



# Standard Specification for Smooth-Wall Coilable Polyethylene (PE) Conduit (Duct) for Preassembled Wire and Cable<sup>1</sup>

This standard is issued under the fixed designation D3485; 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 specification covers materials, dimensions, and workmanship, and performance tests for medium-density and high-density smooth-wall coilable polyethylene (PE) conduit (duct) containing electrical wires or cables, or both, preassembled by the manufacturer.

NOTE 1—The end user may elect to assemble the conduit and the wire or cable system in the field.

1.2 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.

## 2. Referenced Documents

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

- D638 Test Method for Tensile Properties of Plastics
- D746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
- D1238 Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
- D1248 Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
- D1693 Test Method for Environmental Stress-Cracking of Ethylene Plastics
- D2951 Test Method for Resistance of Types III and IV Polyethylene Plastics to Thermal Stress-Cracking<sup>3</sup>
- D6070 Test Methods for Physical Properties of Smooth-Wall, Coilable, Polyethylene (PE) Conduit (Duct) for Preassembled Wire and Cable

### 2.2 Other Document:

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.26 on Olefin Based Pipe.

Current edition approved March 10, 2002. Published June 2002. Originally published as D3485 – 76. Last previous edition D3485 – 97. DOI: 10.1520/D3485-02.

<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.

<sup>3</sup> Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.

## National Electrical Code<sup>4</sup>

## 3. Significance and Use

3.1 PE duct must have smooth surfaces to facilitate the installation and removal of electrical wire and cable. It must be capable of being manufactured and coiled (reeled) in continuous lengths, transported, and subsequently uncoiled for installation or further processing, or both, without affecting its properties or performance.

## 4. Application and Installation

4.1 PE duct is suitable for underground electrical distribution systems utilizing insulations suitable for use at conductor temperatures not exceeding 90°C (190°F) for normal operation. The minimum recommended installation temperature for the PE duct is –25°C (–13°F), however, depending on the type of wire or cable installed in the duct, a higher installation temperature may be required.

## 5. Extrusion Compounds

5.1 The PE-extrusion compounds shall be either medium-density Type II, Class C, or high-density Type III, Class C, as described in Specification D1248, and in addition meet the requirements shown in Table 1. Remove the electrical wires or cables, or both, from the duct before testing.

## 6. Finished PE Duct

6.1 *Workmanship*—Coilable PE duct shall be free of visible cracks, holes, foreign inclusions, or other physical defects that would detract from its performance. It shall be as uniform as practicable in dimensions, smoothness, density, and other physical properties.

6.2 *Dimensions*—Smooth-wall coilable PE duct shall have the dimensions prescribed in Table 2.

## 7. Duct Size Selection

7.1 Use this section only as a guide. Actual duct sizes must be agreed to between the seller and the purchaser.

<sup>4</sup> Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, http://www.nfpa.org.