



Designation: G 11 – 88 (Reapproved 1996)<sup>ε1</sup>

## Standard Test Method for Effects of Outdoor Weathering on Pipeline Coatings<sup>1</sup>

This standard is issued under the fixed designation G 11; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

<sup>ε1</sup> NOTE—Keywords were added editorially in June 1996.

### 1. Scope

1.1 This test method is intended to define conditions for the exposure of coated pipe to weather.

1.2 This test method 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 and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

2.1 *ASTM Standards:*

**G 8** Test Methods for Cathodic Disbonding of Pipeline Coatings<sup>2</sup>

**G 10** Test Method for Specific Bendability of Pipeline Coatings<sup>2</sup>

**G 12** Test Method for Nondestructive Measurement of Film Thickness of Pipeline Coatings on Steel<sup>2</sup>

**G 13** Test Method for Impact Resistance of Pipeline Coatings (Limestone Drop Test)<sup>2</sup>

**G 62** Test Methods for Holiday Detection in Pipeline Coatings<sup>2</sup>

**G 70** Test Method for Ring Bendability of Pipeline Coatings (Squeeze Test)<sup>2</sup>

### 3. Summary of Test Method

3.1 The effects of outdoor weathering on pipeline coatings after 6, 12, and 24 months' exposure are determined visually and by electrical means 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 starting 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 of the type described in this test method 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 26.7-mm ( $\frac{3}{4}$ -in. nominal) diameter steel pipe from a production lot having a minimum length of 4.4 m (14.4 ft). The sample shall be from a lot produced under conditions capable of being duplicated on a production scale.

NOTE 1—Pipe having a nominal diameter of 33.4-mm (1-in. nominal) can be used and is the largest diameter that can be evaluated in accordance

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

Current edition approved May 27, 1988. Published July 1988. Originally published as G 11 – 69 T. Last previous edition G 11 – 83.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 06.02.