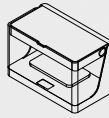


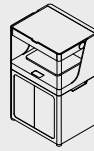
# Composite Printer Comparison

markforged.com



## 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 Inspection. Maximum speed printing, highest accuracy, and integrated material storage. Full material portfolio, including ULTEM™ 9085 filament¹.

	Onyx One™	Onyx Pro™	Mark Two™	X3™	X7™	FX20™
Process						
Fused Filament Fabrication	x	x	x	x	x	x
Continuous Fiber Reinforcement		x	x		x	x
Base Materials³						
Onyx™ (Micro carbon fiber filled nylon)	x	x	x	x	x	x
Onyx ESD™				x	x	x
Onyx FR™²				x	x	x
Nylon			x	x	x	x
Precise PLA		x	x	x	x	
Smooth TPU 95A		x	x	x	x	
ULTEM™ 9085 Filament¹ (including dedicated support material)						x
Continuous Fibers³						
Continuous Fiberglass		x	x		x	x
Continuous Carbon Fiber			x		x	x
Continuous Carbon Fiber FR²					x	x
Continuous Carbon Fiber for ULTEM™ Filament¹						x
Continuous HSHT Fiberglass			x		x	x
Continuous Aramid Fiber (Kevlar®)⁴			x		x	x
Advanced Features						
Out-of-Plastic Detection	x	x	x	x	x	x
Out-of-Fiber Detection					x	x
Fiber Jam Detection		x	x		x	x
Adaptive Bed Leveling				x	x	x
Automated Bed Leveling						x
Micron Precision Linear Encoders						x
Max Speed	1x	1x	1x	1x	2x	4x
Inspection (compatible)				x	x	x
Hardware						
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™ filament¹)
Infill	Closed-cell infill; Multiple geometries available					
Specifications						
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)		530 kg (1170 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)

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

²Available in -A version with traceability.

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

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