



Standard Specification for Ozone-Resistant Ethylene-Alkene Polymer Insulation for Wire and Cable¹

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1. Scope

1.1 This specification covers an ozone-resisting crosslinked rubber insulation compound for electrical wires and cables. The polymer shall consist substantially of ethylene-alkene copolymer (EAM) or ethylene-alkene diene terpolymer (EADM). This polymer type includes ethylenepropylene copolymer (EPM) and ethylenepropylene diene terpolymer (EPDM).

1.2 This type of insulation is considered suitable for use on wire or cable which will be used in wet and dry locations with conductor temperatures up to 90°C during continuous operation, to 130°C during emergency overload conditions, and to 250°C during short-circuit conditions. It is considered suitable for all sizes and voltage classifications of single- and multiple-conductor power cables up to 35 000 V phase-to-phase at the 100 % insulation level and up to 25 000 V at the 133 % insulation level as listed in Table 1D, Conductor Sizes, Insulation Thicknesses, Test Voltages, and Corona Extinction Levels of Ethylene-Propylene Rubber Insulation, of Test Methods D 470. Single-conductor cables shall have a supplementary covering over the insulation, and multiple-conductor cables shall have an overall covering.

1.3 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.

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

2. Referenced Documents

2.1 ASTM Standards:

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, Nonmetallic Shieldings, and Coverings for Electrical and Telecommunications Wires and Cables. Members of ASTM Committees D-2 on Petroleum Products and Lubricants, and B-7 on Light Metals and Alloys, have contributed to this specification.

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D 470 Test Methods for Crosslinked Insulations and Jackets for Wire and Cable²

D 1711 Terminology Relating to Electrical Insulation²

2.2 ICEA Standard:

T-24-380 Guide for Partial Discharge Procedure³

3. Terminology

3.1 *Definitions:* For definitions of terms used in this specification, refer to Terminology D 1711.

3.2 *Definition of Term 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 The crosslinked insulation shall conform to the requirements for physical properties specified in Table 1.

4.2 The values specified in Table 1 are applicable only to insulation having a nominal wall thickness of 0.030 in. (0.76 mm) or greater.

5. Electrical Requirements

5.1 *Order of Testing*—Perform the ac voltage, withstand, insulation resistance, and dc voltage withstand tests in that order when any of these tests are required. The sequence for other testing is not specified.

5.2 *AC Voltage Withstand Test*—Each insulated conductor in the completed cable shall withstand for 5 min the ac test voltage shown in Table 1D, Conductor Sizes, Insulation Thicknesses, Test Voltages, and Corona Extinction Levels of Ethylene-Propylene Rubber Insulation, of Test Methods D 470, except that for nonshielded conductors rated 5000 V or less, the dc test voltage described in 5.5 may be substituted.

5.3 *Insulation Resistance:*

5.3.1 Each insulated conductor in the completed cable shall have an insulation resistance value of not less than that corresponding to a constant of 20 000 at 15.6°C. When the temperature of the water in which the insulation is tested differs from 15.6°C, the measured value obtained shall be multiplied

² *Annual Book of ASTM Standards*, Vol 10.01.

³ Available from the Insulated Cable Engineers' Assn., P.O. Box 440, S. Yarmouth, MA 02664.