boloberry
3d printer manufacturer

PLA

PLA is a tough, easy to use high grade PLA type of filament, ideal for 3D printing. Slightly modified, the filament retains the typical features of PLA, but makes it tougher and less brittle. Due to a low shrinkage factor PLA will not deform after cooling. Poly Lactic Acid is a biodegradable plastic made from renewable natural resources and one of the most popular materials for 3D printing.

Material features:

- Tougher and less brittle compared to regular PLA
- Easy to print at low temperature
- Low warping
- Biodegradable
- Limited smell

Colours:

PLA is available from stock in 33 bright colours. Other colours on request

na 1	bk1	wh1	bu1	rd1	gr1	yl1	or1	si 1	pi 1	pi 5	ma 1	pw1	yg1	go1	gy1	pu1
br1	bu2	bu3	bu13	grb	gr2	gr3	gr13	yl2	gyb	wh2	ylf	orf	grf	clf	grg	

Packaging:

PLA 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	1,24 g/cc
MFR 210°C/2,16 kg	ISO 1133	9,56 gr/10 min
Impact strength - Charpy method 23˚C	ISO 179	3,4 kJ/m2
Moisture absorption	ISO 62	1968 ppm
Printing temp.	DF	205±10°C
Melting temp.	ISO 11357	115±35°C
Vicat softening temp.	ISO 306	60°C
Glass transition temp.	ISO 11357	57°C

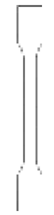
Additional info:

Due to its low tendency to warp PLA can also be printed without a heated bed. If you have a heated bed the recommended temperature is ± 35-60˚C.
PLA 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]	3384	3138	3112
Stress at Yield [MPa]	73	69	39
Stress at Break [MPa]	68	65	39
Strain at Yield [%]	3	3	2
Strain at Break [%]	4	4	3
			

Most important parameters:

When increasing the Nozzle Temperature the Stress at Yield will increase
An increase of up to 120% could be achieved in the vertical print orientation (Z-axis) compared to a visually optimized profile

When decreasing the Fan Speed the Stress at Yield will increase
An increase of up to 40% 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 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.
