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.

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