



Standard Specification for Extruded Crosslinked and Thermoplastic Semi-Conducting, Conductor and Insulation Shielding Materials¹

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1. Scope

1.1 This specification covers extruded crosslinked and thermoplastic semi-conducting, conductor and insulation shielding materials for electrical wires and cables.

1.2 The materials covered are not compatible with hydrocarbon derivatives of a swelling or deteriorating nature.

1.3 The values stated in inch-pound units are the standard, except in cases where SI units are more appropriate. The values in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

- D 573 Test Method for Rubber—Deterioration in an Air Oven²
- D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact³
- D 1711 Terminology Relating to Electrical Insulation⁴
- D 1928 Practice for Preparation of Compression-Molded Polyethylene Test Sheets and Test Specimens³
- D 2647 Specification for Crosslinkable Ethylene Plastics⁵
- D 3182 Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets²
- D 3183 Practice for Rubber—Preparation of Pieces for Test Purposes from Products²
- D 4496 Test Method for DC Resistance or Conductance of Moderately Conductive Materials⁶

¹ This specification is under the jurisdiction of ASTM Committee D-9 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.18 on Solid Insulations, Non-Metallic Shieldings, and Coverings for Electrical and Telecommunications Wires and Cables.

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² Annual Book of ASTM Standards, Vol 09.01.

³ Annual Book of ASTM Standards, Vol 08.01.

⁴ Annual Book of ASTM Standards, Vol 10.01.

⁵ Annual Book of ASTM Standards, Vol 08.02.

⁶ Annual Book of ASTM Standards, Vol 10.02.

D 6095 Test Method for Volume Resistivity for Extruded Crosslinked and Thermoplastic Semi-Conducting, Conductor and Insulation Shielding Materials⁶

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *aging (act of), n*—the exposure of materials to an environment for an interval of time.

3.1.2 *semi-conducting, adj*—moderately conductive; see Terminology D 1711 and Test Method D 4496.

4. Physical Properties

4.1 The shielding material, when processed into molded slabs, in accordance with Practice D 1928 Procedure C, the Sampling Section of Specification D 2647, and Practices D 3182 and D 3183, depending on the type of material being tested, shall conform to the requirements for physical properties specified in Table 1.

5. Electrical Requirements

5.1 *Volume Resistivity*—When the extruded conductor and insulation shielding is sampled and tested in accordance with Test Method D 6095, the volume resistivity at the rated temperature of the insulation shall be not greater than 100 000 Ω ·cm for conductor shielding and 50 000 Ω ·cm for insulation shielding.

6. Sampling

6.1 Sample the semi-conducting materials in accordance with 4.1.

7. Test Methods

7.1 Test the semi-conducting materials in accordance with 4.1 and D 6095.

8. Keywords

8.1 conductor shielding material; insulation shielding material; semi-conducting shielding material; volume resistivity

TABLE 1 Physical Properties for Semiconducting Shielding Materials

Brittle point (Test Method A)	-10°C, max
Aging requirements: ^A	
Elongation at rupture, min, %	100

^A Thermoplastic materials, aged 48 h at 100 ± 1°C. Crosslinked materials, aged 168 h at 121 ± 1°C.

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