

Formlabs Nylon 12 Tough Powder

Selective Laser Sintering | PA12 | powder

Compiled by FabDigit from manufacturer technical data. Values below belong to this named product; unreported properties are omitted.

Manufacturer: Formlabs

Source revision: Rev 01 2024-08-10

Recorded system family: Fuse 1+ 30W

As-printed colour: Gray. Formlabs lists the as-printed colour as Grey

Test values are typical reported results, not guaranteed design allowables or finished-part certification. Review the complete source for specimen preparation, orientation and conditioning.

Test basis: Fuse 1+ 30W using aged powder on a bed-temperature-tuned printer; specimens conditioned at 23 deg C and 50% relative humidity for 40 hours.

Direction: Elongation is reported separately for X/Y (25%) and Z (15%). The other table values do not state an orientation.

Mechanical

PROPERTY	VALUE	TEST / CONDITION
Tensile Strength (Ultimate)	42 MPa	per ASTM D638-14 Type 1
Elastic (Young's) Modulus	1.45 GPa	per ASTM D638-14 Type 1
Elongation at Break	25 %	per ASTM D638-14 Type 1; X/Y 25 / Z 15
Flexural Strength	42 MPa	per ASTM D790-17
Flexural Modulus	1.1 GPa	per ASTM D790-17
Izod Impact, Notched	60 J/m	per ASTM D256-10

Thermal

PROPERTY	VALUE	TEST / CONDITION
Heat Deflection Temp. @ 1.8 MPa	46 deg C	per ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	161 deg C	per ASTM D648-16
Vicat Softening Point (B50)	170 deg C	per ASTM D1525
Flammability (UL 94)	HB	3.00 mm

Physical

PROPERTY	VALUE	TEST / CONDITION
Water absorption (manufacturer test)	0.3 %	per ASTM D570; printed part

Solvent compatibility screen

24 h immersion mass change reported by the manufacturer

Solvent	24 h weight gain
Acetic acid 5%	0.2%
Acetone	0.2%
Bleach (~5% NaOCl)	0.1%
Butyl acetate	0.1%
Diesel fuel	0.6%
Diethyl glycol monomethyl ether	0.5%
Hydraulic oil	0.9%
Hydrogen peroxide (3%)	0.1%
Isooctane	0.1%

Solvent compatibility screen - continued

Solvent	24 h weight gain
Isopropyl alcohol	0.3%
Mineral oil (heavy)	1.0%
Mineral oil (light)	0.8%
Salt water (3.5% NaCl)	0.2%
Skydrol 5	0.8%
Sodium hydroxide solution (0.025%, pH 10)	0.1%
Strong acid (concentrated HCl)	5.6%
TPM	0.8%
Water	0.1%
Xylene	0.2%

TDS test article: printed 1 x 1 x 1 cm cube. Weight change alone does not establish sealing, retained strength, or long-term chemical life.

Biocompatibility endpoint results

ISO 10993 endpoints listed in the manufacturer TDS

Standard / endpoint	Result
ISO 10993-11:2017 - systemic toxicity	No systemic toxicity
ISO 10993-5:2009	Not cytotoxic
ISO 10993-23:2021	Not an irritant
ISO 10993-10:2021	Not a sensitizer
ISO 10993-11:2017 - pyrogenicity	Nonpyrogenic

Manufacturer material-sample result. It does not qualify a finished part or device for its intended use.

Selection and finishing

A more ductile Formlabs PA12 for impact-resistant prototypes, compliant mechanisms and long parts where reduced warpage matters.

Design: Validate the actual snap, hinge or compliant mechanism in its intended orientation. This powder is limited to Fuse 1+ 30W and requires the maker's powder-aging procedure before the first print.

Finishing: Gray is the as-printed colour. Confirm a separate dye or coating route for another colour, and test any tumbling or blasting step on flexible edges and fine features.

Source and document scope

Formlabs manufacturer source reference - Rev 01 2024-08-10

https://formlabs-media.formlabs.com/datasheets/TDS_-_Nylon_12_Tough.pdf

The reviewed reference copy retains manufacturer document ID 2401997 and the Rev 01 cover and includes an outdoor-aging appendix; the current live official PDF uses a descriptive filename and is two pages without that appendix.

FabDigit product page: <https://www.fabdigit.com/materials/polymer-pa12/formlabs-nylon-12-tough/>

FabDigit is the publisher of this reference summary. The named manufacturer remains the source of the material data. This document is not a manufacturer-issued TDS, a certificate of conformity or a test report for an ordered part. Confirm the exact product, system, orientation, conditioning and final finish with the quote.