

OVERTURE NYLON TECHNICAL DATA SHEET

OVERTURE Nylon is based on a copolymer of Nylon 6 and Nylon 6,6. The filament combines excellent strength, toughness, and heat resistance of up to 180°C.

Physical Properties

Property	Testing method	Typical value
Density	ASTM D792 (ISO 1183, GB/T 1033)	1.13 (g/cm ³ at 21.5°C)
Glass transition temperature	DSC, 10 °C/min	67 (°C)
Vicat Softening temperature	ASTM D1525 (ISO 306 GB/T 1633)	180 (°C)
Melt index	260 °C, 1.2 kg	12 (g/10 min)
Melting temperature	DSC, 10 °C/min	190 (°C)
Crystallization temperature	DSC, 10 °C/min	128 (°C)
Decomposition temperature	TGA, 20 °C/min	370 (°C)

Tested with 3D printed specimen of 100% infill

Mechanical Properties (Dry State)

Property	Testing method	Typical value
Young's modulus (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	2223 ± 199 (MPa)
Tensile strength (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	66.2 ± 0.9 (MPa)
Elongation at break (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	9.9 ± 1.5 (%)
Bending modulus (X-Y)	ASTMD790 (ISO 178, GB/T 9341)	1667 ± 118 (MPa)
Bending strength (X-Y)	ASTMD790 (ISO 178, GB/T 9341)	97.0 ± 1.1 (MPa)
Charpy impact strength (X-Y)	ASTM D256 (ISO 179, GB/T 1043)	9.6 ± 1.4 (kJ/m ²)

All testing specimens were printed under the following conditions: nozzle temperature = 265 °C, printing speed = 45 mm/s, build plate temperature = 50 °C, infill = 100% All specimens were annealed at 80°C for 30min and dried for 48h prior to testing

Mechanical Properties (Moisture Conditioned)

Property	Testing method	Typical value
Young's modulus (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	1053 ± 235 (MPa)
Tensile strength (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	31.4 ± 1.5 (MPa)
Elongation at break (X-Y)	ASTM D638 (ISO 527, GB/T 1040)	216.5 ± 12.1 (%)
Bending modulus	ASTMD790 (ISO 178, GB/T 9341)	862.8 ± 133.3 (MPa)
Bending strength	ASTMD790 (ISO 178, GB/T 9341)	41.6 ± 11.6 (MPa)
Charpy impact strength	ASTM D256 (ISO 179, GB/T 1043)	17.2 ± 1.4 (kJ/m ²)

All specimens were annealed at 80 °C for 30 min, and conditioned at 50% relative humidity and ambient temperature for 15 days prior to testing

Recommended printing conditions

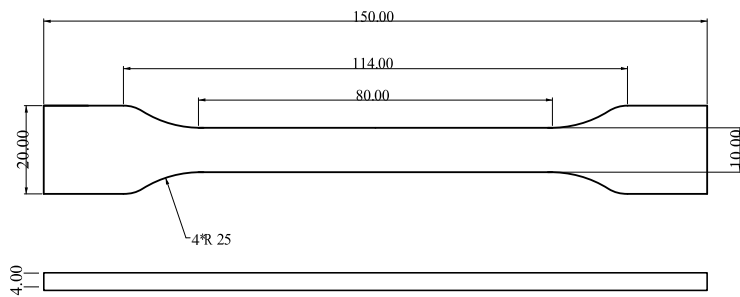
Nozzle temperature	250 - 270 (°C)
Build Surface material	PA film, PI film
Build surface treatment	Applying PVA glue to the build surface
Build plate temperature	25 - 50 (°C)
Cooling fan	Turned off
Printing speed	30-50 (mm/s)
Raft separation distance	0.1 - 0.2 (mm)
Retraction distance	3-6 (mm)

Retraction speed Recommended environmental temperature Threshold overhang angle Recommended support material	40 - 60 (mm/s) 40 - 60 (°C) 55 (°) None
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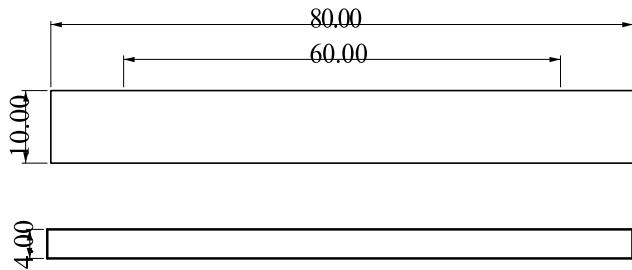
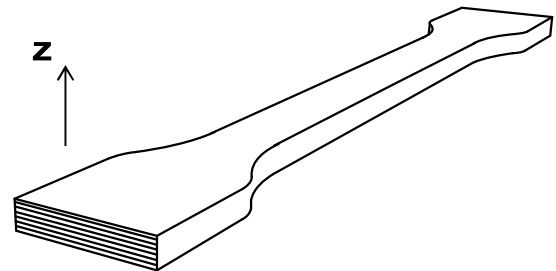
Based on 0.4 mm nozzle and Simplify 3D v.3.1. Printing conditions may vary with different nozzle diameters

Warm Prompt

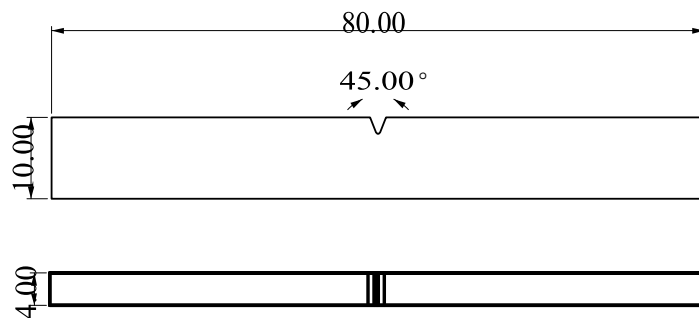
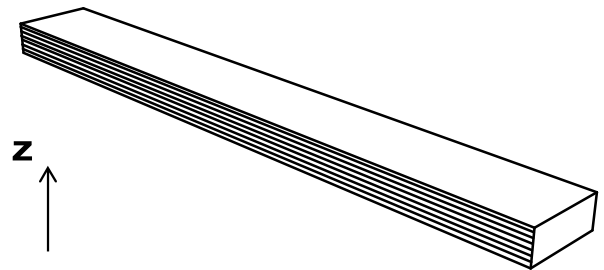
- Abrasion of the brass nozzle happens quite often when printing OVERTURE Nylon. A wear-resistant nozzle, such as hardened steel and ruby nozzle, is highly recommended to be used with OVERTURE Nylon.
- OVERTURE Nylon is sensitive to moisture and should always be stored and used under dry conditions (relative humidity below 20%).
- If OVERTURE Nylon is used as the support material for itself, please remove the support structure before excessive moisture absorption. Otherwise the support structure can be permanently bonded to the model.
- After the printing process, it is recommended to anneal the model in the oven at 70°C for 2 hours.



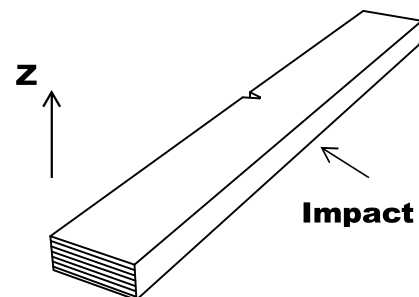
Tensile testing specimen; ASTM D638 (ISO 527, GB/T 1040)



Flexural testing specimen; ASTM D790 (ISO 178, GB/T 9341)



Impact testing specimen; ASTM D256 (ISO 179, GB/T 1043)



Disclaimer:

The typical values presented in this data sheet are intended for reference and comparison purposes only. They should not be used for design specifications or quality control purposes. Actual values may vary significantly with printing conditions. End- use performance of printed parts depends not only on materials, but also on part design, environmental conditions, printing conditions, etc. Product specifications are subject to change without notice.

Each user is responsible for determining the safety, lawfulness, technical suitability, and disposal/recycling practices of OVERTURE materials for the intended application. OVERTURE makes no warranty of any kind, unless announced separately, to the fitness for any use or application. OVERTURE shall not be made liable for any damage, injury or loss induced from the use of OVERTURE materials in any application.