



Standard Test Method for Cathodic Disbonding of Exterior Pipeline Coatings at Elevated Temperatures Using Interior Heating¹

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1. Scope

1.1 This test method describes an accelerated procedure for determining comparative characteristics of coating systems applied to the exterior of steel pipe for the purpose of preventing or mitigating corrosion that may occur in underground or immersion where the pipe is carrying heated media and is under cathodic protection. This test method is intended for use with samples of coated pipe, or with a specimen cut from the section of coated pipe or flat plates, and is applicable to such samples when the coating is characterized by function as an electrical barrier.

1.2 This test method is intended to simulate conditions when external coatings are exposed to high temperature inside the pipe and to an ambient temperature outside, and thus are subjected to temperature gradient. If elevated temperatures are required but without temperature gradient, see Test Method G42.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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 limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

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.

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G12 Test Method for Nondestructive Measurement of Film Thickness of Pipeline Coatings on Steel (Withdrawn 2013)³

G42 Test Method for Cathodic Disbonding of Pipeline Coatings Subjected to Elevated Temperatures

G62 Test Methods for Holiday Detection in Pipeline Coatings

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

3. Summary of Test Method

3.1 The test method described, subjects the coating on the test specimen to electrical stress in a highly conductive alkaline electrolyte. Electrical stress is obtained from an impressed direct-current system. An intentional holiday is to be made in the coating prior to starting of test.

3.1.1 Electrical instrumentation is provided for measuring the current and the potential throughout the test cycle. At the conclusion of the test period, the test specimen is physically examined.

3.1.2 Physical examination is conducted by comparing the extent of loosened or disbonded coating at the intentional holiday in the immersed area with extent of loosened or disbonded coating at a reference holiday made in the coating in an area that was not immersed.

3.1.3 The cathodic stress is applied under conditions of a constant temperature gradient, simulating a heated pipeline with an exterior coating.

3.1.4 Specimens that can be used are: (a) piece of pipe (Fig. 1) or (b) samples cut from pipe or flat plate (Fig. 2 and Fig. 3).

3.1.4.1 Some coatings rely on application tension (such as tape) for maximum cathodic disbondment resistance. Cut coupons or flat plates must not be used.

4. Significance and Use

4.1 Damage to a pipe coating is almost unavoidable during transportation and construction. Breaks or holidays in pipe

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