

INTRODUCTION

High Impact Polystyrene (HIPS), TOPSTAT roll stock based on Conductive Carbon Black technology that can provide static dissipative and electrically conductive performance for applications requiring anti-static properties, electrostatic discharge (ESD) protection, grounding, and/or electrical conductivity.

PROPERTIES

Property	Value	Test Method
Static Decay Rate	< .01 Sec @ 10% RH	-----
Specific Gravity	1.09	ATSM D-792
Flexural Modulus	220,000 psi	ATSM D-790B
Tensile Elongation (Break)	40%	ATSM D-638
Notched Izod Impact	5 ft-lbs./in	ATSM D-256A
Heat Deflection Temp @ 264 psi	154 °F	ATSM D-648

AVAILABLE DIMENSIONS

- Gauge
 - .025 - .070
- Sheet width
 - 25" – 31" in volumes \geq 2,500 pounds
 - 25" – 60" in volumes \geq 15,000

BENEFITS

- Conductive carbon black provides permanent dissipative/conductive properties.
- Can achieve surface resistivity ranging from $10^3 \Omega\text{m}$ to $10^7 \Omega\text{m}$.
- Good performance even in low humidity environments.

RECOMMENDED USAGE

- Processors will need to confirm the optimum Ohms Range for each end use.
- All values are for preformed materials. Electrical values will vary with each individual design.

Conductive:

- Surface resistivity: Less than $1 \times 10^6 \Omega/\text{sq}$ (ohms per square)
- Volume resistivity: Less than $1 \times 10^4 \Omega\text{-cm}$ (ohm-centimeters)
- Applications: Grounding straps, workbench surfaces, ESD bags

Static Dissipative:

- Surface resistivity: Between $1 \times 10^6 \Omega/\text{sq}$ and $1 \times 10^{10} \Omega/\text{sq}$
- Volume resistivity: Between $1 \times 10^4 \Omega\text{-cm}$ and $1 \times 10^{11} \Omega\text{-cm}$
- Applications: Packaging for sensitive electronics, clean rooms, assembly lines

Anti-Static

- Surface resistivity: Between $1 \times 10^{11} \Omega/\text{sq}$ and $1 \times 10^{14} \Omega/\text{sq}$
- Volume resistivity: Not typically specified
- Applications: Preventing static build-up on furniture, clothing, packaging

These ranges are based on international standards such as ANSI/ESD S20.20 and IEC 61340-5-1. They provide a general guideline, but the specific requirements for a particular application may vary depending on factors like the sensitivity of the electronic components and humidity levels.

Here are some additional resources that you may find helpful:

- ESD Handbook: Protection of Electronic Devices from Electrostatic Discharge by ESD Association
- ANSI/ESD S20.20 Standard: Protection of Electronic Devices from Electrostatic Discharge
- IEC 61340-5-1 Standard: Protection of electronic devices from electrostatic phenomena - Part 5-1: Basic requirements - Test methods for ESD protective devices

This information is intended to be used only as a guideline for designers and processors of modified thermoplastics for thermoformed applications. Data are obtained from specimens molded under carefully controlled conditions from representative samples of the compound described herein. Properties may be materially affected by molding techniques applied and by the size and shape of the item molded. Any information regarding performance or use is only offered as suggestion for investigation for use, based upon T.O. Plastics experience. T.O. Plastics makes no warranties, expressed or implied, concerning the suitability or fitness of any of its products. It is the responsibility of the customer to determine that the product is safe, lawful, and technically suitable for the intended use.