

Formlabs Nylon 12 GF Powder

Selective Laser Sintering | PA12-GF | 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 2022-02-01

Recorded system family: Fuse 1+ 30W, Fuse 1

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; specimens conditioned at 23 deg C and 50% relative humidity for 7 days before testing.

Direction: Elongation is reported separately for X/Y (4%) and Z (3%). The other table values do not state an orientation.

Mechanical

PROPERTY	VALUE	TEST / CONDITION
Tensile Strength (Ultimate)	38 MPa	per ASTM D638-14 Type 1
Elastic (Young's) Modulus	2.8 GPa	per ASTM D638-14 Type 1
Elongation at Break	4 %	per ASTM D638-14 Type 1; X/Y 4 / Z 3
Flexural Strength	56 MPa	per ASTM D790-15
Flexural Modulus	2.4 GPa	per ASTM D790-15
Izod Impact, Notched	36 J/m	per ASTM D256-10

Thermal

PROPERTY	VALUE	TEST / CONDITION
Heat Deflection Temp. @ 1.8 MPa	113 deg C	per ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	170 deg C	per ASTM D648-16
Vicat Softening Point (B50)	175 deg C	per ASTM D1525
Flammability (UL 94)	HB	3.00 mm

Physical

PROPERTY	VALUE	TEST / CONDITION
Water absorption (manufacturer test)	0.24 %	per ASTM D570; printed part

Manufacturability

PROPERTY	VALUE	TEST / CONDITION
Powder Moisture Content	0.23 %	per ISO 15512 Method D

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)	0.2%
Butyl acetate	0.2%

Solvent compatibility screen - continued

Solvent	24 h weight gain
Diesel fuel	0.6%
Diethyl glycol monomethyl ether	0.5%
Hydraulic oil	1.0%
Hydrogen peroxide (3%)	0.2%
Isooctane (gasoline)	0.0%
Isopropyl alcohol	0.2%
Mineral oil (heavy)	1.0%
Mineral oil (light)	1.3%
Salt water (3.5% NaCl)	0.2%
Skydrol 5	0.8%
Sodium hydroxide solution (0.025%, pH 10)	0.2%
Strong acid (concentrated HCl)	0.8%
Tripropylene glycol monomethyl ether	0.8%
Water	0.1%
Xylene	0.2%

TDS test article: 1 x 1 x 1 cm cube described as printed and post-cured. No SLS post-cure procedure is defined. This wording does not establish an SLS post-cure requirement. 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 10993-5:2009	Not cytotoxic
ISO 10993-10:2010/(R)2014 - irritation	Not an irritant
ISO 10993-10:2010/(R)2014 - sensitization	Not a sensitizer

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

Selection and finishing

Glass-filled Formlabs PA12 for stiff, dimensionally stable SLS parts exposed to sustained loads or elevated temperature.

Design: Use generous radii and avoid thin compliant tabs. Validate the loaded orientation and long-term creep case, and keep the choice within the published Fuse 1 or Fuse 1+ 30W workflow.

Finishing: Gray is the as-printed colour. Dye or coating availability can differ from unfilled PA12, so confirm the exact colour and adhesion route on a representative coupon.

Source and document scope

Formlabs manufacturer source reference - Rev 01 2022-02-01

<https://formlabs-media.formlabs.com/datasheets/2201635-TDS-ENUS-0.pdf>

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

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