



Designation: D7177/D7177M – 05 (Reapproved 2015)^{ε1}

Standard Specification for Air Channel Evaluation of Polyvinyl Chloride (PVC) Dual Track Seamed Geomembranes¹

This standard is issued under the fixed designation D7177/D7177M; 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.

^{ε1} NOTE—Designation was changed to dual and units information was corrected editorially in June 2015.

1. Scope

1.1 This specification covers a nondestructive evaluation of the strength and continuity of parallel PVC geomembrane seams separated by an unwelded air channel. The unwelded air channel between the two distinct seamed regions is sealed and inflated with air to a predetermined pressure. Long lengths of seam can be evaluated by this specification more quickly than by other common nondestructive tests.

1.2 This specification can be used as a substitute for destructive testing or used in conjunction with destructive testing.

1.3 This specification covers PVC sheet 0.760 mm [0.030 in.] and thicker.

1.4 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.

1.5 *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.*

1.6 *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](#)

3. Terminology

3.1 *Definitions*:

3.1.1 *dual seam, n*—a geomembrane seam with two parallel welded zones separated by an unwelded air space.

3.1.1.1 *Discussion*—The dual seam itself can be made by a number of methods; hot wedge, hot air, and ultrasonic bonding are all typical techniques.

3.1.2 *geomembrane, n*—an essentially impermeable geosynthetic composed of one or more synthetic sheets.

3.1.3 *seam, n*—a permanent joining of two or more materials.

3.2 For definitions of other terms, see Terminology [D4439](#).

4. Summary of Specification

4.1 This specification utilizes a dual seam where an air channel exists between the two welded zones. Both ends of the air channel are sealed and then a pressure gauge is attached to the air space. Air pressure is applied and the gauge is monitored.

4.2 Air pressures used in this specification are related to the ambient temperature of the PVC geomembrane and can be used for thickness 0.760 mm [0.030 in.] and thicker PVC geomembrane. The air pressure is not dependant on thickness of the PVC geomembrane being tested.

4.3 The minimum monitoring time is recommended to be ½ min (30 s) following stabilization of the pressure.

5. Significance and Use

5.1 The increased use of geomembranes as barrier materials to restrict liquid or gas movement, and the common use of dual

¹ This specification is under the jurisdiction of ASTM Committee [D35](#) on Geosynthetics and is the direct responsibility of Subcommittee [D35.06](#) on Geosynthetic Specifications.

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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.