



Standard Practice for Pressurized Air Channel Evaluation of Dual Seamed Geomembranes¹

This standard is issued under the fixed designation D 5820; 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 The practice covers a nondestructive evaluation of the continuity of parallel 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 practice more quickly than by other common nondestructive tests.

1.2 This practice should not be used as a substitute for destructive testing. Used in conjunction with destructive testing, this method can provide additional information regarding the seams undergoing testing.

1.3 This practice supercedes Practice D 4437 for geomembrane seams that include an air channel. Practice D 4437 may continue to be used for other types of seams. The user is referred to the referenced standards, or to EPA/530/SW-91/051 for additional information regarding geomembrane seaming techniques and construction quality assurance.

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:

D 4437 Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes²

D 4439 Terminology for Geotextiles²

D 4491 Test Methods for Water Permeability of Geotextiles by Permittivity²

2.2 Other Standard:

CGSB 148.1 #112 Dual Seam Non-Destructive Pressure Testing Method for Geomembranes³

EPA/530/SW-91/051 Technical Guidance Document: In-

spection Techniques for the Fabrication of Geomembrane Field Seams⁴

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.

3.1.2 *Discussion*—The dual seam itself can be made by a number of methods, the most common being the hot wedge technique. Other possible methods include hot air and ultrasonic bonding techniques.

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

3.1.4 *Discussion*—In geotechnical engineering, impermeable essentially means that no measurable liquid flows through a geosynthetic when tested in accordance with Test Methods D 4491.

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

3.2 For definitions of other terms, see Terminology D 4439.

4. Summary of Practice

4.1 This practice 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 gage is attached to the air space. Air pressure is applied and the gage is monitored for excessive gage air pressure drop.

4.2 Air pressures used in this practice are related to the thickness, stiffness and material type of the geomembrane.

4.3 The minimum monitoring time is recommended to be 2 min following stabilization of the pressure.

4.4 Maximum allowable loss of air pressure varies depending upon thickness, stiffness and type of material of the geomembrane.

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 track seams in joining these sheets, has created a need for a standard nondestructive test by which the quality of the seams can be assessed for continuity and water tightness. The test is

¹ This practice is under the jurisdiction of ASTM Committee D-35 on Geosynthetics and is the direct responsibility of Subcommittee D35.10 on Geomembranes. Current edition approved Oct. 10, 1995. Published January 1996.

² *Annual Book of ASTM Standards*, Vol 04.09.

³ Available from Canadian General Standards Board, 222 Queen Street, Ottawa, Ontario, Canada, K1A1G6.

⁴ Available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.