



Designation: D7408 – 12 (Reapproved 2020)

# Standard Specification for Non-Reinforced PVC (Polyvinyl Chloride) Geomembrane Seams<sup>1</sup>

This standard is issued under the fixed designation D7408; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers the minimum values for seams fabricated into unreinforced PVC geomembranes in factory and field applications.

1.2 This specification covers PVC geomembranes in thickness of 0.25 through 1.52 mm (0.010 through 0.060 in.).

1.3 In addition to structural characteristics, the specifier shall evaluate other characteristics beyond the scope of this specification that affect the final choice of construction. These include, but are not limited to, functional, legal, insurance, and economic considerations.

1.4 This specification is not intended to exclude products or systems not covered by the referenced documents.

1.5 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.

1.6 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *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:<sup>2</sup>

[D638 Test Method for Tensile Properties of Plastics](#)

<sup>1</sup> 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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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[D882 Test Method for Tensile Properties of Thin Plastic Sheeting](#)

[D4439 Terminology for Geosynthetics](#)

[D7176 Specification for Non-Reinforced Polyvinyl Chloride \(PVC\) Geomembranes Used in Buried Applications](#)

## 3. Terminology

### 3.1 Definitions:

3.1.1 *adhesive or bodied solvent, n*—these seams are typically produced by applying an adhesive to both sides of the sheet to be bonded and then pressure is applied to the top sheet with the bottom sheet supported by a flat, firm surface.

3.1.2 *chemical fusion seams, n*—use of a chemical agent to dissolve the surface of the geomembrane for bonding.

3.1.3 *hot air or knife, n*—this technique melts the two geomembrane surfaces to be seamed by running a hot metal wedge or hot air between them. Pressure is applied to the top or bottom geomembrane, or both, to form a continuous bond. These seams are usually produced with a combination of a hand-held heat gun or hand-held hot wedge along with a hand roller.

3.1.4 *thermal fusion, n*—also known as hot air or hot wedge, this technique introduces high-temperature air or gas or a hot wedge between two geomembrane surfaces to facilitate melting. Pressure is applied to the top and/or bottom sheets of the geomembrane, forcing together the two surfaces to form a continuous bond.

3.1.4.1 *Discussion*—Some seams of this kind are made with dual bond tracks separated by a non-bonded gap. These seams are referred to as dual-track seams or double-track seams.

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

## 4. Classification

4.1 Types of seams covered in this specification:

4.1.1 Chemical fusion,

4.1.2 Adhesive or bodied solvent,

4.1.3 Dielectric, and

4.1.4 Thermal fusion.

## 5. Significance and Use

5.1 *Significance*—The increased use of geomembranes as barrier materials to restrict fluid migration from one location to

another in various applications, and the various types of seaming methods used in joining geomembrane sheets, has created a need to standardize minimum seam strength requirements.

5.2 *Use*—Standard seam specification provides information as to the status of the seam. Data obtained by this standard can be used in CQC/CQA documents. This test method is useful for specification testing and for comparative purposes but does not necessarily measure the ultimate strength that the seam may acquire.

**6. Apparatus**

6.1 Tensile instrumentation shall meet the requirements outlined in Test Method D638.

6.2 *Grip Faces*—Grip faces shall be a minimum 25 mm (1 in.) wide and a minimum of 25 mm (1 in.) in length. Smooth rubber, fine serrated, or coarse serrated grip faces have all been found to be suitable for testing geomembrane seams.

**7. Sample Preparation**

7.1 Cut a sample large enough to accommodate the removal of five (5) peel specimens and five (5) shear specimens (use Fig. 1).

NOTE 1—Larger samples sizes may be required on site-specific or project-specific or requirements for the purpose of archiving or third party testing.

7.2 Once the sample is received at the testing facility, the sample shall be acclimated at a standard laboratory environment, Humidity between 50 and 70 % and a temperature of  $21.6 \pm 2 \text{ }^\circ\text{C}$  ( $70.6 \pm 4 \text{ }^\circ\text{F}$ ) for a minimum of 40 h for all types of seams, except thermo and dielectric type seams, for these types of seams a minimum of 4 h at the standard laboratory environment is required.

NOTE 2—If samples are sent to the lab and testing is preformed prior to the required lab acclimating period then this must be noted on the sample results. However the sample should be at least a minimum of 40 h from the time of fabrication and lab acclimation period should be at least one (1) hour minimum.

**8. Specimen Preparation**

8.1 Cut five specimens in peel and five in shear as shown in Fig. 1.

NOTE 3—Cut out the five peel and five shear specimens from the sample typically across the seam. In some conditions with seams without a cross flap, seams may have to be partially peeled open to initiate a peel test tab.

8.2 Use 25.4 mm wide (1 in.) specimens.

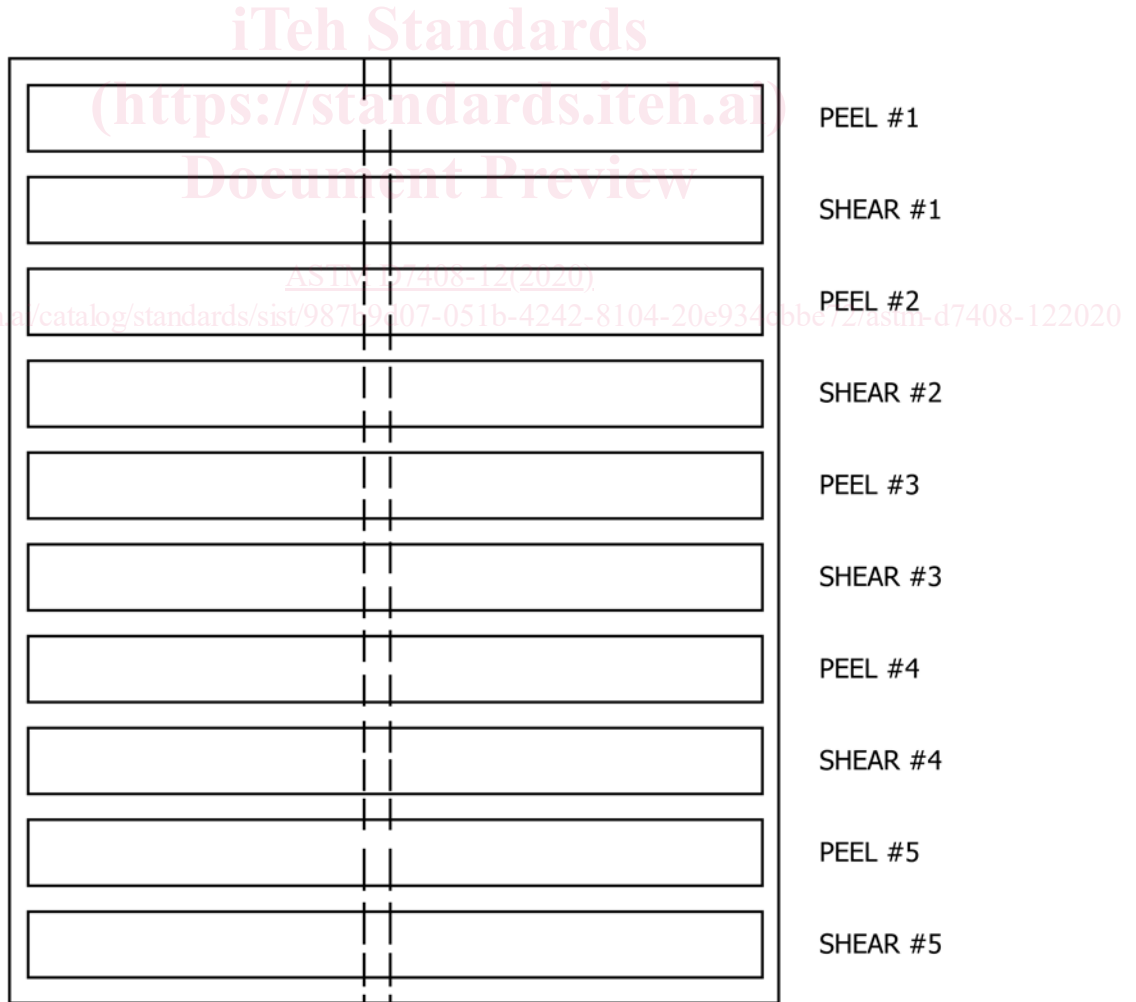


FIG. 1 Seam Sample