



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

This standard is issued under the fixed designation A674; 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 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 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.2.1 Important SI values are provided in brackets. Also, certain important SI values appear without brackets or parentheses.

1.3 *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:²

D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

D882 Test Method for Tensile Properties of Thin Plastic Sheeting

D1709 Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method

D1922 Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method

D4976 Specification for Polyethylene Plastics Molding and Extrusion Materials

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 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.

2.2 ANSI/AWWA Standards:³

C 600 Installation of Ductile Iron Water Mains and Their Appurtenances

C 105/A21.5 Polyethylene Encasement for Ductile-Iron Pipe Systems

3. Terminology

3.1 Definitions:

3.1.1 *high-density, cross-laminated polyethylene film*—Film extruded from virgin high-density polyethylene raw material, which is then molecularly oriented by stretching. The final product is then formed by two single-ply layers of the film that are then laminated together with their orientations at 90° to one another using molten, high-density, virgin resin.

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

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

3.1.4 *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.

4. Requirements

4.1 Materials:

4.1.1 *General*—All films shall be manufactured of virgin polyethylene material as non-virgin polyethylene materials may be susceptible to accelerated environmental degradation.

4.1.1.1 *Requirements*—The sections that follow list the material requirements for linear low-density and high-density, cross-laminated polyethylene film. In each category, the film shall meet all of the listed requirements.

4.1.2 *Linear low-density polyethylene film*—Linear low-density polyethylene film shall be manufactured of virgin polyethylene material conforming to the requirements of Specification **D4976** shown in **Table 1**.

4.1.2.1 *Thickness*—Linear low-density polyethylene film shall have a minimum thickness of 0.008 in. [0.20 mm].

³ Available from American Water Works Association (AWWA), 6666 W. Quincy Ave., Denver, CO 80235, <http://www.awwa.org>.