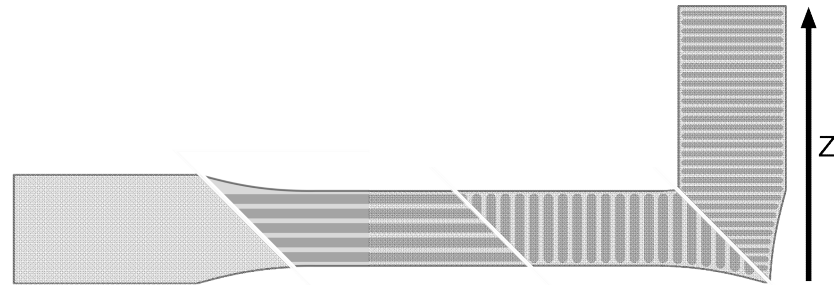


# Essentium TPU 90A

**Description:**

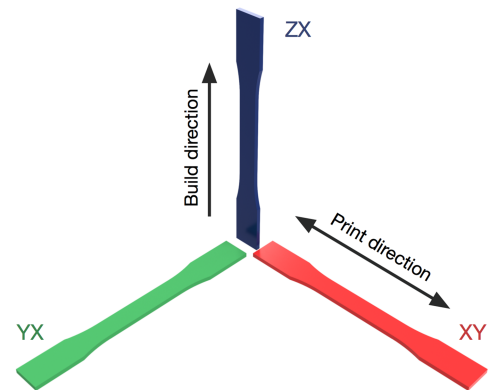
We engineered our Essentium Flex line to have the perfect balance of elasticity and toughness. This filament exhibits excellent interlayer adhesion and high stain at break. Our TPU 90A filament is perfect for a print that needs flexibility, grip, and abrasion resistance. Use this material to make flexible hinges, belts, plugs, gaskets, protective cases, overgrips, wheels, shoe soles, vibration dampeners, energy-absorbing lattices, and so much more! With this filament, we've got your flexible printing needs covered.



Metric	Method	Molded Properties <sup>1</sup>	3D Printed Properties <sup>2</sup>			
			45-45	XY	YX	ZX
Tensile Strength, MPa	ASTM D412	44	37	32	25	17
Strain at Break, %	ASTM D412	520	844	710	630	416
Stress at 100%, Mpa	ASTM D412	10	7	8	7	7
Stress at 300%, Mpa	ASTM D412	23	14	14	13	13

Metric	Method	Properties <sup>1</sup>
Shore Hardness, A	ASTM D2240	90
Specific Gravity	ASTM D792	1.21
Melt Flow Rate <sup>3</sup> , g/10 min	ASTM D1238	30-50
Glass Transition Temperature, °C	Internal	-38
Vicat Softening Temperature, °C	ASTM D1525	128

Recommended Print Settings:	
Extrusion Temperature, °C	205-250
Bed Temperature, °C	23-60
Enclosure Temperature, °C	Room Temperature
Print Speed, mm/s	15-30



Notes:

- (1) Values taken from raw material TDS
- (2) Print settings: nozzle temp: 240 °C, bed temp: 60 °C, infill: 100%, speed: 20mm/s, layer height: .3mm, extrusion multiplier: 1.05, nozzle diameter: 1.0mm
- (3) 210 °C, 21.6 kg

The data contained within this TDS is accurate to the best knowledge of Essentium Materials. Essentium Materials products are sold with the understanding that purchasers, thereof, will make their own intensive tests to determine the suitability of these products for the particular uses of the purchaser. Essentium Materials assumes no liability or responsibility for any damage to person or property resulting from incident to the use of these products by the purchasers, thereof, and furnished them with all faults and without warranties, express or implied. © 2017

Technology protected by pending patents. ESS-04-V1

Essentium Materials, LLC  
5880 Imperial Loop Dr.  
Suite 10  
College Station, TX 77845  
[essentiummaterials.com](http://essentiummaterials.com)  
979.777.2354