



Designation: C1785 – 13

Standard Test Method for Concentration of Pinhole Detections in Moisture Barriers on Metal Jacketing¹

This standard is issued under the fixed designation C1785; 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 concentration of pinhole detections in a moisture barrier film or coating that is applied to the interior surface of metal jacketing.

1.2 Since this method relies on the completion through the metal jacketing of an electrical circuit, this method is only applicable to jacketing that is electrically conductive and has a moisture barrier applied which is not electrically conductive.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered 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

- C168 Terminology Relating to Thermal Insulation
- C1729 Specification for Aluminum Jacketing for Insulation
- C1767 Specification for Stainless Steel Jacketing for Insulation

3. Terminology

3.1 *Definitions*—Definitions in Terminology C168 apply to terms used in this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *moisture barrier (moisture retarder)*—a layer of plastic film or other material applied to the inner side of metal jacketing to inhibit jacket corrosion by interfering with the

formation of a galvanic cell between the dissimilar metals of the pipe and jacket or by preventing crevice or pitting corrosion.

3.2.2 *pinhole*—a hole completely through a moisture barrier typically too small to be seen by the eye.

3.2.3 *pinhole detection*—a single sounding of the audible test equipment alarm while the test is being conducted.

3.2.3.1 *Discussion*—Because pinholes are very small and the dampened cellulose sponge contacts the moisture barrier in an area larger than a single pinhole (see 6.4), it is theoretically possible that multiple pinholes in close proximity to each other would register as a single detection. For this reason, this test method measures the concentration of pinhole detections rather than pinholes.

3.2.4 *holiday*—synonymous with pinhole.

4. Summary of Test Method

4.1 A voltage is applied across the nonconductive moisture barrier on metal jacketing using an electrode consisting of a cellulose sponge dampened with an electrically conductive liquid such as tap water. Holes in the moisture barrier lead to completion of an electrical circuit which triggers an audible alarm in the test equipment. The number of pinhole detections collectively in ten specified test areas is determined and reported.

5. Significance and Use

5.1 Corrosion on the interior surface of metal jacketing can be caused by the formation of a galvanic cell between the dissimilar metals of the pipe and jacket or by crevice or pitting corrosion.

5.2 The application of a moisture barrier to the interior surface of the metal jacketing inhibits this corrosion by interfering with the galvanic cell formation or by preventing water from contacting the interior metal surface.

5.3 Holes in the moisture barrier decrease its effectiveness in preventing corrosion. Large holes, scratches, or tears in the moisture barrier visible to the naked eye are easily discerned and are cause for rejection of the metal jacketing.

¹ This test method is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.33 on Insulation Finishes and Moisture.

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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.