

TECHNICAL DATA SHEET (TDS)

PETG ESD Filament (Electrostatic Discharge Safe)

1. Product Description

PETG ESD Filament is a modified polyethylene terephthalate glycol (PETG) material engineered with permanent electrostatic dissipative properties. It is designed for applications that require static control to protect sensitive electronic components from electrostatic discharge (ESD) damage.

The material combines the ease of printing of standard PETG with controlled surface resistivity, good mechanical strength, chemical resistance, and dimensional stability.

Suitable for industrial, electronic, and functional end-use parts.

2. Key Features

- Permanent ESD-safe performance
 - Controlled surface resistivity
 - Good impact resistance
 - Excellent layer adhesion
 - Low warping
 - Good chemical resistance
 - Easy to print compared to ABS
 - Suitable for functional parts
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3. Typical Applications

- Electronic component trays
- PCB holders and fixtures
- Test jigs and tooling
- Industrial housings
- Anti-static enclosures
- Semiconductor handling parts
- Factory automation components

4. Typical Material Properties

(Values are typical and not for specification purposes)

Mechanical Properties

Property	Test Method	Typical Value
Tensile Strength	ASTM D638	45 – 55 MPa
Tensile Modulus	ASTM D638	1800 – 2100 MPa
Elongation at Break	ASTM D638	8 – 15 %
Flexural Strength	ASTM D790	65 – 80 MPa
Impact Strength (Izod, Notched)	ASTM D256	5 – 8 kJ/m ²

Thermal Properties

Property	Test Method	Typical Value
Glass Transition Temperature (T _g)	ASTM D3418	75 – 80 °C
Heat Deflection Temperature (0.45 MPa)	ASTM D648	65 – 75 °C
Recommended Printing Temperature	—	230 – 250 °C
Recommended Bed Temperature	—	70 – 90 °C

Electrical Properties (ESD Performance)

Property	Test Standard	Typical Value
Surface Resistivity	ASTM D257	10 ⁶ – 10 ⁹ Ω/sq
Volume Resistivity	ASTM D257	10 ⁶ – 10 ⁹ Ω·cm

Classification: Electrostatic Dissipative (ESD Safe)

5. Printing Guidelines

- Nozzle Temperature: 230 – 250 °C
 - Bed Temperature: 70 – 90 °C
 - Cooling Fan: Low to medium
 - Print Speed: 40 – 80 mm/s
 - Enclosure: Recommended for dimensional stability
 - Drying Condition: 65 °C for 4–6 hours (if moisture absorbed)
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6. Storage Conditions

- Store in a dry environment
 - Keep sealed in moisture-proof packaging
 - Recommended storage humidity: < 50% RH
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7. Filament Specifications

Parameter	Specification
Diameter	1.75 mm ± 0.02 mm
Net Weight	1 kg
Density	~1.27 g/cm ³
Color	Black (ESD grade)

8. Compliance

- RoHS Compliant
 - REACH Compliant
 - ESD Standard Reference: ANSI/ESD S20.20 (Application dependent)
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9. Safety Information

For safe handling, please refer to the corresponding Material Safety Data Sheet (MSDS).
Avoid inhalation of fumes during printing. Ensure adequate ventilation.