



# Standard Test Method for Impact Resistance of Pipeline Coatings (Limestone Drop Test)<sup>1</sup>

This standard is issued under the fixed designation G13/G13M; 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 covers the determination of the relative resistance of pipeline coatings to impact by observing the effects of falling stones on coated pipe specimens.

1.2 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.

1.3 *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:*<sup>2</sup>

**G12 Test Method for Nondestructive Measurement of Film Thickness of Pipeline Coatings on Steel** (Withdrawn 2013)<sup>3</sup>

**G62 Test Methods for Holiday Detection in Pipeline Coatings**

2.2 *AASHTO Standard:*<sup>4</sup>

**M80–51 (No. 67) Specification for Coarse Aggregate for Portland Cement Concrete**

<sup>1</sup> 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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<sup>2</sup> 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.

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

<sup>4</sup> Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, http://www.transportation.org.

## 3. Summary of Test Method

3.1 The impact resistance of pipeline coatings is determined by dropping weighed amounts of a specified type of limestone through a chute onto a coated pipe specimen. Results are reported as the number of drops required to pierce through the coating to bare metal, as determined visually or electrically.

## 4. Significance and Use

4.1 This test method is intended to simulate the effects of backfilling after pipe has been placed in the trench. The backfill is often rocky soil and, if it is unscreened and the coated pipe is unshielded by sand or other protective padding, the falling rocks may seriously damage the coating.

## 5. Apparatus

5.1 The impact apparatus shall be essentially as shown in Fig. 1 and shall include the following:

5.1.1 *Box with Chute*, providing a means of dropping stones from a height of 1830 mm [6.0 ft] measured to the top of a piece of coated pipe under test. Construction details are shown in Fig. 2.

NOTE 1—The box and chute described in Fig. 2 are designed for testing coatings on 100-mm [4-in.] and 150-mm [6-in.] pipe specimens. Smaller diameter pipe may be used by inserting wood V-blocks in the trough in the box below the chute.

5.1.2 *Stones*, hard, coarse, limestone aggregate, conforming to AASHTO Designation: M80-51 (No. 67) which is taken from America Association of State Highway and Transportation Officials “Standard Specifications for Coarse Aggregate for Portland Cement Concrete.”

NOTE 2—These specifications cover the quality and size of coarse aggregate. No. 67 designates a 19-mm [¾-in.] to No. 4 size stone with the following sieve analysis:

Square Opening, mm [in.]	Weight % Passing
25 [1]	100
19 [¾]	95 to 100
10 [⅜]	20 to 55
No. 4	0 to 10

5.1.3 *Bucket*—Any suitable bucket that will hold 16 kg [35 lb] of stones.

5.1.4 *Holiday Detectors*—Two types are needed as described in Test Methods G62.