



Standard Specification for Cured-in-Place Pipe Lining System for Rehabilitation of Metallic Gas Pipe¹

This standard is issued under the fixed designation F 2207; 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 specification covers requirements and method of testing for materials, dimensions, hydrostatic burst strength, chemical resistance, adhesion strength and tensile strength properties for cured-in-place (CIP) pipe liners installed into existing metallic gas pipes, ¾ to 48 in. nominal pipe size, for renewal purposes. The maximum allowable operating pressure (MAOP) of such renewed gas pipe shall not exceed a pressure of 100 psig (689 kPa). The cured-in-place pipe liners covered by this specification are intended for use in pipelines transporting natural gas, petroleum fuels (propane-air and propane-butane vapor mixtures), and manufactured and mixed gases, where resistance to gas permeation, ground movement, internal corrosion, leaking joints, pinholes, and chemical attack are required.

1.2 The cured-in-place pipe liners covered by this specification are intended for use in existing structurally sound or partially deteriorated metallic gas pipe as defined in 3.2.8. They are installed with limited excavation using an inversion method (air or water) and are considered to be a trenchless pipeline rehabilitation technology. The inverted liner is bonded to the inside wall of the host pipe using a compatible adhesive (usually an adhesive or polyurethane) in order to prevent gas migration between the host pipe wall and the CIP liner and, also, to keep the liner from collapsing under its own weight.

1.3 CIP liners can be installed in partially deteriorated pipe as defined in 3.2.8. Even for low pressure gas distribution systems, which typically operate at less than 1 psig, CIP liners are not intended for use as a stand-alone gas carrier pipe but rely on the structural integrity of the host pipe. Therefore, the safe use of cured-in-place pipe lining technology for the rehabilitation of existing cast iron, steel, or other metallic gas piping systems, operating at pressures up to 100 psig, is contingent on a technical assessment of the projected operating condition of the pipe for the expected 30 to 50 year life of the CIP liner. Cured-in-place pipe liners are intended to repair/rehabilitate structurally sound pipelines having relatively small, localized defects such as localized corrosion, welds that

are weaker than required for service, or loose joints (cast iron pipe), where leaks might occur.

1.4 *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 requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 123 Terminology Relating to Textiles²
- D 543 Practice for Evaluating the Test Method for Resistance of Plastics to Chemical Reagents³
- D 883 Terminology Relating to Plastics³
- D 1598 Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure⁴
- D 1600 Terminology for Terms Relating to Plastics³
- D 1763 Specifications for adhesive Resins³
- D 2240 Test Method for Rubber Property—Durometer Hardness⁵
- D 2837 Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials⁴
- D 3167 Test Method for Floating Roller Peel Resistance of Adhesives⁶
- D 3892 Practice for Packaging/Packing of Plastics⁷
- D 4848 Terminology of Force, Deformation and Related Properties of Textiles⁸
- D 4850 Terminology Relating to Fabric⁸
- F 412 Terminology Relating to Plastic Piping Systems⁴

3. Terminology

3.1 *General*—Definitions are in accordance with those set forth in Terminologies D 123, D 883, D 4848, D 4850, and F 412. Abbreviations are in accordance with Terminology D 1600, unless otherwise indicated.

² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 08.01.

⁴ Annual Book of ASTM Standards, Vol 08.04.

⁵ Annual Book of ASTM Standards, Vol 09.01.

⁶ Annual Book of ASTM Standards, Vol 15.06.

⁷ Annual Book of ASTM Standards, Vol 08.02.

⁸ Annual Book of ASTM Standards, Vol 07.02.

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