

Technical data sheet: P-filament

Polypropylene (PP) is one of the most widely used plastics with a broad property profile. PP is one of the lightest materials and has excellent mechanical and chemical properties.

Material description

Trade name	P-filament
Manufacturer	PPprint GmbH
Polymer group	Thermoplastic polymer
Chemical name	Polypropylene copolymer
Use	Extrusion-based 3D printing

Suggested 3D print settings (nozzle diameter 0.4mm)

Nozzle temperature	200 - 220 °C
Bed temperature	20 °C (50 - 80 °C recommended for the first layer, 100 – 110 °C for non-destructive removal after completion)
Chamber temperature	not required
Bed modification	P-surface
Active fan cooling	recommended
Layer height	0.1 – 0.4 mm
Print speed	15 – 40 mm/s

Material properties

Melt temperature	137 °C	ASTM D3418
Melt Flow Rate ¹	19.3 g/10 min	ISO 1133
Melt Volume Rate ¹	25.7 cm ³ /10 min	ISO 1133
Density	0.9 g/cm ³	ISO 1183
Odor	odorless	-

¹ Test conditions: T = 210 °C; m = 5.0 kg

Mechanical properties: Tensile test

All specimens were punched out of printed square tubes consisting of two shells, which were 3D printed with a Raise Pro 3D printer and applying the following printing conditions:

Nozzle temperature: 210 °C;

Bed temperature: 70 °C;

Chamber temperature: 70 °C;

Printing speed: 30 mm/s.

90°



punched dog bone: S 3A with an orientation of 90° to the nozzle movement direction

0°



punched dog bone: S 3A with an orientation of 0° to the nozzle movement direction

E-Modul (MPa)	640 ± 20	660 ± 10
Yield strength (MPa)	18.1 ± 0.1	19.6 ± 0.3
Tensile strength (MPa)	18.7 ± 0.3	35.1 ± 0.6
Strain at break (%)	> 600	> 600

Certifications/ approvals*

PPprint GmbH

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Regulation EU Nr. 10/2011	Union Guidelines on Regulation (EU) No 10/2011 on plastic materials and articles intended to come into contact with food (Europe)
FDA	Food and Drug administration approval (USA)

* These data are generated using information obtained from the raw material suppliers.

Filament specification

Diameter 1.75	1.75 ± 0.10 mm	PPprint
Diameter 2.85	2.85 ± 0.10 mm	PPprint
Ovality	0.05	PPprint
Netto weight on spool	600 g \pm 5%	PPprint

Annotation

The data and properties presented here are averages of a standard batch. The 3D printed square tubes from which the specimens were punched out were produced in Slic3r version 1.3.0.

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