



Designation: F2719 – 09 (Reapproved 2015)

Standard Practice for Installation of Polyethylene (PE) and Encapsulated Cement Mortar Formed in Place Lining System (FIPLS) for the Rehabilitation of Water Pipelines¹

This standard is issued under the fixed designation F2719; 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 requirements and test methods for installation of a semi-structural polyethylene (PE) and encapsulated cement mortar formed-in-place lining system (FIPLS) intended for the rehabilitation of water pipelines from 4 in. to 12 in. This renewal process involves installing a folded PE liner with multiple hooks on the outside face into an existing water pipeline then pumping cement mortar into the annular space and progressively reforming the liner against the original pipe wall by means of forcing a reforming device through the pipeline.

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.

1.3 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. Particular attention is drawn to those safety regulations and requirements involving entering into and working in confined spaces.

1.4 This practice is to be used with the material specified in 4.2.1 of F2718 the Standard Specification for Polyethylene (PE) and Cement Materials for an Encapsulated Cement Mortar Formed in Place Lining System (FIPLS) for the Rehabilitation of Water Pipelines.

2. Referenced Documents

2.1 ASTM Standards:²

¹ This practice is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.67 on Trenchless Plastic Pipeline Technology.

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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.

C109/C109M Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens)

D1600 Terminology for Abbreviated Terms Relating to Plastics

F412 Terminology Relating to Plastic Piping Systems

F2718 Specification for Polyethylene (PE) and Cement Materials for an Encapsulated Cement Mortar Formed in Place Liner System (FIPLS) for the Rehabilitation of Water Pipelines

2.2 AWWA/ANSI Standard:³

C651 Disinfecting Water Mains
Manual M28 Rehabilitation of Water Mains

2.3 NSF/ANSI Standards:⁴

NSF/ANSI 14 for Plastic Piping Components and related Materials

NSF/ANSI 61 for Drinking Water Systems Components – Health Effects

3. Terminology

3.1 *Definitions*—Unless otherwise indicated, definitions are in accordance with Terminology F412, and abbreviations are in accordance with Terminology D1600. The abbreviation of polyethylene is PE.

3.2 *Definitions of Terms Specific to This Standard:*

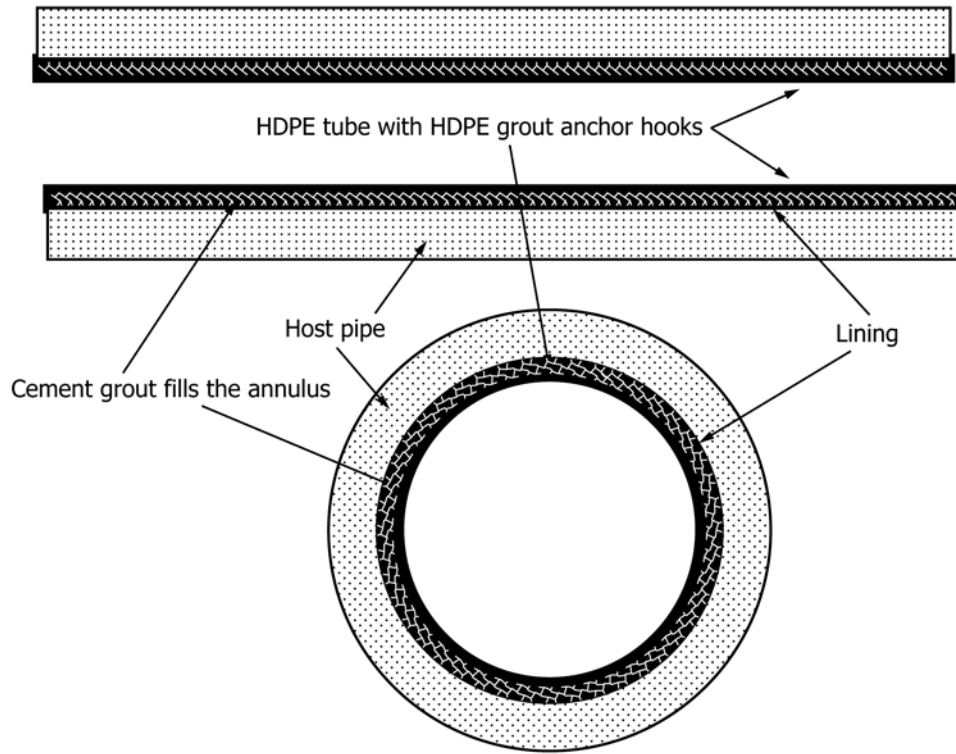
3.2.1 *cement mortar, n*—a specially formulated cement based grout.

3.2.2 *formed-in-place-liner system (FIPLS), n*—after insertion of the liner and cement mortar, sequential insertion and reforming of the liner and cement mortar in the host pipe, a semi-structural composite lining of cement mortar with PE external surface is formed. See Fig. 1 and Fig. 2.

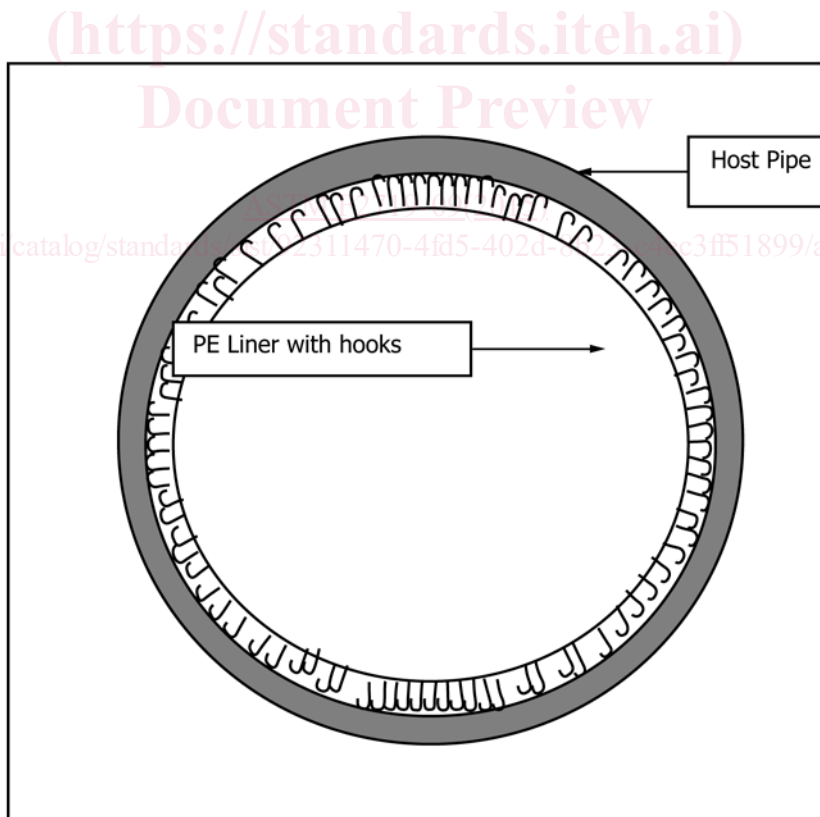
3.2.3 *liner, n*—a PE sheet with integral anchors extruded in a flat shape then formed with overlapping edges and fusion welded into a cylindrical shape. The collapsed liner or lay flat

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

⁴ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48105, <http://www.nsf.org>.



These figures are intended only for clarification of terms specific to this standard and show a representative Formed-In-Place Liner System.
FIG. 1 PE and Encapsulated Cement Mortar Formed-In-Place Liner System (FIPLS)



These figures are intended only for clarification of terms specific to this standard and show a representative Formed-In-Place Liner System.
FIG. 2 PE Liner with Protruding Hooks