

### ESSENTIUM TPU 58D-AS

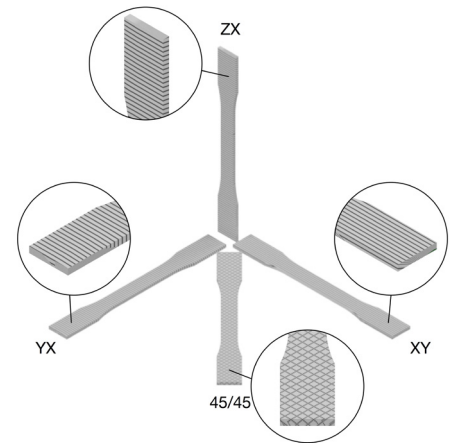
Essentium's TPU 58D-AS is an industry-first ESD safe and anti-static 58D Shore hardness thermoplastic polyurethane filament that is available in a variety of colors. This cutting-edge material has excellent impact strength, tear strength, and abrasion resistance and is safe for clean room and electronics manufacturing applications.

MECHANICAL PROPERTIES					
Metric	Test Method	Print Orientation			
		XY	45/45	YX	ZX
Ultimate Tensile Strength, MPa	ISO 37	33.0 (1.7)	21.0 (0.6)	14.0 (1.3)	15.5 (0.4)
Tensile Modulus, GPa	ISO 37	0.142 (0.004)	0.140 (0.004)	0.152 (0.011)	0.164 (0.003)
Strain at Break, %	ISO 37	740 (30)	470 (10)	78 (20)	81 (10)
Notched Izod Impact Strength*, kJ/m <sup>2</sup>	ISO 180/A	54 (5)	55 (5)	7.3 (3.0)	6.6 (2.1)

Standard deviations listed in parentheses.

MATERIAL PROPERTIES		
Property	Method	Value
Specific Gravity <sup>1</sup> , g/cm <sup>3</sup>	ISO 1183	1.21
Shore Hardness	ISO 868	58D
Surface Resistance, Ohms	IEC 61340-2-3	1E8 – 1E10

<sup>1</sup> Values taken from resin manufacturer TDS



### MATERIAL HANDLING AND DRYING

Essentium TPU 58D-AS 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 58D-AS 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:

- ESD safe in colors
- Clean room safe
- Non-marking
- Good abrasion and wear resistance
- Excellent chemical, solvent, oil and ozone resistance

#### APPLICATIONS INCLUDE:

- ESD safe dust caps
- Abrasion resistant panel covers
- ESD safe jigs and fixtures
- No-fly parts
- Impact rated components

Version 1.1  
Revision Date: 06/30/22