



Designation: D6095 – 12 (Reapproved 2023)

# Standard Test Method for Longitudinal Measurement of Volume Resistivity for Extruded Crosslinked and Thermoplastic Semiconducting Conductor and Insulation Shielding Materials<sup>1</sup>

This standard is issued under the fixed designation D6095; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the procedure for determining the volume resistivity, measured longitudinally, of extruded crosslinked and thermoplastic semiconducting, conductor and insulation shields for wire and cable.

1.2 In common practice the conductor shield is often referred to as the strand shield.

1.3 Technically, this test method is the measurement of a resistance between two electrodes on a single surface and modifying that value using dimensions of the specimen geometry to calculate a resistivity. However, the geometry of the specimen is such as to support the assumption of a current path primarily throughout the volume of the material between the electrodes, thus justifying the use of the term “longitudinal volume resistivity.” (See 3.1.2.1.)

1.4 Whenever two sets of values are presented, in different units, the values in the first set are the standard, while those in parentheses are for information only.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see 7.1.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.07 on Electrical Insulating Materials.

Current edition approved May 1, 2023. Published May 2023. Originally approved in 1997. Last previous edition approved in 2018 as D6095 – 12 (2018). DOI: 10.1520/D6095-12R23.

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

D257 Test Methods for DC Resistance or Conductance of Insulating Materials

D1711 Terminology Relating to Electrical Insulation

D4496 Test Method for D-C Resistance or Conductance of Moderately Conductive Materials

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *semiconducting, adj*—moderately conductive, see Terminology D1711 and Test Method D4496.

3.1.2 *longitudinal volume resistivity, n*—an electrical resistance multiplied by a factor calculated from the geometry of a specimen volume between electrodes in contact with one, and only one, surface of the specimen.

3.1.2.1 *Discussion*—In normal wire and cable usage, the longitudinal volume resistivity is simply referred to as “volume resistivity.” This usage is at variance with terminology in Test Methods D257, Terminology D1711, and Test Method D4496.

## 4. Significance and Use

4.1 The electrical behavior of semiconducting extruded shielding materials is important for a variety of reasons, such as safety, static charges, and current transmission. This test method is useful in predicting the behavior of such semiconducting compounds. Also see Test Method D4496.

## 5. Apparatus

5.1 See Test Method D4496 for a description of the apparatus, except the electrode system which is described in 7.2.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.