

# Technical data sheet Nylon

Ultimaker

Chemical name	Polyamide
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. 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

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

## Color information

<u>Color</u>	<u>Color code</u>
Nylon Transparent	n/a
Nylon Black	RAL 9011

## Mechanical properties (\*)

### Injection molding

### 3D printing

	<u>Typical value</u>	<u>Test method</u>	<u>Typical value</u>	<u>Test method</u>
Tensile modulus	-	-	579.0 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	-	-	20.0 %	ISO 527 (50 mm/min)
Elongation at break	-	-	210.0 %	ISO 527 (50 mm/min)
Flexural strength	-	-	24.0 MPa	ISO 178
Flexural modulus	-	-	463.5 MPa	ISO 178
Izod impact strength, notched (at 23°C)	-	-	34.4 kJ/m <sup>2</sup>	ISO 180
Charpy impact strength (at 23°C)	-	-	-	-
Hardness	-	-	74 (Shore D)	Durometer

## Thermal properties

### Typical value

### Test method

Melt mass-flow rate (MFR)	6.2 g/10min	ISO 1133 (250 °C, 1.2 kg)
Heat deflection (HDT) at 0.455 MPa	-	-
Heat deflection (HDT) at 1.82 MPa	-	-
Glass transition	50 °C	-
Coefficient of thermal expansion	-	-
Melting temperature	185 - 195 °C	ISO 11357 (20 °C/min)
Thermal shrinkage	12 ± 2 %	DIN 53866 (100 °C, 30 min)

## Other properties

### Typical value

### Test method

Specific gravity	1.14	-
Flame classification	-	-

(\*) Seen notes.

## Notes

Properties reported here are average of a typical batch. The 3D printed test specimens were printed in the XY plane, using the normal quality profile in 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 5 transparent and 5 black specimens for the tensile, flexural, and impact tests. The Shore hardness D was measured in a 7-mm-thick square printed in the XY plane, using the normal quality profile in Cura 2.5, 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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