



Designation: D6676/D6676M – 21

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

This standard is issued under the fixed designation D6676/D6676M; 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 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 are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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. Referenced Documents

2.1 ASTM Standards:²

D7091 Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

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).

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.