



Standard Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids¹

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1. Scope

1.1 This practice covers materials and installation procedures for polyethylene encasement to be applied to underground installations of ductile iron pipe. It may also be used for polyethylene encasement of fittings, valves, and other appurtenances to ductile iron pipe systems.

1.2 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 149 Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies²
- D 882 Standard Test Method for Tensile Properties of Thin Plastic Sheet
- D 1709 Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method
- D 1922 Standard Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheet by Pendulum Method
- D 4976 Standard Specification for Polyethylene Plastics Molding and Extrusion Materials

2.2 ANSI/AWWA Standards:

- C 600, Installation of Ductile Iron Water Mains and Their Appurtenances³
- C 105/A21.5, Polyethylene Encasement for Ductile-Iron Pipe Systems³

3. Terminology

3.1 Definitions:

3.1.1 *polyethylene encasement*—polyethylene material, in tube or sheet form, that is used to encase ductile iron pipe.

¹ This practice is under the jurisdiction of ASTM Committee A04 on Iron Castings and is the direct responsibility of Subcommittee A04.12 on Pipes and Tubes.

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² *Annual Book of ASTM Standards*, Vol 08.01.

³ Available from American Water Works Association, 6666 W. Quincy Ave., Denver, CO 80235.

3.1.2 *securing overlap*—any one of various methods of holding polyethylene encasement in place at the point of overlap until backfilling operations are completed. This may be accomplished with adhesive tape or plastic tie straps.

3.1.3 *linear low-density polyethylene film*—Film extruded from virgin linear low-density polyethylene raw material.

3.1.4 *high-density, cross-laminated polyethylene film*—Film extruded from virgin high-density polyethylene raw material, which is then molecularly oriented by stretching. Two single layers of the film are then laminated together with their orientations at 90° to one another to form the final product.

4. Requirements

4.1 Materials:

4.1.1 *Linear low-density polyethylene film*—Linear low-density polyethylene film shall be manufactured of virgin polyethylene material conforming to the requirements of Specification D 4976 shown in Table 1.

4.1.1.1 *Thickness*—Linear low-density polyethylene film shall have a minimum thickness of 0.008 in. (0.20 mm).

4.1.2 *High-density cross-laminated polyethylene film*—High-density cross-laminated polyethylene film shall be manufactured of virgin polyethylene material conforming to the requirements of Specification D 4976 shown in Table 2.

4.1.2.1 *Thickness*—High-density cross-laminated polyethylene film shall have a minimum thickness of 0.004 in. (0.10 mm).

4.2 *Tube Size*—The tube size for each pipe diameter shall be as listed in Table 3.

4.3 *Color*—Polyethylene film may be supplied with its natural color, colors including white and black, or black (weather-resistant) containing not less than 2 percent carbon black with an average particle diameter of 50 mm or less. A minimum of 2 percent of a hindered-amine ultraviolet inhibitor is required in any natural or colored film except black film containing 2 percent or more carbon black.

4.4 *Marking requirements*—The polyethylene film supplied shall be clearly marked, at a minimum of every 2-ft along its length, containing the following information:

- (a) Manufacturer's name or registered trademark
- (b) Year of manufacture
- (c) ASTM A 674
- (d) Minimum film thickness and material type (LLDPE or HDCLPE)