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.

Designation: D8551 – 24

Standard Practices for Permanent Monitoring Systems for Electrical Leak Detection and Location[1]

This standard is issued under the fixed designation D8551; 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 These practices describe standard procedures for using electrical methods to locate leaks in geomembranes covered with liquid, earthen materials, waste, and/or any material deposited on the geomembrane.

1.2 These practices are intended to ensure that permanent leak detection and location systems are effective, which can result in complete containment (no leaks in the geomembrane).

1.3 Not all sites will be easily amenable to this method, but some preparation can be performed in order to enable this method at nearly any site as outlined in Section 6. If ideal testing conditions cannot be achieved (or designed out), the method can still be performed, but any issues with site conditions must be documented.

1.4 Permanent monitoring systems for electrical leak detection and location can be used on geomembranes installed in basins, ponds, tanks, ore and waste pads, landfill cells, landfill caps, and other containment facilities including civil engineering structures. The procedures are applicable for geomembranes made of materials such as polyethylene, polypropylene, polyvinyl chloride, chlorosulfonated polyethylene, bituminous material, and other sufficiently electrically insulating materials.

1.5 Any permanent electrical monitoring system must detect the occurrence of a leak through the geomembrane, and it must last longer than the monitored geomembrane by nature of the concept. Therefore, all buried components and mechanical and electrical connections must be made of material either the same as the geomembrane, in case of sensors situated above geomembrane, or made from a material with a longer lifespan in cases where they are situated under the monitored geomembrane.

1.6 Permanent electrical monitoring systems are comprised of either large mesh pads separated by nominal spaces, or a grid of sensors situated either below the geomembrane or above the geomembrane or in both positions (below and above the geomembrane). In specific cases, sensors may be situated only at the perimeter of the monitored lined facility.

1.7 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.8 The electrical methods used for geomembrane leak location should be attempted only by qualified and experienced personnel. Appropriate safety measures should be taken to protect the leak location operators, as well as other people at the site.

1.9 *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.*

1.10 *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]

D4439 Terminology for Geosynthetics

D6747 Guide for Selection of Techniques for Electrical Leak Location of Leaks in Geomembranes

D7002 Practice for Electrical Leak Location on Exposed Geomembranes Using the Water Puddle Method

D7007 Practices for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earthen Materials

D7703 Practice for Electrical Leak Location on Exposed Geomembranes Using the Water Lance Method

D7909 Guide for Placement of Intentional Leaks During Electrical Leak Location Surveys of Geomembranes

[1] These practices are under the jurisdiction of ASTM Committee D35 on Geosynthetics and are the direct responsibility of Subcommittee D35.10 on Geomembranes.

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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.

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