



Designation: ~~D3555 – 07 (Reapproved 2013)~~ **D3555 – 07 (Reapproved 2018)**

Standard Specification for Track-Resistant Black Crosslinked Polyethylene Insulation for Wire and Cable, 90 °C Operation¹

This standard is issued under the fixed designation D3555; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers a track-resistant black crosslinked polyethylene insulation, the base polymer which consists substantially of polyethylene or its copolymers. This insulation shall be carbon black pigmented.

1.2 This type of insulation is considered suitable for use on wire or cable that will be used for continuous operation at conductor temperatures up to 90 °C.

1.3 This insulation is suitable for use on wire or in cable used for power transmission in overhead spaced-line service, installed at temperatures above –25° and exposed to sunlight and other atmospheric environments between –55 and +90 °C.

1.4 In many instances, the insulation cannot be tested unless it has been formed around a conductor. Therefore, tests done on insulated wire in this standard are solely to determine the relevant property of the insulation and not to test the conductor or completed cable.

1.5 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.

1.6 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D470 Test Methods for Crosslinked Insulations and Jackets for Wire and Cable

D1711 Terminology Relating to Electrical Insulation **D3555-07(2018)**

D2132 Test Method for Dust-and-Fog Tracking and Erosion Resistance of Electrical Insulating Materials **d3555-072018**

D2765 Test Methods for Determination of Gel Content and Swell Ratio of Crosslinked Ethylene Plastics

2.2 *ICEA Standard:*

ICEA T-28-562 Test Method for Measurement of Hot Creep of Polymeric Insulations³

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions of terms used in this specification, refer to Terminology **D1711**.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *aging, (act of), n*—exposure of materials to air at a temperature of 121 °C for 168 h.

4. Physical Properties

4.1 When tested for physical and aging requirements, heat distortion, cold bend, U-bend discharge, surface resistivity, and track resistance in accordance with Test Methods **D470**, the track-resistant black crosslinked polyethylene insulation shall meet the

¹ This specification 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.

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² 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.

³ Available from The Insulated Cable Engineers Association, Inc. (ICEA), P.O. Box 1568, Carrollton, GA 30112, <http://www.icea.net>.