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Standard Test Method for Measuring Core Thickness of Textured Geomembrane¹

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1. Scope

1.1 This test method covers a procedure to measure the core thickness of textured geomembranes.

1.2 This test method does not provide thickness values for geomembranes under variable normal stresses.

2. Referenced Documents

2.1 *ASTM Standards:*

D 4354 Practice for Sampling of Geosynthetics for Testing²

D 4439 Terminology for Geosynthetics²

3. Terminology

3.1 *Definitions:*

3.1.1 *core thickness, n*—the average thickness of a textured geomembrane as measured using this particular test method.

3.1.2 *geomembrane, n*—an essentially impermeable geosynthetic composed of one or more synthetic sheets. (**D 4439**)

3.1.3 *thickness gage points, n*—the tips of a thickness gage which contact the upper and lower geomembrane surfaces, and between which the thickness is measured.

3.1.4 *pressure, n*—the force or load per unit area.

3.1.5 *textured geomembrane, n*—a geomembrane having one or both surfaces intentionally manufactured with projections or indentations, most commonly for the purpose of providing increased shear strength against adjacent materials.

3.1.6 *thickness, n*—the perpendicular distance between one surface and its opposite.

3.1.7 For definitions of other terms relating to geomembranes used in this test method, refer to the Terminology D 4439.

4. Summary of Test Method

4.1 The core thickness of a textured geomembrane is calculated as the average value of measurements taken on replicate specimens of the sample under investigation. The thickness of each specimen is measured at a specific location as

the distance between two gage points. The opposing thickness gage points are manufactured to a defined geometry, with a specified force of 0.56 ± 0.05 N (2.0 ± 0.2 oz) applied along their axis.

5. Significance and Use

5.1 Thickness is one of the basic index properties used to control and track the quality of many geomembranes. Additionally, many mechanical properties (for example, tensile yield strength, puncture strength, etc.) can be related to core thickness. Core thickness values may also be required in calculation of some parameters such as diffusion coefficients or tensile stresses.

5.2 The measured core thickness of geomembranes may vary considerably depending on the pressure applied to the specimen during measurement. To reduce variation in measurements and the chance of unrealistically low values due to excessively high pressures, a specific gage point geometry and applied force are prescribed in this test method.

5.3 The test method is applicable to all commonly available textured geomembranes that are deployed as manufactured geomembrane sheets.

6. Apparatus

6.1 *Thickness Gage*—The thickness gage shall be of the dead-weight type capable of measuring to an accuracy of at least ± 0.01 mm (0.0004 in.). The gage shall be constructed to permit application of a specific force of 0.56 ± 0.05 N (2.0 ± 0.2 oz). The gage shall have a base point (or anvil) and a free-moving presser point whose axes are aligned to each other.

NOTE 1—The geomembrane specimen being measured should be maintained perpendicular to the axes of the opposing gage points. An underlying support system may be necessary to support large test specimens.

6.2 *Thickness Gage Points*—The gage points shall be made of hardened steel. The points shall be tapered at an angle of $60 \pm 2^\circ$ to the horizontal with the tip rounded to a radius of 0.8 ± 0.1 mm (0.031 ± 0.004 in.). Fig. 1 shows the critical dimensions.

NOTE 2—The gage and points can be calibrated using standard thickness blocks. Frequent use and rough use of the gage can dull the gage

¹ This test method is under the jurisdiction of ASTM Committee D-35 on Geosynthetics and is the direct responsibility of Subcommittee D35.10 on Geomembranes.

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² *Annual Book of ASTM Standards*, Vol 04.13.