



Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates¹

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1. Scope

1.1 This practice covers procedures that may be used to allow the detection of discontinuities in nonconductive linings applied to concrete substrates.

1.2 Discontinuities may include pinholes, internal voids, holidays, cracks, and conductive inclusions.

1.3 This practice describes detection of discontinuities utilizing a low voltage wet sponge holiday detector and a high voltage pulsating or continuous dc spark tester. Linings with thickness in excess of 20 mils must be tested utilizing high voltage spark testing equipment.

NOTE 1—For further information on discontinuity testing refer to NACE Standard RP0188-88 or Practice D 5162.

1.4 This practice describes procedures both with and without the use of a conductive underlayment.

1.5 The values stated in the inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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.* For a specific hazard statement, see Section 7.

2. Referenced Documents

2.1 ASTM Standards:

D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies²

D 5162 Practice for Discontinuity (Holiday) Testing of Nonconductive Coating on Metallic Substrates³

2.2 NACE Standards:⁴

RP0188-88 Discontinuity (Holiday) Testing of Protective Coatings

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *discontinuity*—a localized lining site that has a dielectric strength less than a determined test voltage.

3.1.2 *conductive underlayment*—a continuous layer applied to the prepared concrete surface prior to the application of a nonconductive lining layer(s) that will allow high voltage spark testing for discontinuities in the lining.

3.1.3 *spark-over*—the distance a spark, from a high voltage tester, will jump across a space from a grounded surface at a specific electrical voltage.

3.1.4 *high voltage spark tester*—an electrical device (in excess of 800 V) used to locate discontinuities in a nonconductive protective coating applied to a conductive substrate.

3.1.5 *low voltage tester*—a low voltage wet sponge electrical detector used to locate discontinuities in nonconductive linings applied to conductive substrates.

3.1.5.1 *Discussion*—This test instrument is not suitable for testing linings in excess of 20 mils.

3.1.6 *test voltage*—that electrical voltage established which will allow a discontinuity at the thickest lining location site to be tested, but which will not damage the lining.

3.1.6.1 *Discussion*—The test voltage must always be set well below the dielectric breakdown strength of the lining. This voltage should be recommended by the lining manufacturer. The dielectric breakdown voltage strength of a solid can be determined by Test Method D 149.

4. Summary of Practice

4.1 This practice allows for high and low voltage electrical detection of discontinuities in new linings applied to concrete substrates through the utilization of a continuous conductive underlayment applied to the prepared concrete surface prior to the application of the nonconductive lining layer(s) or by determining the conductivity of the concrete substrate to be

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² *Annual Book of ASTM Standards*, Vol 10.01.

³ *Annual Book of ASTM Standards*, Vol 06.02.

⁴ Available from National Association of Corrosion Engineers, P.O. Box 218340, Houston, TX 77218.