

# **Stratasys FDM 3D Printers and Materials.**

Reliable. Repeatable. Exceptional.



# Stronger. Faster. Better.

The FDM technology with unmatched versatility and proven performance.





### Flexible options. Durable results.

FDM<sup>®</sup> (fused deposition modeling) 3D Printers offer unparalleled versatility to turn your CAD files into durable parts. These parts are tough enough to be used as advanced conceptual models, functional prototypes, manufacturing tools and production parts. Engineers can produce a wide variety of products just by loading different files and materials. No traditional machining process can do that.



## Superior materials. Unrivalled repeatability.

FDM technology works with engineering-grade thermoplastics to build strong, long-lasting and dimensionally stable parts with the best accuracy and repeatability of any 3D printing technology. FDM machines make parts with the most commonly used thermoplastics, such as ABS, polycarbonate, a variety of blends, as well as engineered thermoplastics for aerospace, medical, automotive, electronic and other specialty applications. When using 3D printing for validation prototypes and the production of finished goods, using a durable, proven thermoplastic is all the more important, and it may be the only choice for many applications.



### **Bigger parts.** Improved designs.

FDM systems are as versatile and durable as the parts they produce. The most advanced FDM 3D Printers boast the largest build envelopes and material capacities in their class, delivering longer, uninterrupted build times, bigger parts and higher production run quantities than other additive manufacturing systems. Plus, they're true production workhorses, delivering the high throughput, duty cycles and utilization rates that make digital manufacturing not only possible, but practical.







## Faster workflow. Efficient processes.

FDM 3D Printers can streamline processes from design through manufacturing, reducing costs and eliminating traditional barriers along the way. With FDM, a designer can create an idea, and test it the same day. Industries can cut lead times and costs, products turn out better, and get to market faster. Breakthrough designs, process innovations, just-intime manufacturing — whatever you can imagine, FDM can make it happen.

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## More materials. More benefits.



Material	Highlights
Antero™ 800NA (polyetherketoneketone)	<ul> <li>High heat and chemical resistance</li> <li>Low outgassing and high dimensional stability</li> <li>Excellent strength, toughness and wear-resistant properties</li> </ul>
Antero™ 840CN03	<ul> <li>Excellent ESD (electrostatic dissipative) properties</li> <li>High heat and chemical resistance</li> <li>Low outgassing and high dimensional stability</li> <li>Excellent strength, toughness and wear-resistant properties</li> </ul>
ULTEM™ 1010 resin (polyetherimide)	<ul><li>Food safety and bio-compatibility certification</li><li>Highest heat resistance, chemical resistance and tensile strength</li><li>Outstanding strength and thermal stability</li></ul>
ULTEM™ 9085 resin (polyetherimide)	<ul> <li>FST (flame, smoke, toxicity)-certified thermoplastic</li> <li>High heat and chemical resistance; highest flexural strength</li> <li>Ideal for commercial transportation applications such as airplanes, buses, trains and boats</li> </ul>
PPSF (polyphenylsulfone)	<ul><li>Mechanically superior material, greatest strength</li><li>Ideal for applications in caustic and high heat environments</li></ul>
ST-130™ (Sacrificial Tooling)	<ul> <li>Designed specifically for hollow composite parts</li> <li>Fast, hands-free dissolution time</li> <li>High heat and autoclave pressure resistance</li> </ul>
FDM Nylon 6™ (polyamide 6)	<ul><li>Combines strength and toughness superior to other thermoplastics</li><li>Produces durable parts with a clean finish and high break resistance</li></ul>
FDM Nylon 12™ (polyamide 12)	<ul> <li>The toughest nylon in additive manufacturing</li> <li>Excellent for repetitive snap fits, press fit inserts and fatigue-resistance applications</li> <li>Simple, clean process – free of powders</li> </ul>
FDM Nylon 12CF™ (polyamide 12CF)	<ul> <li>Carbon fiber reinforced thermoplastic with excellent structural characteristics</li> <li>Highest flexural strength</li> <li>Highest stiffness-to-weight ratio</li> </ul>
PC (polycarbonate)	<ul> <li>Most widely used industrial thermoplastic with superior mechanical properties and heat resistance</li> <li>Accurate, durable and stable for strong parts, patterns for metal bending and composite work</li> <li>Great for demanding prototyping needs, tooling and fixtures</li> </ul>
PC-ISO™ (polycarbonate - ISO 10993 USP Class VI biocompatible)	<ul> <li>Biocompatible (ISO 10993 USP Class VI)<sup>1</sup> material</li> <li>Sterilizable using gamma radiation or ethylene oxide (EtO) sterilization methods</li> <li>Best fit for applications requiring higher strength and sterilization</li> </ul>
PC-ABS (polycarbonate - acrylonitrile butadiene styrene)	<ul> <li>Superior mechanical properties and heat resistance of PC</li> <li>Excellent feature definition and surface appeal of ABS</li> <li>Hands-free support removal with soluble support</li> </ul>
ASA (acrylonitrile styrene acrylate)	<ul> <li>Build UV-stable parts with the best aesthetics of any FDM material</li> <li>Ideal for production parts for outdoor infrastructure and commercial use, outdoor functional prototyping and automotive parts and accessory prototypes</li> </ul>
ABS-ESD7™ (acrylonitrile butadiene styrene - static dissipative)	<ul> <li>Static-dissipative with target surface resistance of 10<sup>7</sup> ohms (typical range 10<sup>9</sup> – 10<sup>6</sup> ohms)<sup>2</sup></li> <li>Makes great assembly tools for electronic and static-sensitive products</li> <li>Widely used for functional prototypes of cases, enclosures and packaging</li> </ul>
ABS-M30i™ (acrylonitrile butadiene styrene - ISO 10993 USP Class VI biocompatible)	<ul> <li>Biocompatible (ISO 10993 USP Class VI)1 material</li> <li>Sterilizable using gamma radiation or ethylene oxide (EtO) sterilization methods</li> <li>Best fit for applications requiring good strength and sterilization</li> </ul>
ABS-M30™ (acrylonitrile butadiene styrene)	<ul><li>Versatile material: good for form, fit and functional applications</li><li>Familiar production material for accurate prototyping</li></ul>
Diran™ 410MF07	<ul><li>Good mechanical properties and toughness</li><li>Smooth texture with low sliding friction</li><li>Best fit for production of jigs, fixtures and manufacturing aids</li></ul>
PLA (Polylactic acid)	<ul> <li>Fast printing</li> <li>Good tensile strength</li> <li>Economical and user-friendly</li> <li>Ideal for concept models</li> </ul>
FDM™ TPU 92A (thermoplastic polyurethane)	<ul> <li>Elastomer material with Shore A value of 92</li> <li>Extremely flexible, durable and resilient</li> <li>Compatible with soluble support</li> <li>Accelerates elastomer prototyping without the need for molds</li> </ul>

<sup>1</sup> It is the responsibility of the finished device manufacturer to determine the suitability of all the component parts and materials used in their finished products.

<sup>2</sup> Actual surface resistance may range from 109 to 106 ohms, depending upon geometry, build style and finishing techniques.

## A printer for every purpose.







F120™	F170™	F270™	
10 x 10 x 10 in. (254 x 254 x 254 mm)	10 x 10 x 10 in. (254 x 254 x 254 mm)	12 x 10 x 12 in. (305 x 254 x 305 mm)	
35 x 35 x 29 in. (889 x 889 x 721 mm).	64 x 34 x 28 in. (1626 x 864 x 711 mm)	64 x 34 x 28 in. (1626 x 864 x 711 mm)	
275 lbs (124 kg)	500 lbs (227 kg) with consumables	500 lbs (227 kg) with consumables	
ABS-M30, ASA	ABS-M30, ASA, PLA, FDM TPU 92A	ABS-M30, ASA, PLA, FDM TPU 92A	
1.5 x (standard mode)	1.5 x (standard mode)	1.5 x (standard mode)	
3 x (fast-draft mode)	3 x (fast-draft mode)	3 x (fast-draft mode)	
Parts are produced within an accuracy of +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm), whichever is greater.	Parts are produced within an accuracy of +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm), whichever is greater.	Parts are produced within an accuracy of +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm), whichever is greater.	
	10 x 10 x 10 in.         (254 x 254 x 254 mm)         35 x 35 x 29 in.         (889 x 889 x 721 mm),         275 lbs (124 kg)         ABS-M30, ASA         1.5 x (standard mode)         3 x (fast-draft mode)         Parts are produced within an accuracy of +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm),	10 x 10 x 10 in.       10 x 10 x 10 in.         (254 x 254 x 254 mm)       (254 x 254 x 254 mm)         35 x 35 x 29 in.       64 x 34 x 28 in.         (889 x 889 x 721 mm),       (1626 x 864 x 711 mm)         275 lbs (124 kg)       500 lbs (227 kg) with consumables         ABS-M30, ASA       ABS-M30, ASA, PLA, FDM TPU 92A         1.5 x (standard mode)       1.5 x (standard mode)         3 x (fast-draft mode)       3 x (fast-draft mode)         Parts are produced within an accuracy of +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm),       Parts are produced within an accuracy of +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm),	

Software

**GrabCAD Print**<sup>TM</sup>: GrabCAD Print simplifies the traditional 3D print preparation workflow and provides intelligence around printer usage so your team can get quality prints, faster. Print directly from CAD, organize print queues, monitor material levels and work with detailed views of your model. The tray and slice preview feature supports adjustments before going to print.



	F370™	Fortus 380mc™³	Fortus 450mc™	F900™			
Build Envelope	14 x 10 x 14 in. (355 x 254 x 355 mm)	14 x 12 x 12 in. (355 x 305 x 305 mm)	16 x 14 x 16 in. (406 x 355 x 406 mm)	36 x 24 x 36 in. (914 x 610 x 914 mm)			
Custom Cize Maight	64 x 34 x 28 in. (1,626 x 864 x 711 mm)	50 x 35.5 x 76.5 in. (1,270 x 901.7 x 1,984 mm)	50 x 35.5 x 76.5 in. (1,270 x 901.7 x 1,984 mm)	109.1 x 66.3 x 79.8 in. (2,772 x 1,683 x 2,027 mm)			
System Size/Weight	500 lbs (227 kg) with consumables	1,325 lbs (601 kg)	1,325 lbs (601 kg)	6,325 lbs (2,869 kg)			
Material Options	<b>F370:</b> ABS-M30, ASA, PC-ABS, PLA, Diran 410MF07, ABS-ESD7,	ABS-M30, ABS-M30i, ABS-ESD7, ASA, PC-ISO, PC, PC-ABS, FDM Nylon 12	ABS-M30, ABS-M30i, ABS-ESD7, Antero 800NA, ASA, PC-ISO, PC, PC-ABS, FDM Nylon 12,	ABS-M30, ABS-M30i, ABS-ESD7, Antero 800NA, Antero 840CN03, ASA, PC-ISO, PC, PC-ABS, PPSF, FDM Nylon 12, FDM Nylon 12CF, FDM Nylon 6, ST-130, ULTEM™ 9085 resin, ULTEM™ 1010 res			
	FDM TPU-92A	Fortus 380mc Carbon Fiber Edition: ASA and FDM Nylon 12CF	FDM Nylon 12CF, ST-130, ULTEM™ 9085 resin, ULTEM™ 1010 resin				
Throughput Comparison	1.5 x (standard mode)	2.0 x	2.0 x	2.1 x			
moughput companson	3 x (fast-draft mode)	2.0 X	2.0 X				
Part Accuracy <sup>1</sup>	Parts are produced within an accuracy of: +/008 in. (.200 mm), or +/002 in./in. (.002 mm/mm), whichever is greater.	Parts are produced within an accuracy of $\pm$ .005 in. (.127 mm) or $\pm$ .0015 in./in. (.0015 mm/mm), whichever is greater.	Parts are produced within an accuracy of ± .005 in. (.127 mm) or ± .0015 in./in. (.0015 mm/mm), whichever is greater.	Parts are produced within an accuracy of $\pm$ .0035 in. (.09 mm) or $\pm$ .0015 in./in. (.0015 mm/mm), whichever is greater. <sup>2</sup>			
	automatically slicing and can override Insight's defa	generating support structures	and material extrusion paths i ers that control the look, stren	nufactured on an FDM 3D Printer by n one push of a button. If necessary, users agth and precision of parts as well as the			
Software	<b>Control Center™:</b> Control Center is the software that communicates between the user workstation(s) and the FDM system(s), managing jobs and monitoring the production status of FDM systems. This software application provides the control to maximize efficiency, throughput and utilization while minimizing response time. Control Center is included with Insight software.						
	<b>GrabCAD Print:</b> GrabCAD Print simplifies the traditional 3D print preparation workflow and provides intelligence around printer usage so your team can get quality prints, faster. Print directly from CAD, organize print queues, monitor material levels and work						

<sup>1</sup> Accuracy is geometry-dependent. Achievable accuracy specification derived from statistical data at 95% dimensional yield. Z part accuracy includes an additional tolerance of -0.000/+slice height.

with detailed views of your model. The tray and slice preview feature supports adjustments before going to print.

<sup>2</sup> See Fortus 900mc accuracy study white paper for more information.

<sup>3</sup> Fortus 380mc Carbon Fiber Edition runs only ASA and FDM Nylon 12CF, but is identical to the Fortus 380mc otherwise.

## Premium materials. Premium performance.

FDM 3D Printers use a variety of engineering-grade thermoplastics to manufacture functional parts direct from digital data. FDM thermoplastics are environmentally stable, so overall shape and part accuracy don't change with ambient conditions over time, unlike the powders in competitive processes. Materials are easy to change on FDM 3D Printers, with no mess or complicated processes. When combined with FDM 3D Printers, FDM thermoplastics give you high-quality thermoplastic parts that are ideal for concept modeling, functional prototyping, manufacturing tools or production parts.

	Antero 800NA	Antero 840CN03	ULTEM™ 1010 resin	ULTEM™ 9085 resin	PPSF	ST-130
	Fortus 450mc	F900	Fortus 450mc	Fortus 450mc	F900	Fortus 450mc
System Availability	F900		F900	F900		F900
	0.010 in. (0.254 mm)	0.010 in. (0.254 mm)	0.020 in. (0.508 mm) <sup>11</sup>	0.013 in. (0.330 mm) <sup>10</sup>	0.013 in. (0.330 mm) <sup>3</sup>	0.013 in. (0.330 mm)
Layer Thickness			0.013 in. (0.330 mm)	0.010 in. (0.254 mm)	0.010 in. (0.254 mm)	
			0.010 in. (0.254 mm)			
Support Structure	Breakaway	Breakaway	Breakaway	Breakaway	Breakaway	Breakaway
Available Colors	Natural	■ Black	Natural	<ul><li>Tan</li><li>Black</li></ul>	Tan	Natural
Tensile Strength	<b>XZ:</b> 13,504 psi (94 MPa)	<b>XZ:</b> 13,610 psi (95 MPa)	<b>XZ:</b> 11,735 psi (81 MPa)	<b>XZ:</b> 9,950 psi (69 MPa)	<b>XZ:</b> 8,000 psi	N/A
(Ultimate) <sup>2</sup>	<b>ZX:</b> 6,650 psi (47 MPa)	<b>ZX:</b> 7,320 psi (50 MPa)	<b>ZX:</b> 5,400 psi (37 MPa)	<b>ZX:</b> 6,100 psi (42 (MPa)	(55 MPa)	
Tensile Elongation <sup>2</sup>	<b>XZ:</b> 6.40 ± 1.05%	<b>XZ:</b> 6%	<b>XZ:</b> 3.3%	<b>XZ:</b> 5.8%	<b>XZ:</b> 3.0%	N/A
	<b>ZX:</b> 1.22 ± 0.28%	<b>ZX:</b> 1.8%	<b>ZX:</b> 1.3%	<b>ZX:</b> 2.2%	λΖ: 3.076	N/A
Flexural Stress	<b>XZ:</b> 20,548 ± 477 psi (142 ± 3 MPa)	<b>XZ:</b> 19,620 psi (135 MPa)	<b>XZ:</b> 20,835 psi (144 MPa)	<b>XZ:</b> 16,200 psi (112 MPa)	<b>XZ:</b> 15,900 psi	N/A
Flexulal Stless	<b>ZX:</b> 9,349 ± 1,514 psi (64 ± 10 MPa)	<b>ZX:</b> 9,760 psi (70 MPa)	<b>ZX:</b> 11,184 psi (77 MPa)	<b>ZX:</b> 9,900 psi (68 MPa)	(110 MPa)	N/A
	<b>XZ:</b> 0.69 ± 0.12 ft-lb/in (37 ± 6 J/m)	<b>XZ:</b> 0.90 ft-lb/in (48 J/m)	<b>XZ:</b> 0.8 ft-lb/in (41 J/m)	<b>XZ:</b> 2.0 ft-lb/in (120 J/m) <b>XZ:</b> 1.1 ft-lb/in		N1/A
IZOD Impact, notched	<b>ZX:</b> 0.51 ± 0.09 ft-lb/in (27 ± 5 J/m)	<b>ZX:</b> 0.5 ft-lb/in (28 J/m)	<b>ZX:</b> 0.4 ft-lb/in (24 J/m)	<b>ZX:</b> 0.9 ft-lb/in (48 J/m)	(59 J/m)	N/A
Heat Deflection at 264 psi	297 °F (147 °C)	306 °F (153 °C)	415 °F (213 °C)	307 °F (153 °C)	372 °F (189 °C)	226 °F (108 °C)
Unique Properties	High strength, and heat and chemical resistance, low outgassing	Electrostatic dissipative (ESD) properties	Food-safety and bio-compatibility certification	Flame, smoke, toxicity (FST) certified, ULTEM™ 9085 resin Aerospace grade available	Highest heat and chemical resistance	Sacrificial tooling

	FDM Nylon 6	FDM Nylon 12	FDM Nylon 12CF	PC	PC-ISO	
	F900	Fortus 380mc	Fortus 450mc	Fortus 380mc	Fortus 380mc	
System Availability		Fortus 450mc	F900	Fortus 450mc	Fortus 450mc	
		F900	Fortus 380mc Carbon Fiber Edition	F900	F900	
	0.013 in. (0.330 mm)	0.013 in. (0.330 mm)	0.010 in. (0.254 mm)	0.013 in.⁵ (0.330 mm)	0.013 in. (0.330 mm)	
Laver Thickness	0.010 in. (0.254 mm)	0.010 in. (0.254 mm)		0.010 in. (0.254 mm)	0.010 in. (0.254 mm)	
Layer Thickness		0.007 in. (0.178 mm)		0.007 in. (0.178 mm)	0.007 in. (0.178 mm)	
				0.005 in. (0.127 mm) <sup>1,5</sup>		
Support Structure	Soluble	Soluble	Soluble	Breakaway, Soluble	Soluble	
Available Colors	■ Black	Black	Black	□ White	☐ White ■ Translucent Natura	
Tensile Strength	<b>XZ:</b> 9,800 psi (67.6 MPa)	<b>XZ:</b> 6,650 psi (46 MPa)	<b>XZ:</b> 10,960 psi (75.6 MPa)	<b>XZ:</b> 8,300 psi (57 MPa)	<b>XZ:</b> 8,300 psi	
(Ultimate) <sup>2</sup>	<b>ZX:</b> 5,300 psi (36.5 MPa)	<b>ZX:</b> 5,600 psi (38.5 MPa)	<b>ZX:</b> 4,990 psi (34.4 MPa)	<b>ZX:</b> 6,100 psi (42 MPa)	(57 MPa)	
	<b>XZ:</b> 38%	<b>XZ:</b> 30%	<b>XZ:</b> 1.9%	<b>XZ:</b> 4.8%		
Tensile Elongation <sup>2</sup>	<b>ZX:</b> 3.2%	<b>ZX:</b> 5%	<b>ZX:</b> 1.2%	<b>ZX</b> : 2.5%	<b>XZ:</b> 4%	
	<b>XZ:</b> 14,100 psi (97.2 MPa)	<b>XZ:</b> 9,700 psi (67 MPa)	<b>XZ:</b> 20,660 psi (142 MPa)	<b>XZ:</b> 13,000 psi (89 MPa)	<b>XZ:</b> 13,100 psi	
Flexural Stress	<b>ZX:</b> 11,900 psi (82 MPa)	<b>ZX:</b> 8,800 psi (61 MPa)	<b>ZX:</b> 8,430 psi (58.1 MPa)	<b>ZX:</b> 9,900 psi (68 MPa)	(90 MPa)	
IZOD Impact, notched	<b>XZ:</b> 2.0 ft-lb/in (106 J/m)	<b>XZ:</b> 2.5 ft-lb/in (135 J/m)	<b>XZ:</b> 1.6 ft-lb/in (85 J/m)	<b>XZ:</b> 1.4 ft-lb/in (73 J/m)	<b>XZ:</b> 1.6 ft-lb/in	
	<b>ZX:</b> 0.8 ft-lb/in (43 J/m)	<b>ZX:</b> 1 ft-lb/in (53 J/m)	<b>ZX:</b> 0.4 ft-lb/in (21.4 J/m)	<b>ZX:</b> 0.5 ft-lb/in (28 J/m)	(86 J/m)	
Heat Deflection Temp at 264 psi	199 °F (93 °C)	180 °F <sup>6</sup> (82 °C) <sup>6</sup>	289 °F (143 °C)	261 °F (127 °C)	260 °F (127 °C)	
Unique Properties	Very high strength and toughness combined	Fatigue-resistant, high elongation at break	Highest flexural strength of any FDM material	Strong (tension)	ISO 10993 USP Class VI⁴	

<sup>1</sup> 0.005 in. (0.127 mm) layer thickness not available for Stratasys F900.

<sup>2</sup> See individual material spec sheets for testing details.

- $^{\rm s}$  0.013 in. (0.330 mm) layer thickness for PPSF not available on Stratasys F900.
- <sup>4</sup> It is the responsibility of the finished device manufacturer to determine the suitability of all the component parts and materials used in their finished products.
- <sup>5</sup> PC can attain 0.013 in. (0.330 mm) layer thickness when use with break away support. PC can attain 0.005 in. (0.127mm) layer thickness when used with SR-100 soluble support.

<sup>7</sup> Actual surface resistance may range from 109 to 106 ohms, depending upon geometry, build style and finishing techniques.

- <sup>8</sup> Available only on the Stratasys F123 Series.
- <sup>9</sup> Available only on the Stratasys F370.
- $^{\mbox{\tiny 10}}$  Available on Fortus 400mc and Stratasys F900.
- <sup>11</sup> Available on the F170, F270, F370 and F900.
- <sup>12</sup> F120 is only available with ASA lvory.
- <sup>13</sup> ABS is only available in Black on F120.
- \*\* Mechanical properties are measured on the Fortus systems and may vary with other printers.

<sup>6</sup> Annealed.

## Premium materials. Premium performance. (Continued)

	PC-ABS	ASA	ABS-ESD7	ABS-M30i	
	Fortus 380mc	Fortus 380mc	Fortus 380mc	Fortus 380mc	
	Fortus 450mc	Fortus 450mc	Fortus 450mc	Fortus 450mc	
	F370	F120	F370	F900	
System Availability	F900	F170	F900		
cyclonny transistry		F270			
		F370			
		F900			
	0.013 in. (0.330 mm)	0.020 in. (0.508 mm)	0.010 in. (0.254 mm)	0.013 in. (0.330 mm)	
	0.010 in. (0.254 mm)	0.013 in. (0.330 mm)	0.007 in. (0.178 mm)	0.010 in. (0.254 mm)	
Layer Thickness	0.007 in. (0.178 mm)	0.010 in. (0.254 mm)		0.007 in. (0.178 mm)	
	0.005 in. (0.127 mm) <sup>1</sup>	0.007 in. (0.178 mm)		0.005 in. (0.127 mm)1	
		0.005 in. (0.127 mm)			
Support Structure	Soluble	Soluble	Soluble	Soluble	
Available Colors	■ Black □ White <sup>2</sup>	<ul> <li>Ivory<sup>12</sup></li> <li>Black</li> <li>Dark Gray</li> <li>Light Gray</li> <li>White</li> <li>Red</li> <li>Orange</li> <li>Vellow</li> <li>Green</li> <li>Dark Blue</li> </ul>	■ Black	Ivory	
	<b>XZ:</b> 5,900 psi	<b>XZ:</b> 4,750 psi (33 MPa)	<b>XZ:</b> 5,200 psi	<b>XZ:</b> 4,650 psi	
Tensile Strength (Ultimate) <sup>2</sup>	(41 MPa)	<b>ZX:</b> 4,300 psi (30 MPa)	(36 MPa)	(36 MPa)	
Tensile Elongation <sup>2</sup>	<b>XZ:</b> 6%	<b>XZ:</b> 9%	<b>XZ:</b> 3.0%	<b>XZ:</b> 4%	
Tensile Elorigation	<b>XZ:</b> 070	<b>ZX:</b> 3%	<b>XZ:</b> 3.0%	<b>XZ:</b> 470	
	<b>XZ:</b> 9,800 psi	<b>XZ:</b> 8,700 psi (60 MPa)	<b>XZ:</b> 8,800 psi	<b>XZ:</b> 8,800 psi	
Flexural Stress	(68 MPa)	<b>ZX:</b> 6,900 psi (48 MPa)	(61 MPa)	(61 MPa)	
IZOD Impact, notched	XZ: 3.7 ft-lb/in (196 J/m)	<b>XZ:</b> 1.2 ft-lb/in (64 J/m)	<b>XZ:</b> 0.5 ft-lb/in (28 J/m)	<b>XZ:</b> 2.6 ft-lb/in (139 J/m	
Heat Deflection Temp at 264 psi	205 °F (96 °C)	196 °F (91 °C)	180 °F (82 °C)	180 °F (82 °C)	
Unique Properties	Strong (impact)	UV stable with the best aesthetics of any FDM material	Static-dissipative, target surface resistance of 107 ohms <sup>7</sup>	ISO 10993 USP Class VI <sup>4</sup>	

	ABS-M30**		Diran 410MF07	PLA		FDM TPU 924
	Fortus 380mc		F370	F170		F170
	Fortus 450mc			F270		F270
	F120			F370		F370
System Availability	F170					
, ,	F270					
	F370					
	F900					
	0.013 in.		0.007 in.	0.010 in.		0.010 in.
	(0.330 mm)		(0.178 mm)	(0.254 mm)		(0.254 mm)
	0.010 in. (0.254 mm)		0.010 in. (0.254 mm)			
_ayer Thickness	0.007 in.		0.013 in.			
	(0.178 mm)		(0.330 mm)			
	0.005 in. (0.127 mm) <sup>1</sup>					
Support Structure	Soluble		Breakaway	Breakaway		Soluble
Available Colors	<ul> <li>Ivory</li> <li>White</li> <li>Black<sup>13</sup></li> <li>Dark Gray</li> <li>Red</li> </ul>	<ul> <li>Blue</li> <li>Orange<sup>8</sup></li> <li>Yellow<sup>8</sup></li> <li>Green<sup>8</sup></li> <li>Custom Colors</li> </ul>	■ Black	<ul> <li>Black</li> <li>White</li> <li>Light Gray</li> <li>Medium Gray</li> <li>Red</li> <li>Blue</li> <li>Natural Translucent</li> </ul>	<ul> <li>Red Translucent</li> <li>Blue Translucent</li> <li>Yellow Translucent</li> <li>Green Translucent</li> </ul>	Black
Tapaila Otrapath // Iltipata)?	<b>XZ:</b> 4,650 psi (32 MPa)		<b>XZ:</b> 6,490 psi (45 MPa)	<b>XZ:</b> 6,990 psi (48 MPa)		<b>XZ:</b> 2,519 psi (17.4 MPa)
Tensile Strength (Ultimate) <sup>2</sup>	<b>ZX</b> : 4,050 psi (28 MPa)		<b>ZX:</b> 4460 psi (30 MPa)	<b>ZX:</b> 3,830 psi (26 MPa)		<b>XY:</b> 2432 psi (16.8 MPa)
Fancila Flangation?	<b>XZ:</b> 7.0%		<b>XZ:</b> 12%	<b>XZ:</b> 2.5%		<b>XZ:</b> 482%
Tensile Elongation <sup>2</sup>	<b>ZX:</b> 2%		<b>ZX:</b> 3.1%	<b>ZX:</b> 1.0%		<b>XY:</b> 552%
	<b>XZ:</b> 8,700 psi (60 MPa)		<b>XZ:</b> 8,800 psi (60 MPa)	<b>XZ:</b> 12,190 psi (84 MPa)		<b>XZ:</b> 351 psi (2.4 MPa)
Flexural Stress	<b>ZX:</b> 7,000 psi (48 MPa)		<b>ZX:</b> 6770 psi (45 MPa)	<b>ZX:</b> 6,750 psi (45 MPa)		<b>XY:</b> 255 psi (1.8 MPa)
IZOD Impact, notched	<b>XZ:</b> 2.4 ft-lb/in		<b>XZ:</b> 7 ft-lb/in (380 J/m)	<b>XZ:</b> 0.5 ft-lb/in (27 J/m)		
	(128 J/m)		<b>ZX:</b> 0.5 ft-lb/in (27 J/m)			_
Heat Deflection Temp at 264 psi	180 °F (82 °C)		158 °F (70 °C)	124 °F (51 °C)		100 °F (38 °C) (@ 66 psi)
Unique Properties	Variety of color o	ptions	Smooth, lubricious texture with low sliding friction	Low cost, fast-dra	aft printing	Elastomer

<sup>1</sup> 0.005 in. (0.127 mm) layer thickness not available for Stratasys F900.

<sup>2</sup> See individual material spec sheets for testing details.

- $^{\rm s}$  0.013 in. (0.330 mm) layer thickness for PPSF not available on Stratasys F900.
- <sup>4</sup> It is the responsibility of the finished device manufacturer to determine the suitability of all the component parts and materials used in their finished products.
- <sup>5</sup> PC can attain 0.013 in. (0.330 mm) layer thickness when use with break away support. PC can attain 0.005 in. (0.127mm) layer thickness when used with SR-100 soluble support.

<sup>6</sup> Annealed.

- <sup>7</sup> Actual surface resistance may range from 109 to 106 ohms, depending upon geometry, build style and finishing techniques.
- <sup>8</sup> Available only on the Stratasys F123 Series.
- <sup>9</sup> Available only on the Stratasys F370.
- <sup>10</sup> Available on Fortus 400mc and Stratasys F900.
- <sup>11</sup> Available on the F170, F270, F370 and F900.
- <sup>12</sup> F120 is only available with ASA lvory.
- <sup>13</sup> ABS is only available in Black on F120.
- \*\* Mechanical properties are measured on the Fortus systems and may vary with other printers.

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