FDM Nylon 12CF

DATA SHEET

FDM Nylon 12CF™ is a carbon-filled thermoplastic with excellent structural characteristics. The material is comprised of a blend of Nylon 12 resin and chopped carbon fiber, at a loading of 35% by weight. This combination produces one of the strongest thermoplastics in the FDM ® material portfolio. It has the highest flexural strength of any FDM thermoplastic, resulting in the highest stiffness-to-weight ratio.

Appropriate uses include strong but lightweight tooling applications and functional prototypes in the aerospace, automotive, industrial and recreational manufacturing industries. FDM Nylon 12CF is available on the Fortus 450mc™ 3D Production System and is compatible with SR-110™ support material.

LEARN MORE ABOUT FDM NYLON 12CF AT PROTO3000.COM

proto3000

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At the core:
Advanced FDM Technology

Fortus 3D Production Systems are powered by FDM (fused deposition modeling) technology. FDM is the industry's leading additive manufacturing technology, and the only one that uses production-grade thermoplastics, enabling the most durable parts. Fortus ® systems use a wide range of thermoplastics with advanced mechanical properties so your parts can endure high heat, caustic chemicals, sterilization and high-impact applications.

No special facilities needed

You can install a Fortus 3D Production System just about anywhere. No special venting is required because Fortus systems don't produce noxious fumes, chemicals or waste.

No special skills needed

Fortus 3D Production Systems are easy to operate and maintain compared to other additive fabrication systems because there are no messy powders to handle and contain. They're so simple, an operator can be trained to operate a Fortus system in less than 30 minutes.

Get your benchmark on the future of manufacturing

Fine details. Smooth surface finishes. Accuracy. Strength. The best way to see the advantages of a Fortus 3D Production System is to have your own part built on a Fortus system. Get your free part at stratasys.com.

MECHANICAL PROPERTIES [1]	TEST METHOD	ENGLISH		METRIC	
		XZ Axis	*ZX Axis*	*XZ Axis*	*ZX Axis*
Tensile Strength, Yield (Type 1, 0.125", 0.2"/min) PSI	ASTM D638	9,190 psi	4,170 psi	63.4 MPa	28.8 MPa
Tensile Strength, Ultimate (Type 1, 0.125", 0.2"/min) PSI	ASTM D638	10,960 psi	4,990 psi	75.6 Mpa	34.4 MPa
Tensile Modulus (Type 1, 0.125", 0.2"/min) PSI	ASTM D638	1.1 Msi	0.33 Msi	7515 MPa	2300 MPa
Tensile Elongation at Break (Type 1, 0.125", 0.2"/min) %	ASTM D638	1.9%	1.2%	1.9%	1.2%
Tensile Elongation at Yield (Type 1, 0.125", 0.2"/min) %	ASTM D638	0.9%	1.1%	0.9%	1.1%
Flexural Strength (Method 1, 0.05"/min) PSI	ASTM D790	20,660 psi	8,430 psi	142 MPa	58.1 MPa
Flexural Modulus (Method 1, 0.05"/min) PSI	ASTM D790	1.5 Msi	0.3 Msi	10,620 Mpa	1830 MPa
Flexural Strain at Break (Method 1, 0.05"/min) PSI	ASTM D790	3%	3%	3%	3%
IZOD Impact, notched (Method A, 23 °C) ft-lbf/in	ASTM D256	1.6 ft-lb/in	0.4 ft-lb/in	85 J/m	21.4 J/m
IZOD Impact, un-notched (Method A, 23 °C) ft-lbf/in	ASTM D256	5.8 ft-lb/in	1.6 ft-lb/in	310 J/m	85 J/m

THERMAL PROPERTIES [2]	TEST METHOD	ENGLISH	METRIC
Heat Deflection (HDT) @ 66 psi	ASTM D648		
Heat Deflection (HDT) @ 264 psi	ASTM D648	289 °F	143 °C
Vicat Softening Temperature (Rate B/50)	ASTM D1525		
Glass Transition Temperature (Tg)	DMA (SSYS)		
Coefficient of Thermal Expansion (flow)	ASTM E831		
Coefficient of Thermal Expansion (xflow)	ASTM E831		
Melting Temperature		433 °F	223 °C

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ELECTRICAL PROPERTIES	TEST METHOD	VALUE
Volume Resistivity (kOhms)	ASTM D257	5.4E+03 - 3.9E+04
Surface Resistivity (kOhms)	ASTM D257	3.3E+03 - 6.9E+04
Dielectric Constant	ASTM D150-98	
Dissipation Factor	ASTM D150-98	
Dielectric Strength	ASTM D149-09, Method A	

OTHER	TEST METHOD	VALUE
Specific Gravity	ASTM D792	1.15
Flame Classification	UL94	HB
Rockwell Hardness	ASTM D785	
UL File Number		E345258

SYSTEM AVAILABILITY	LAYER THICKNESS CAPABILITY	SUPPORT STRUCTURE	AVAILABLE COLORS
Fortus 450mc	0.010"		Black

The information presented are typical values intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. End-use material performance can be impacted (+/-) by, but not limited to, part design, end-use conditions, test conditions, etc. Actual values will vary with build conditions. Tested parts were built on Fortus 450mc @ 0.010" (0.254 mm) slice. Product specifications are subject to change without notice.

The performance characteristics of these materials may vary according to application, operating conditions or end use. Each user is responsible for determining the Stratasys material is safe, lawful and technically suitable for the intended application, as well as for identifying the proper disposal (or recycling) method consistent with applicable environmental laws and regulations. Stratasys 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.

[1] Build orientation is on side long edge.
[2] Literature value unless otherwise noted.

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