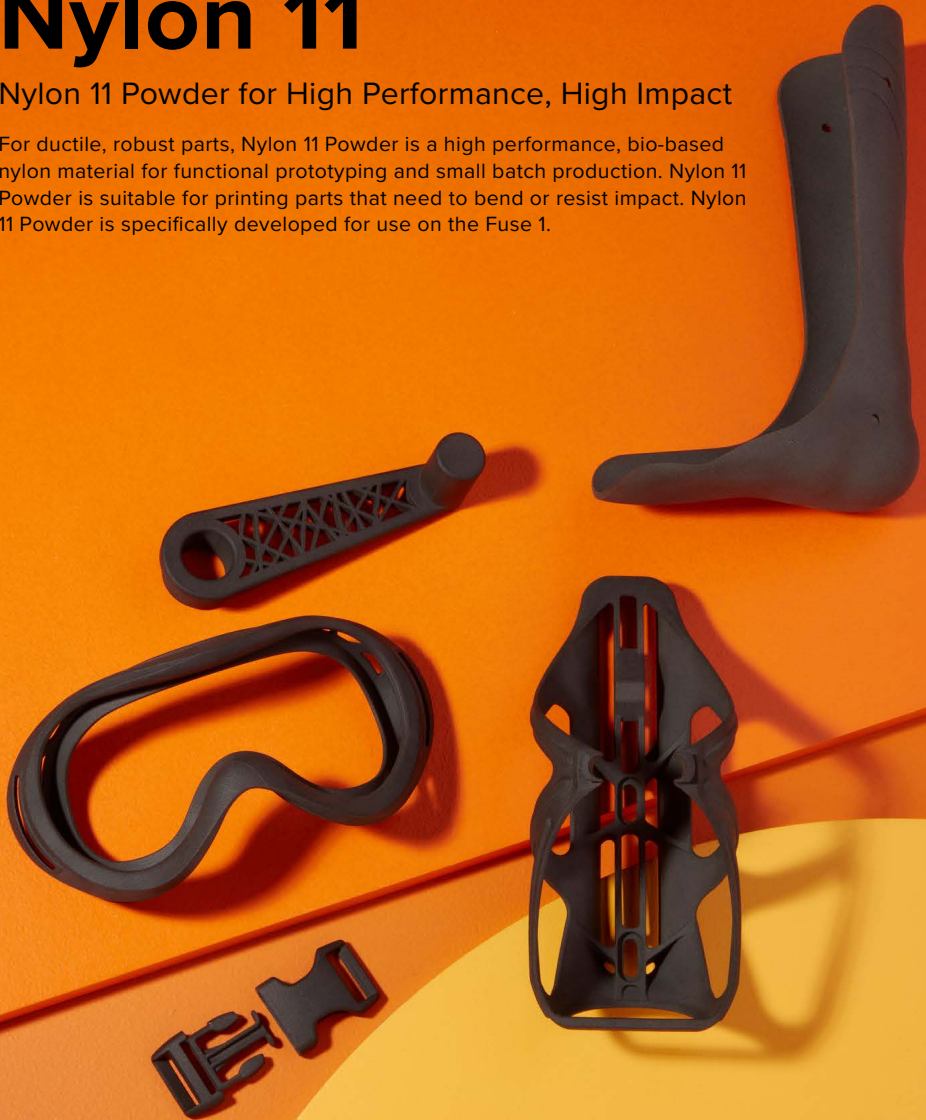


# Nylon 11

## 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

Prepared 06 . 05 . 2021

Rev. 01 06 . 05 . 2021

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 11**

	METRIC <sup>1,2</sup>	IMPERIAL <sup>1,2</sup>	METHOD
<b>Tensile Properties</b>			
Ultimate Tensile Strength	49 MPa	7107 psi	ASTM D638 Type I
Tensile Modulus	1.6 GPa	232 ksi	ASTM D638 Type I
Elongation at Break (X/Y)	40 %	40 %	ASTM D638 Type I
<b>Flexural Properties</b>			
Flexural Strength	55 MPa	7977 psi	ASTM D790 A
Flexural Modulus	1.4 GPa	203 ksi	ASTM D790 A
<b>Impact Properties</b>			
Notched Izod	71 J/m	1.3 ft-lb/in	ASTM D256
<b>Temperature Properties</b>			
Heat Deflection Temp. @ 1.8 MPa	46 °C	115 °F	ASTM D648
Heat Deflection Temp. @ 0.45 MPa	182 °C	360 °F	ASTM D648
Vicat Softening Temperature	189 °C	372°F	ASTM D1525
<b>Other Properties</b>			
Moisture Content (powder)	0.37 %	0.37 %	ISO 15512 Method D
Water Absorption (printed part)	0.07 %	0.07 %	ASTM D570

Nylon 11 Powder has been evaluated as a **skin contacting device** in accordance with ISO 10993-1, and passed the requirements for the following biocompatibility endpoints:

ISO Standard	Test Result <sup>3,4</sup>
ISO 10993-5	Not Cytotoxic
ISO 10993-10	Not an Irritant

<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 11 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 11 Powder was tested at NAMSA World Headquarters, OH, USA.

## 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%	0.1	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	0.3
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		