ABS ESD Antistatic Filament

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1. Product Overview

ABS ESD Antistatic Filament is a specially formulated ABS material engineered to dissipate electrostatic charges safely. It is ideal for printing components used in electronics assembly, semiconductor handling, jigs & fixtures, and environments sensitive to static discharge. With balanced mechanical strength and stable ESD performance, it provides a reliable solution for functional industrial applications.

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2. Key Features

- **ESD-Safe:** Surface resistivity engineered for antistatic applications
- **Stable Electrical Performance:** Consistent charge dissipation across the printed surface
- **High Mechanical Strength:** Typical ABS rigidity and impact resistance
- **Heat-Resistant:** Suitable for functional, load-bearing electronics fixtures
- **Dimensional Stability:** Low warping formulation for better printability
- **Smooth Surface Finish:** Excellent for prototype and industrial use

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3. Typical Applications

- Electronics housing & covers
- Jigs and fixtures for PCB assembly
- Tooling for semiconductor handling
- 3D-printed trays, holders, and transport parts
- Robotics and automation components

- Sensor brackets and protective enclosures

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4. Technical Specifications

4.1 Physical Properties

Property	Test Method	Value
Density	ASTM D792	1.03 g/cm³
Surface Resistivity	ASTM D257	10^6 – 10^9 Ω/sq (Antistatic Range)

(Note: Actual resistivity may vary based on print settings, humidity, and part geometry.)

4.2 Mechanical Properties

Property	Test Method	Value
Tensile Strength	ASTM D638	35–45 MPa
Tensile Modulus	ASTM D638	1,600–2,000 MPa
Elongation at Break	ASTM D638	4–10%
Flexural Strength	ASTM D790	55–70 MPa
Flexural Modulus	ASTM D790	1,700–2,200 MPa
Impact Strength (Izod Notched)	ASTM D256	20–35 J/m

4.3 Thermal Properties

Property	Test Method	Value
Heat Deflection Temperature (HDT)	ASTM D648 @ 0.45MPa	85–95°C

Glass Transition Temperature (Tg)	DSC	~105°C
Melting Temperature	–	Amorphous (No True Melting Point)

4.4 Electrical Properties

Property	Test Method	Value
Surface Resistivity	ASTM D257	10^6 – 10^9 Ω/sq
Charge Decay Time	IEC 61340	< 2 seconds (typical)**

Note: Values vary depending on print orientation, layer height, humidity, and infill density.

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5. Recommended Printing Settings

Parameter	Recommended Range
Nozzle Temperature	240 – 260°C
Bed Temperature	90 – 110°C
Chamber Temperature	40 – 60°C (recommended for best layer adhesion)
Print Speed	40 – 80 mm/s
Bed Adhesion	ABS glue / ABS slurry / PEI sheet
Enclosure	Strongly recommended

Note: Dry filament before use (4–6 hours at 60°C) for best ESD performance.

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6. Storage Guidelines

- Store in a dry environment (<20% RH).
- Keep filament in a sealed bag with desiccants.

- Re-dry filament if exposed to humidity.

Moisture may increase surface resistivity and reduce ESD reliability.

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7. Safety Information

- Print in a well-ventilated area; ABS emits fumes when heated.
- Avoid inhalation of vapors or dust.
- Follow standard handling guidelines for thermoplastics.

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8. Disclaimer

All data above are typical values, provided for reference and not guaranteed as absolute specifications. Performance may vary depending on printer model, slicing settings, and environmental conditions.