

TPU Technical Data Sheet (TDS)

Thermoplastic polyurethane (TPU) is a soft material which contain both feature of rubber and plastic. It is a semi-flexible and chemical resistance filament with strong interlayer bonding. It also has good corrosion resistance to industrials oils and chemicals.

IEMAI 3D high performance TPU filament is based on FFF/FDM technology, with a commonly used diameter of 1.75 mm, 235 °C printing temperature, 50 °C bed temperature, having excellent interlayer adhesion which greatly improve the strength and shock resistance of the prototype.

It is commonly applied in field such as functional prototypes, guides, sleeves, and protective cases.

Mechanical Properties	Typical Value	Test Method
Tensile Modulus	26 MPa	ASTM D638
Tensile Stress at Yield	8.6 MPa	ASTM D638
Tensile Stress at Break	39 MPa	ASTM D638
Elongation at Yield	55%	ASTM D638
Elongation at Break	580%	ASTM D638
Flexural Strength	-	-
Flexural Modulus	-	-
Izod Impact Strength, notched (at 23 °C)	19.1kJ/m ²	ASTM D256
Izod Impact Strength, unnotched (at 23 °C)	-	-
Charpy Impact Strength, notched (at 23 °C)	-	-
Hardness	95 (Shore A)	ASTM D2240

Thermal Properties	Typical Value	Test Method
Melt Mass Flow Rate (MFR)	-	-
Heat Deflection (HDT) at 0.455 MPa	74 °C	ASTM D648
Heat Deflection (HDT) at 1.82 MPa	49 °C	ASTM D648
Glass Transition	-24 °C	DSC
Coefficient of Thermal Expansion (flow)	100*16 ⁻⁶ C ⁻¹	ISO 11359-1/-2
Coefficient of Thermal Expansion (xflow)	-	-
Melting Temperature	220 °C	DSC
Thermal Shrinkage (hot air, 100 °C, 30 min)	-	-

Electrical Properties	Typical Value	Test Method
Volume Resistivity	10 ¹¹ ohm.m	IEC 60093



3D printing solutions for high performance materials

Surface Resistance	$2 \cdot 10^{14}$ Ohm	IEC 60093
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Other Properties	Typical Value	Test Method
Specific Gravity	1.22	ASTM D782
Flame Classification	HB Class	ICE 60695-11-10
Moisture Absorption	0.18%	ASTM D570 (24h)

Print Recommendation	
Nozzle Temperature	220 -240 °C
Bed Temperature	30 -500 °C
Print Speed	20-50 mm/s
Chamber Temperature	0-50 °C
Cooling Fan	0-100%