

### ESSENTIUM TPU 74D

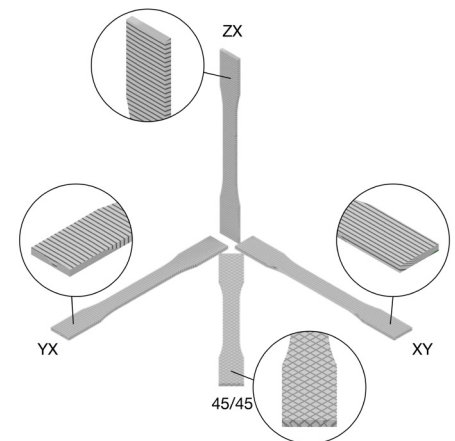
Essentium's TPU 74D is the highest durometer filament in our broad flexible portfolio. It is a no-warp drop in replacement for ABS. It has excellent impact strength, tear strength, and abrasion resistance.

MECHANICAL PROPERTIES					
Metric	Test Method	Print Orientation			
		XY	45/45	YX	ZX
Ultimate Tensile Strength, MPa	ISO 37	39.2 (0.8)	32.7 (1.7)	24.0 (1.1)	24.8 (0.8)
Tensile Modulus, GPa	ISO 37	0.340 (0.016)	0.328 (0.016)	0.314 (0.010)	0.316 (0.046)
Strain at Break, %	ISO 37	730 (23)	510 (71)	73 (15)	110 (26)
Notched Izod Impact Strength*, kJ/m <sup>2</sup>	ISO 180/A	N	N	15 (14)-H	5.4 (3.0)-C

Standard deviations listed in parentheses. \*For Izod impact results the code-letters correspond to N: non-break, H: hinge break, C: complete break

MATERIAL PROPERTIES <sup>1</sup>		
Property	Method	Value
Specific Gravity, g/cm <sup>3</sup>	ISO 1183	1.23
Glass Transition Temperature, °C	DMA	33
Shore Hardness	ISO 868	73D
Tear Strength, kN/m	ISO 34-1	220
Abrasion Loss, mm <sup>3</sup>	ISO 4649	20
Compression Set at RT	ISO 815	50
Compression Set at 70°C	ISO 815	55

1 Values taken from resin manufacturer TDS



### MATERIAL HANDLING AND DRYING

Essentium TPU 74D is a very hygroscopic thermoplastic and will rapidly absorb moisture from humid air. Keep the material in the vacuum sealed packaging until you are ready to print with it. TPU 74D filament should always be fed to the printer in a dry container and stored in a dry cabinet. If the material does absorb more than 200ppm moisture, it should be dried in a low dew point (< -40°C) oven or vacuum oven at 90 – 120°C for 2 – 3 hours.

### RECOMMENDED HSE PRINT SETTINGS

#### 0.4mm Hozzle

Extrusion Width, mm	0.4 – 0.45	Hozzle Temperature, °C	270 – 330
Layer Height, mm	0.2 – 0.25	Bed Temperature, °C	70 – 80
Print Speed, mm/s	20 – 200	IR Temperature, °C	20 – 40
Infill, %	15 – 75	Fan Speed, %	10 – 40

#### 0.8mm Hozzle

Extrusion Width, mm	0.75 – 0.85	Hozzle Temperature, °C	280 – 350
Layer Height, mm	0.3 – 0.35	Bed Temperature, °C	70 – 80
Print Speed, mm/s	10 – 120	IR Temperature, °C	20 – 40
Infill, %	15 – 75	Fan Speed, %	10 – 60

### RECOMMENDED FDM PRINT SETTINGS

Nozzle Temperature, °C	230 – 250	Fan Speed, %	0 – 20
Bed Temperature, °C	50 – 80	Bed Material	G-10/FR4 or Glass
Print Speed, mm/s	20 – 50	Bed Adhesion Method	Magigoo® Flex
First Layer Speed, mm/s	15 – 20	Infill Density, %	<75

### KEY FEATURES:

- Semi-rigid
- Best in class tear resistance
- Temperature resistance up to 120°C
- Good abrasion and wear resistance
- Excellent chemical, solvent, oil and ozone resistance

### APPLICATIONS INCLUDE:

- ABS replacement
- Abrasion resistant covers
- Snap fit connectors
- Heavy load vibration isolation
- Impact rated structural components

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