

Technical data sheet Nylon

Ultimaker

Chemical composition

See Nylon safety data sheet, section 3

Description

Used by many manufacturers worldwide, Nylon is well known for its impressive durability, high strength-to-weight ratio, flexibility, low friction, and corrosion resistance. Enjoy a seamless 3D printing experience due to the reduced humidity absorption when compared to other Nylon filaments

Key features

Industrial-grade impact and abrasion resistance, durable, high strength-to-weight ratio, low friction coefficient, and good corrosion resistance to alkalis and organic chemicals

Applications

Functional prototyping, tooling, and industrial modeling

Non-suitable for

Food contact and *in vivo* applications. Applications where the printed part is exposed to temperatures higher than 80 °C

Filament specifications

	Value	Method
Diameter	2.85 ± 0.05 mm	-
Max roundness deviation	0.05 mm	-
Net filament weight	750 g	-
Filament length	~ 103 m	-

Color information

Color	Color code
Nylon Transparent	N/A
Nylon Black	RAL 9011

Mechanical properties*

	Injection molding		3D printing	
	Typical value	Test method	Typical value	Test method
Tensile modulus	-	-	579 MPa	ISO 527 (1 mm/min)
Tensile stress at yield	-	-	27.8 MPa	ISO 527 (50 mm/min)
Tensile stress at break	-	-	34.4 MPa	ISO 527 (50 mm/min)
Elongation at yield	-	-	20%	ISO 527 (50 mm/min)
Elongation at break	-	-	210%	ISO 527 (50 mm/min)
Flexural strength	-	-	24 MPa	ISO 178
Flexural modulus	-	-	463.5 MPa	ISO 178
Izod impact strength, notched (at 23 °C)	-	-	34.4 kJ/m ²	ISO 180
Charpy impact strength (at 23 °C)	-	-	-	-
Hardness	-	-	74 (Shore D)	Durometer

Electrical properties*

	Typical value	Test method	Typical value	Test method
Dissipation factor (at 1 MHz)	-	-	0.037	ASTM D150-11
Dielectric constant (at 1 MHz)	-	-	3.24	ASTM D150-11

Thermal properties

	Typical value	Test method
Melt mass-flow rate (MFR)	6.2 g/10 min	ISO 1133 (250 °C, 1.2 kg)
Heat detection (at 0.455 MPa)	-	-
Heat deflection (at 1.82 MPa)	-	-
Vicat softening temperature	-	-
Glass transition	50 °C	-
Coefficient of thermal expansion	-	-
Melting temperature	185 - 195 °C	ISO 11357
Thermal shrinkage	12 ± 2%	DIN 53866 (100 °C, 30 min)

*See notes

Other properties

	Value	Test method
Specific gravity	1.14	-
Flame classification	-	-

Notes

Properties reported here are average of a typical batch. The 3D printed test specimens were printed in the XY plane, using the fine quality profile in Ultimaker Cura 2.1, an Ultimaker 2+, a 0.4 mm nozzle, 90% infill, 250 °C nozzle temperature, and 60 °C build plate temperature. The values are the average of five transparent and five black specimens for the tensile, flexural, and impact tests. The Shore hardness D was measured in a 7-mm-thick square, using the normal quality profile in Ultimaker Cura 2.5, an Ultimaker 3, a 0.4 mm print core, and 100% infill. The electrical properties were measured on a 54-mm-diameter disk with 3 mm thickness printed in the XY plane, using the fine quality profile (0.1 mm layer height) in Ultimaker Cura 3.2.1, an Ultimaker 3, a 0.4 mm print core, and 100% infill. Ultimaker is constantly working on extending the TDS data.

Disclaimer

Any technical information or assistance provided herein is given and accepted at your risk, and neither Ultimaker nor its affiliates make any warranty relating to it or because of it. Neither Ultimaker nor its affiliates shall be responsible for the use of this information, or of any product, method or apparatus mentioned, and you must make your own determination of its suitability and completeness for your own use, for the protection of the environment, and for the health and safety of your employees and purchasers of your products. No warranty is made of the merchantability or fitness of any product; and nothing herein waives any of Ultimaker's conditions of sale. Specifications are subject to change without notice.

Version	Version 4.002
Date	November 19, 2018