

ABS

ABS is an extra strong impact-resistant filament ideal for 3D printing of solid printed products. Due to the process stability and physical features of Acrylonitrile Butadiene Styrene it is a widely used thermoplastic polymer in industry. The material is also very light and durable. This makes ABS particularly suitable for tools, toys and all kinds of utensils. Printed at a slightly over-average temperature for ABS, this filament gives extra strong 3D print results.

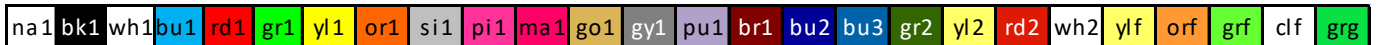
Material features:

- Very high impact-resistance
- Extra strong
- Stable printing
- Light and durable
- Limited warping



Colours:

ABS is available from stock in 26 bright colours. Other colours on request



Packaging:

ABS 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	ISO 1183	1,03 g/cc
MFR 220°C/10 kg	ISO 1133	5,7 g/10 min
Impact strength - Charpy method 23°C	ISO 179	35 kJ/m ²
Printing temp.	DF	245±10°C
Melting temp.	ISO 294	245±10°C
Vicat softening temperature	ASTM D 1525	103°C

Additional info:

Recommended temperature for heated bed is ± 90-110°C.

ABS is printed at a slightly higher temperature to make the final product extra strong.

ABS can be used on all common desktop FDM or FFF technology 3D printers.


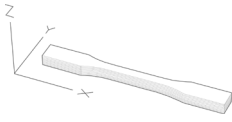

Storage: Cool and dry (15-25°C) and away from UV light. This enhances the shelf life significantly.

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]	2109	2068	2227
Stress at Yield [MPa]	38	35	17
Stress at Break [MPa]	30	30	18
Strain at Yield [%]	3	2	1
Strain at Break [%]	≈3	8	1

Most important parameters:



When decreasing the Fan Speed up to a certain point the Stress at Yield will increase

An increase of up to 18% could be achieved in the vertical print orientation (Z-axis) compared to a visually optimized profile



When increasing the Material Flow the Stress at Yield will increase

An increase of up to 156% could be achieved in the vertical print orientation (Z-axis) compared to a visually optimized profile



When using an Enclosure the Stress at Yield will increase

An increase of up to 50% could be achieved in the vertical print orientation (Z-axis) compared to a visually optimized profile

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.

MCPN 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.