

Technical Data Sheet

Spectrum Filaments PLA Tough

Identification	
Trade name	Spectrum PLA Tough
Chemical name	Polylactic Acid
Use	Additive Manufacturing
Origin	Spectrum Group Sp. z o.o.

Filament Specification	
Diameter 1.75	1.75 ± 0.05 mm
Diameter 2.85	2.85 ± 0.05 mm
“Verify your spool” option	YES



Material properties		
Melt Flow Rate ¹	9,42 g/10 min	-
Melt temperature	140-160°C	-
Density	1.20 g/cm ³	-
Glass transition temperature	60°C	-
Water solubility	insoluble	-
Odor	odorless	-
Storage	at temperatures not exceeding 50°C	-


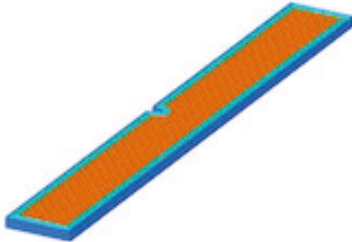
¹Test conditions: T = 210°C; m = 2.16 kg

Guideline for print settings*	
Nozzle temperature	190-230°C
Bed temperature	0-45°C
Active cooling fan	YES (up to 100%)
Layer height**	0.05 - 0.35 mm
Shell thickness**	0.40 – 2.4 mm
Print speed**	40 – 130 mm/s



*Settings are based on a 0,4 mm nozzle.

** The range depends on the geometrical complexity

Mechanical properties	Tensile test		Test Method ASTM D638	
	Printed vertical (Z-axis)		Printed horizontal (X, Y-axis)	
Infill	50 %	100 %	50 %	100 %
Tensile strength (MPa)	19,1	25,2	40,1	53,2
Force at break (MPa)	17,6	22,4	37,8	43,5
Elongation at max force (%)	3,6	4,9	9,1	14,5
Elongation at break (%)	3,6	4,9	10,7	15,0
Emodulus (MPa)	262,9	347,7	399,1	432,8
All specimens were printed using the BLIXET B100 Multi 3D printer using following parameters: Nozzle temperature: 210°C Bed temperature: 60°C Printing speed: 45mm/s Number of shells: 4 Infill type: lattice Infill under: 45°				

Mechanical properties	Impact test		Test Method ISO 179	
	Charpy - Printed vertical (Z-axis)		Charpy - Printed horizontal (X, Y-axis)	
Infill	50%	100%	50%	100%
Impact strength (J/cm ²)	1,19	1,40	2,33	2,09
Impact energy (mJ)	500	600	975	875
All specimens were printed using the BLIXET B100 Multi 3D printer using following parameters: Nozzle temperature: 210°C Bed temperature: 60°C Printing speed: 45mm/s Number of shells: 4 Infill type: lattice Infill under: 45°				



Mechanical properties	Flexural test		Test Method ISO 178	
	Printed vertical (Z-axis)		Printed horizontal (X, Y-axis)	
Infill	50%	100%	50%	100%
Flexural modulus (MPa)	1668	1703	1855	2493
Maximum bending stress (MPa)	13,81	14,08	49,17	71,13
Deflection (mm)	1	10	1	10
<p>All specimens were printed using the BLIXET B100 Multi 3D printer using following parameters: Nozzle temperature: 210°C Bed temperature: 60°C Printing speed: 45mm/s Number of shells: 4 Infill type: lattice Infill under: 45°</p>				

Preparation date: 08-05-2019

All shown data are typical properties. Users should confirm results by their own tests.