



TDS Rev. 1.0  
Update: 27.03.2020

## Technical Data Sheet

# ANTIBACTERIAL PLA

IDENTIFICATION	
Commercial name	FiberForce ANTIBACTERIAL PLA
Raw Material	PLA – Polylactic Acid + additives
Use	3D printing applications
Manufacturer	FiberForce Italy srl – Vicolo Del Cristo 4, 31100 Treviso (ITALY)

PHYSICAL PROPERTIES	VALUE	STANDARD
Density	1,24 g/cc	ASTM D1505

ANTIBACTERIAL PERFORMANCES – ISO 22196				
Eschirichia Coli				
Sample ID	Bacterial count (CFU / cm <sup>2</sup> )		Log reduction	% reduction
	t = 0h	t = 24h		
Control	1.4E+04	1.0E+05	-0.87	0.00
Sample 1	1.4E+04	1.2E+04	0.94*	88.43*

Staphylococcus Aureus				
Sample ID	Bacterial count (CFU / cm <sup>2</sup> )		Log reduction	% reduction
	t = 0h	t = 24h		
Control	1.6E+04	4.2E+03	0.58	73.54
Sample 1	1.6E+04	1.7E+01	2.37*	99.59*

\*Reduction calculated versus control at **t=24h**

THERMAL PROPERTIES	VALUE	STANDARD
Melting point	145 – 160 °C	ASTM D3418
Glass Transition Temperature	60 °C	ASTM D3418



## MECHANICAL PROPERTIES

### TENSILE TEST – STANDARD ISO 527

Test specimens printed on Ultimaker 2+ with the following setup: - Nozzle type: standard brass - Nozzle Temperature: 210 °C - Heat bed Temp: 35 °C - Print speed: 50 mm/s - Infill orientation: 45°	<b>xz</b>			<b>xy</b>		
<b>Infill</b>	15%	50%	100%	15%	50%	100%
<b>Tensile strength (Mpa)</b>	12,3	21,8	25,4	29,3	34,6	47,8
<b>Elastic Modulus (Mpa)</b>	1302	1639	2190	1782	2001	2467
<b>Elongation at break (%)</b>	1,80	2,83	2,49	3,87	4,72	4,59
<b>Energy at break (J)</b>	0,5	1,3	1,4	3,1	5	6,6

### IMPACT TEST IZOD – STANDARD ISO 180

Test specimens printed on Ultimaker 2+ with the following setup: - Nozzle type: standard brass - Nozzle Temperature: 210 °C - Heat bed Temp: 35 °C - Print speed: 50 mm/s - Infill orientation: 45°	<b>zy- normal</b>			<b>xy- parallel</b>		
<b>Infill</b>	15%	50%	100%	15%	50%	100%
<b>Impact strength (KJ/m<sup>2</sup>)</b>	10,85	11,81	15,27	11,03	11,34	17,91
<b>Impact Energy (J)</b>	0,43	0,47	0,61	0,44	0,45	0,72

## FILAMENT SPECIFICATIONS AND PRINT SETTINGS

<b>Diameter 1.75mm</b>	1.75 ± 0.05 mm
<b>Diameter 2.85mm</b>	2.85 ± 0.05 mm
<b>Roundness deviation</b>	max 2%
<b>Suggested Print Temperature</b>	200 – 215 °C
<b>Suggested Print Speed</b>	40 – 85 mm/s
<b>Suggested Bed Temperature</b>	30 – 50 °C (not necessary)
<b>Cooling fan</b>	100%