



Standard Test Method for Cathodic Disbonding of Pipeline Coatings Subjected to Elevated Temperatures¹

This standard is issued under the fixed designation G42; 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 test method describes an accelerated procedure for determining comparative characteristics of insulating coating systems applied to steel pipe exterior for the purpose of preventing or mitigating corrosion that may occur in underground service where the pipe will be exposed to high temperatures and is under cathodic protection. This test method is intended for use with samples of coated pipe taken from commercial production and is applicable to such samples when the coating is characterized by function as an electrical barrier.

1.2 This test method is intended for testing coatings submerged or immersed in the test solution at elevated temperature. When it is impractical to submerge or immerse the test specimen, Test Method G95 may be considered where the test cell is cemented to the surface of the coated pipe specimen. If room temperatures are required, see Test Methods G8. If a specific test method is required with no options, see Test Method G80.

1.3 The values stated in SI units to three significant decimals are to be regarded as the standard. The values given in parentheses are for information only.

1.4 **Warning**—Mercury has been designated by EPA and many state agencies as a hazardous material that can cause central nervous system, kidney, and liver damage. Mercury, or its vapor, may be hazardous to health and corrosive to materials. Caution should be taken when handling mercury and mercury-containing products. See the applicable product Material Safety Data Sheet (MSDS) for details and EPA's website (<http://www.epa.gov/mercury/faq.htm>) for additional information. Users should be aware that selling mercury or mercury-containing products, or both, in your state may be prohibited by state law.

1.5 *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 appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 *ASTM Standards:*²

G8 Test Methods for Cathodic Disbonding of Pipeline Coatings

G12 Test Method for Nondestructive Measurement of Film Thickness of Pipeline Coatings on Steel (Withdrawn 2013)³

G80 Test Method for Specific Cathodic Disbonding of Pipeline Coatings (Withdrawn 2013)³

G95 Test Method for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method)

E1 Specification for ASTM Liquid-in-Glass Thermometers

E2251 Specification for Liquid-in-Glass ASTM Thermometers with Low-Hazard Precision Liquids

3. Summary of Test Method

3.1 This test method subjects the coating on the test specimen to electrical stress in a highly conductive electrolyte. The coating is artificially perforated before starting the test. The electrical stress is produced by connecting the test specimen to the negative terminal of a source of direct current and by connecting an anode to the positive terminal. Electrical instrumentation is provided for measuring the current flowing in the cell. The electrical potential is also measured and the specimen is physically examined at intervals during the test period and upon conclusion of the test.

3.1.1 The cathodic stress is applied under conditions of a constant-elevated temperature.

4. Significance and Use

4.1 Damage to pipe coating is almost unavoidable during transportation and construction. Breaks or holidays in pipe coatings may expose the pipe to possible corrosion since, after

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.48 on Durability of Pipeline Coating and Linings.

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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.

³ The last approved version of this historical standard is referenced on www.astm.org.