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	Thermoplatic polymer
Chemical name	Polypropylene copolymer
Use	Extrusion-based 3D printing

Suggested 3D print settings (nozzle diameter 0.4 mm)	
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		**Test method**
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	-
Color	natur	-

[1] Test condition: T = 210 °C; m = 5.0 kg

Mechanical properties: Tensile test		**Test method ISO 527**
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*	Description
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		Test method
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 ± 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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