Designation: G11 – 19

Standard Practice for Effects of Outdoor Weathering on Pipeline Coatings[1]

This standard is issued under the fixed designation G11; 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 is intended to define conditions for the exposure of coated metal pipe to weather.

1.2 This practice specifies qualifications for the samples, procedure to be followed in exposure to weather, and procedure for evaluating effects of exposure including visual examination and other tests.

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 *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.*

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

G7 Practice for Atmospheric Environmental Exposure Testing of Nonmetallic Materials

G8 Test Methods for Cathodic Disbonding of Pipeline Coatings

G10 Test Method for Specific Bendability of Pipeline Coatings

G14 Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test)

G62 Test Methods for Holiday Detection in Pipeline Coatings

3. Summary of Practice

3.1 The effects of outdoor weathering on pipeline coatings after 6, 12, and 24 months' exposure are determined visually and electrically by comparing exposed samples of coated pipe with unexposed samples of coated pipe before and after impact and bending tests. At the beginning of the test the unexposed samples are qualified by a cathodic disbonding test.

4. Significance and Use

4.1 Since coated pipe may be stored outdoors for long periods before burial, weathering tests described in this practice are needed to evaluate the stability of these coatings stored outdoors. The results obtained should be treated only as indicating the general effect of weathering. Exposure conditions vary greatly from year to year, from one part of a year to another, and from locality to locality. The results of short-term exposure tests in the north are more meaningful if exposure is started in the summer followed by a winter season. In southern areas where climatic conditions are more uniform throughout the year, the time of year when short-term exposure is started is less critical. In all localities, the longer the exposure period, the more reliable are the results obtained.

5. Location of Test Sites

5.1 Weathering racks shall be located in cleared areas representative of local outdoor weather conditions.

6. Apparatus

6.1 *Racks*—The horizontal racks shall be any suitable pipe storage racks of sufficient height to prevent any undesirable effects of vegetation growth during the period of exposure. Racks may be constructed from a variety of materials, but pipe specimens must rest on a nonconductive surface. An example of a suitable rack is illustrated in Fig. 1.

7. Sampling

7.1 Each starting sample shall consist of coated 19.1 mm (¾ in. nominal) diameter steel pipe from a production lot having a minimum length of 4.4 m (14.4 ft). The sample shall

[1] This practice 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.

*A Summary of Changes section appears at the end of this standard