



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 [STRATASYS.COM](https://www.stratasys.com)



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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 METH-OD | 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 |
| Rockwell Hardness | ASTM D785 | |

| SYSTEM AVAILABILITY | LAYER THICKNESS CAPABILITY | SUPPORT STRUCTURE | AVAILABLE COLORS |
|---------------------|----------------------------|-------------------|------------------|
| Fortus 450mc | 0.010" | Soluble | 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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ISO 9001:2008 Certified

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