PP

PP is our easy to print general-purpose low-density Polypropylene. PP has been developed for optical clarity while maintaining mechanical performance and a superb layer adhesion. PP's high stretch ability, decent flexibility and chemical/fatigue resistance makes it suitable for a variety of household articles and containers. PP can also be used for engineering articles such as living-hinges and snap-fit fastener materials. Lastly PP can be used to print dishwasher & microwave safe objects. PP is a cost-effective all-round filament suitable for a broad variety of needs.

Material features:

- High chemical & Fatique resistance
- High elongation before break
- Superb layer adhesion
- Suitable for food contact articles
- Dishwasher & Microwave safe

Colours:

PP is available from stock in 3 colours:

cl1	bk1	wh1

Packaging:

PP is available in nearly any type of packaging and labelling. Ask our team to help you customizing your product.

Filament specs.

Size	Ø tolerance	Roundness
1,75mm	± 0,05mm	≥ 95%
2,85mm	± 0,10mm	≥ 95%

Material properties

Description	Testmethod	Typical value
Specific gravity	ASTM D1505	0,9 g/cc
MFI 230°C / 2,16kg	ISO 1133	8 g/10 min
Flexural modulus	ASTM D790	402 MPa
Hardness	ASTM D2240	D50
Printing temp.	DF	230±10°C
Melting temp.		205±15°C
Vicat Softening Temperature		103°C

Additional info:

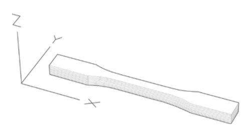
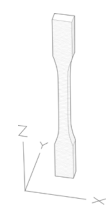
PP does not adhere to any print sticker well enough to counteract warp on large objects, therefore we recommend a Polypropylene sheet (inexpensive) so that no heated bed is required. Adherence improves when the first layer temperature is higher. Printing with a raft improves bottom layer removability and evens out unconformities in the PP sheet. PP can be used on most common desktop FDM or FFF technology 3D printers.
Storage: Cool and dry (15-25˚C) and away from UV light. This enhances the shelf life significantly.

Grasbeemd 19, 5705 DE, Helmond, The Netherlands - +31 492 210 210 – info@dutchfilaments.com – www.mcpp-3dp.com
MCPP Netherlands B.V. a Group Company of Mitsubishi Chemical

Mechanical Specifications

During additional research a print profile has been made which was optimized for achieving a highest possible tensile performance. Table 1 shows the typical values of an injection moulded specimen compared to a 3D-printed specimen in both the X-Y axis (3D-printed horizontally) and the Z-axis (3D-printed vertically). After that, some important parameters are given and the corresponding trend is briefly described.

Table 1: Tensile data of both injection moulded and 3D-printed specimens.*

	Injection Moulded	3D-Printed X-Y	3D-Printed Z
Young's Modulus [MPa]	2128	375	329
Stress at Yield [MPa]	39	14	12
Stress at Break [MPa]	29	-	11
Strain at Yield [%]	8	18	17
Strain at Break [%]	19	>200	>450
			

Most important parameters:

When decreasing the Fan Speed the Strain at Break will increase
An increase of up to 1648% could be achieved in the vertical print orientation (Z-axis) compared to a visually optimized profile

When increasing the Material Flow the Strain at Break will increase
An increase of up to 385% could be achieved in the vertical print orientation (Z-axis) compared to a visually optimized profile

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Print Conditions
All specimens have been printed using a 0.4mm nozzle and the layer height was set to 0.2mm. The room in which the 3D-printer was located had an environmental temperature of ± 25°C.

**Test Conditions*
The tensile tests have been carried out according to ISO-527 using modified 1BA specimens (3D-printing) and 1A specimens (injection moulding). The room in which the Universal Testing Machine was located had an environmental temperature of ± 20°C.

MCPP Netherlands B.V. cannot be held responsible for any inaccuracies. No guarantees can be given since differences in data could be caused by differences between individual 3D-printers.