
Fiber Jam Detection		x	x		x	x	x
Adaptive Bed Leveling				x	x	x	x
Automated Bed Leveling							x
Micron Precision Linear Encoders							x
Max Speed	x	x	x	x	x	2x	4x
Blacksmith™ (compatible)						x	x
<b>Hardware</b>							
Build Volume	320 x 132 x 154 mm (12.6 x 5.2 x 6.0 in)			330 x 270 x 200 mm (13.0 x 10.6 x 7.9 in) (2.7X larger than Desktop Series)			525 x 400 x 400 mm (20.7 x 15.7 x 15.7 in) (4.7x larger than Industrial Series)
Print Bed	Flat to within 160 µm; Kinematic coupling Manual shim leveling			Flat to within 80 µm; Kinematic coupling Manual laser-assisted leveling			Precision ground aluminum vacuum bed Auto leveling
Z Resolution Range	100 - 200 µm			50 - 200 µm	50 - 250 µm		50 - 250 µm
Build Chamber	Not heated						Heated up to 200°C
Material Storage	Outboard dry box			Inboard dry box			Integrated humidity controlled chamber
Supports	Same material breakaway supports						Same material breakaway supports (Onyx) Dedicated breakaway support (ULTEM™ filament <sup>1</sup> )
Infill	Closed-cell infill; Multiple geometries available						
<b>Specifications</b>							
Storage	Cloud included; Offline available						
Power	100-240 VAC, 150W (2A peak)						200-240VAC 3P+E, 24A or 347-416VAC 3P+N+E, 14A; 8 kW
Weight	16 kg (35 lb)			48 kg (106 lb)			453 kg (1000 lb)
Footprint	584 x 330 x 355 mm (23 x 13 x 14 in)			584 x 483 x 914 mm (23 x 19 x 36 in)			1325 x 900 x 1925 mm (52 x 36 x 76 in)

<sup>1</sup>ULTEM™ and 9085 trademarks are used under license from SABIC, its affiliates or subsidiaries.

<sup>2</sup>Available in -A version with traceability.

<sup>3</sup>Support for all Markforged plastic and fiber materials on the FX20 will be added over time, although not every combination.

<sup>4</sup>Dupont™ and Kevlar® are trademarks and registered trademarks of E. I. du Pont de Nemours and Company.