ENGINEERING MATERIAL

formlabs

Nylon 11 Powder

Nylon 11 Powder for High Performance, High Impact

For ductile, robust parts, Nylon 11 Powder is a high performance, bio-based nylon material for functional prototyping and small batch production. Nylon 11 Powder is suitable for printing parts that need to bend or resist impact.

Nylon 11 Powder is specifically developed for use on the Fuse 1.

V1 **FLP11B01**

* **May not be available in all regions**

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MATERIAL PROPERTIES DATA

Nylon 11 Powder

	METRIC [1,2]	IMPERIAL [1,2]	METHOD
Tensile Properties			
Ultimate Tensile Strength	49 MPa	7107 psi	ASTM D 638-14 Type 1
Tensile Modulus	1.6 GPa	232 ksi	ASTM D 638-14 Type 1
Elongation at Break (X/Y)	40%	40%	ASTM D 638-14 Type 1
Flexural Properties			
Flexural Strength	55 MPa	7977 psi	ASTM D 790-15
Flexural Modulus	1.4 GPa	203 ksi	ASTM D 790-15
Impact Properties			
Notched Izod	71 J/m	1.3 ft-lb/in	ASTM D256-10
Thermal Properties			
Heat Deflection Temp. @ 1.8 MPa	46 °C	115 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	182 °C	360 °F	ASTM D 648-16
Vicat Softening Temperature	189 °C	372°F	ASTM D 1525
Other Properties			
Moisture Content (powder)	0.37%	0.37%	ISO 15512 Method D
Water Absorption (printed part)	0.07%	0.07%	ASTM D570

Samples printed with Nylon 11 Powder have been evaluated in accordance with ISO 10993-1, and has passed the requirements for the following biocompatibility risks:

ISO Standard	Test Result [3,4]
EN ISO 10993-5:2009	Not Cytotoxic
ISO 10993-10:2010/(R)2014	Non Irritant
ISO 10993-10:2010/(R)2014	Not a sensitizer

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

[2] Parts were printed using Fuse 1 with Nylon 11 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 11 Powder was tested at NAMSA 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%	0.1	Mineral oil (Light)	0.4
Acetone	0.1	Mineral oil (Heavy)	0.4
Bleach ~5% NaOCl	0.1	Salt Water (3.5% NaCl)	0.1
Butyl Acetate	0.1	Skydrol 5	0.2
Diesel Fuel	0.2	Sodium Hydroxide solution (0.025% pH 10)	0.1
Diethyl glycol Monomethyl Ether	0.4	Strong Acid (HCl conc)	1.0
Hydraulic Oil	0.5	Tripropylene glycol monomethyl ether	0.3
Hydrogen peroxide (3%)	< 0.1	Water	0.1
Isooctane (aka gasoline)	< 0.1	Xylene	0.1
Isopropyl Alcohol	0.1		