

# Nylon 12 GF Powder

For stiff, stable, functional parts.

A high-performance SLS material for in-house production of parts that require high rigidity, dimensional accuracy, and thermal stability.

*Specifically developed for use on Fuse Series Printers.*

**Fixtures Undergoing Long-Term Sustained Loading**

**Functional Prototypes for composite products**

**Stiff Structural Components**

**Thermally Stressed Housings**

**End-Use Industrial Parts**



**FLP12B01**

\* May not be available in all regions

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To the best of our knowledge the information contained herein is accurate. However, Formlabs, Inc. makes no warranty, expressed or implied, regarding the accuracy of these results to be obtained from the use thereof.

# MATERIAL PROPERTIES DATA

# Nylon 12 GF Powder

	METRIC <sup>1, 2</sup>	IMPERIAL <sup>1, 2</sup>	METHOD
<b>Mechanical Properties</b>			
Ultimate Tensile Strength	38 MPa	5510 psi	ASTM D 638-14 Type 1
Tensile Modulus	2800 MPa	406 ksi	ASTM D 638-14 Type 1
Elongation at Break (X/Y)	4%	4%	ASTM D 638-14 Type 1
Elongation at Break (Z)	3%	3%	ASTM D 638-14 Type 1
<b>Flexural Properties</b>			
Flexural Strength	56 MPa	8122 psi	ASTM D 790-15
Flexural Modulus	2400 MPa	348 ksi	ASTM D 790-15
<b>Impact Properties</b>			
Notched Izod	36 J/m	0.67 ft lb/in	ASTM D256-10
<b>Thermal Properties</b>			
Heat Deflection Temp. @ 1.8 MPa	113°C	235°F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	170°C	338°F	ASTM D 648-16
Vicat Softening Temperature	175°C	347°F	ASTM D1525
<b>Other Properties</b>			
Moisture Content (powder)	0.23%	0.23%	ISO 15512 Method D
Water Absorption (printed part)	0.24%	0.24%	ASTM D570

Samples printed with Nylon 12 GF Powder have been evaluated in accordance with ISO 10993-1:2018, and has passed the requirements for the following biocompatibility risks:

ISO Standard	Description <sup>3,4</sup>
ISO 10993-5:2009	Not cytotoxic
ISO 10993-10:2010/(R)2014	Not an irritant
ISO 10993-10:2010/(R)2014	Not a sensitizer

### Flammability Properties

Testing Standard	Rating
UL 94 Section 7	HB *

\* Thickness of the sample tested = 3.00mm

<sup>1</sup> Material properties may vary with part geometry, print orientation and temperature.

<sup>2</sup> Parts were printed using Fuse 1, with Nylon 12 GF powder. Parts were conditioned at 50% relative humidity and 23 °C for 7 days before testing.

<sup>3</sup> Material properties may vary based on part design and manufacturing practices. It is the manufacturer's responsibility to validate the suitability of the printed parts for the intended use.

<sup>4</sup> Nylon 12 GF was tested at NAMS World Headquarters, OH, USA.

## SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed 1 x 1 x 1 cm cube immersed in respective solvent:

Solvent	24 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	0.2	Mineral oil (Heavy)	1.0
Acetone	0.2	Mineral oil (Light)	1.3
Bleach ~5% NaOCl	0.2	Salt Water (3.5% NaCl)	0.2
Butyl Acetate	0.2	Skydrol 5	0.8
Diesel Fuel	0.6	Sodium Hydroxide solution (0.025% PH 10)	0.2
Diethyl glycol Monomethyl Ether	0.5	Strong Acid (HCl conc)	0.8
Hydraulic Oil	1.0	Tripropylene glycol monomethyl ether	0.8
Hydrogen peroxide (3%)	0.2	Water	0.1
Isocetane (aka gasoline)	0.0	Xylene	0.2
Isopropyl Alcohol	0.2		