

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 resulted from a close collaboration between Croda and Essentium to develop an exclusive anti-static filament line based on Croda Ionphase™ permanent anti-static additives. It has excellent impact strength, tear strength, and abrasion resistance and is safe for clean room and electronics manufacturing applications.



MECHANICAL PROPERTIES

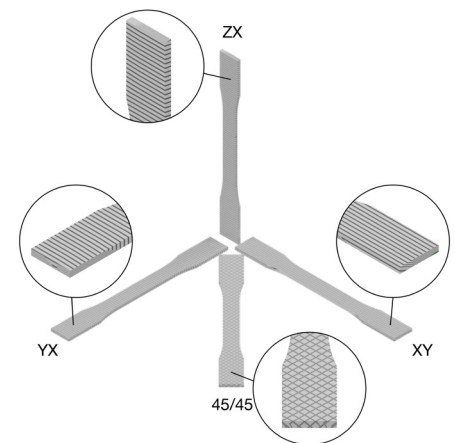
Metric	Test Method	Print Orientation			
		XY	45/45	YX	ZX
Ultimate Tensile Strength, MPa	ISO 37	33.0 (1.7)	21.0 (0.6)	14.0 (1.3)	15.5 (0.4)
Tensile Modulus, GPa	ISO 37	0.142 (0.004)	0.140 (0.004)	0.152 (0.011)	0.164 (0.003)
Strain at Break, %	ISO 37	740 (30)	470 (10)	78 (20)	81 (10)
Notched Izod Impact Strength*, kJ/m ²	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 ¹ , g/cm ³	ISO 1183	1.21
Shore Hardness	ISO 868	58D
Surface Resistance, Ohms	IEC 61340-2-3	1E8 – 1E10

¹ 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 1.0
Revision Date: 11/03/20