formlabs

SLS POWDERS

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 the Fuse Series Printers.

Fixtures Undergoing Long-Term Sustained Loading

Stiff Structural Components

End-Use Industrial Parts

Functional Prototypes for composite products

Thermally StressedHousings

V1 **FLP12B01**

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Material Properties	METRIC [1,2]	IMPERIAL [1,2]	METHOD
Mechanical Properties	**METRIC [1,2]**	**IMPERIAL [1,2]**	**METHOD**
Ultimate Tensile Strength	38 MPa	5510 psi	ASTM D638-14 Type 1
Tensile Modulus	2800 MPa	406 ksi	ASTM D638-14 Type 1
Elongation at Break (X/Y)	4%		ASTM D638-14 Type 1
Elongation at Break (Z)	3%		ASTM D638-14 Type 1
Flexural Properties	**METRIC [1,2]**	**IMPERIAL [1,2]**	**METHOD**
Flexural Strength	56 MPa	8122 psi	ASTM D790-15
Flexural Modulus	2400 MPa	348 ksi	ASTM D790-15
Impact Properties	**METRIC [1,2]**	**IMPERIAL [1,2]**	**METHOD**
Notched Izod	36 J/m	0.67 ft-lb/in	ASTM D256-10
Thermal Properties	**METRIC [1,2]**	**IMPERIAL [1,2]**	**METHOD**
Heat Deflection Temp. @ 1.8 MPa	113 °C	235 °F	ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	170 °C	338 °F	ASTM D648-16
Vicat Softening Temperature	175 °C	347 °F	ASTM D1525
Other Properties	**METRIC [1,2]**	**IMPERIAL [1,2]**	**METHOD**
Moisture Content (powder)	0.23%		ISO 15512 Method D
Water Absorption (printed part)	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 [3,4]
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

SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed and post-cured 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
Isooctane (aka gasoline)	0.0	Xylene	0.2
Isopropyl Alcohol	0.2		

[1] Material properties may vary with part geometry, print orientation and temperature.

[2] 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.

[3] 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.

[4] Nylon 12 GF was tested at NAMSA World Headquarters, OH, USA.