

Formlabs Nylon 11 CF Powder

Selective Laser Sintering | PA11 | powder

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

Manufacturer: Formlabs

Source revision: Rev 02 2023-08-08

Recorded system family: Fuse 1+ 30W

As-printed colour: Black. Carbon-fibre filled - prints black

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

Direction: Tensile strength, tensile modulus, and elongation report X, Y, and Z values. Flexural, impact, and thermal rows do not state an orientation.

Mechanical

PROPERTY	VALUE	TEST / CONDITION
Tensile Strength (Ultimate)	69 MPa	per ASTM D638-14 Type 1; X 69 / Y 52 / Z 38
Elastic (Young's) Modulus	5.3 GPa	per ASTM D638-14 Type 1; X 5.3 / Y 2.8 / Z 1.6
Elongation at Break	9 %	per ASTM D638-14 Type 1; X 9 / Y 15 / Z 5
Flexural Strength	110 MPa	per ASTM D790-15
Flexural Modulus	4.2 GPa	per ASTM D790-15
Izod Impact, Notched	74 J/m	per ASTM D256-10

Thermal

PROPERTY	VALUE	TEST / CONDITION
Heat Deflection Temp. @ 1.8 MPa	178 deg C	per ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	188 deg C	per ASTM D648-16
Vicat Softening Point (B50)	188 deg C	per ASTM D1525

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%
Diesel fuel	0.6%
Diethyl glycol monomethyl ether	0.5%
Hydraulic oil	1.0%
Hydrogen peroxide (3%)	0.2%
Isooctane	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%

Solvent compatibility screen - continued

Solvent	24 h weight gain
TPM	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 10993-23:2021	Not an irritant
ISO 10993-10:2021	Not a sensitizer

Manufacturer material-sample result for long-term (>30 day) surface contact with intact skin. It does not qualify a finished part or device.

Selection and finishing

A Fuse-series carbon-fibre PA11 for stiff, lightweight functional components where black as-printed appearance is acceptable.

Design: Keep loads in the stronger plane where possible, avoid sharp internal corners, and validate loaded threads, inserts and fatigue features on representative production orientation.

Finishing: Black is the inherent as-printed appearance and is not a dye base. Any abrasive cleanup may change the surface fibre appearance.

Source and document scope

Formlabs manufacturer source reference - Rev 02 2023-08-08

<https://formlabs-media.formlabs.com/datasheets/2201694-TDS-ENUS-0.pdf>

The reviewed reference copy was prepared 2022-06-22 and revised 2023-08-08.

FabDigit product page: <https://www.fabdigit.com/materials/polymer-pa11/formlabs-nylon-11-cf/>

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