boloberry
3d printer manufacturer
www.boloberry.com

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

na1	bk1	wh1	bu1	rd1	gr1	yl1	or1	si1	pi1	ma1	go1	gy1	pu1	br1	bu2	bu3	gr2	yl2	rd2	wh2	ylf	orf	grf	clf	grg

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/m2
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.

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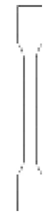
Mechanical Specifications

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

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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 TestingMachine was located had an environmental temperature of ± 20°C.

Boloberry 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.