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Standard Guide for the Selection of Test Methods for Prefabricated Bituminous Geomembranes (PBG^M)¹

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1. Scope

1.1 This guide provides recommendations for the selection of appropriate test methods for prefabricated bituminous sheet used in geomembrane applications to provide consistency in data reporting.

~~1.2 This guide includes test methods for all types of composite bituminous geomembranes fabricated in a plant and consisting of a synthetic fabric saturated by a modified bituminous or an oxidized bituminous blend.~~

~~1.3 This guide is intended to aid all personnel involved in the selection, manufacture, installation, or evaluation of prefabricated bituminous geomembranes.~~

1.2 This guide includes test methods for all types of prefabricated bituminous geomembranes (PBG^M).

1.3 This guide is intended to aid all personnel involved in the selection, manufacture, or evaluation of prefabricated bituminous geomembranes. Field-related evaluation of PBGM, including but not limited to seam testing, is beyond the scope of this guide.

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:²

D36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)

D471 Test Method for Rubber Property Effect of Liquids

D573 Test Method for Rubber Deterioration in an Air Oven

D696 Test Method for Coefficient of Linear Thermal Expansion of Plastics Between 30C and 30C with a Vitreous Silica Dilatometer

D746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

D751 Test Methods for Coated Fabrics

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

D1079 Terminology Relating to Roofing and Waterproofing

D1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature

D1434 Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting

D3776 Test Methods for Mass Per Unit Area (Weight) of Fabric

D4354 Practice for Sampling of Geosynthetics for Testing

D4355 Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus

D4439 Terminology for Geosynthetics

D4595 Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method

D4833 Test Method for Index Puncture Resistance of Geomembranes and Related Products

D4873 Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples

D4885 Test Method for Determining Performance Strength of Geomembranes by the Wide Strip Tensile Method

D5147 Test Methods for Sampling and Testing Modified Bituminous Sheet Material

D5199 Test Method for Measuring the Nominal Thickness of Geosynthetics

D5261 Test Method for Measuring Mass per Unit Area of Geotextiles

D5262 Test Method for Evaluating the Unconfined Tension Creep and Creep Rupture Behavior of Geosynthetics

¹ This guide is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of 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.

- D5321 [Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method](#)
- D5322 [Practice for Laboratory Immersion Procedures for Evaluating the Chemical Resistance of Geosynthetics to Liquids](#)
- D5514 [Test Method for Large Scale Hydrostatic Puncture Testing of Geosynthetics](#)
- D5641 [Practice for Geomembrane Seam Evaluation by Vacuum Chamber](#)
- D5716 [Test Method for Measuring the Rate of Well Discharge by Circular Orifice Weir](#) [5617 Test Method for Multi-Axial Tension Test for Geosynthetics](#)
- D5884 [Test Method for Determining Tearing Strength of Internally Reinforced Geomembranes](#) [D6747](#)
- D6747 [Guide for Selection of Techniques for Electrical Detection of Potential Leak Paths in Geomembranes](#)
- D7003 [Test Method for Strip Tensile Properties of Reinforced Geomembranes](#)
- D7006 [Practice for Ultrasonic Testing of Geomembranes](#)
- 7274 [Test Method for Mineral Stabilizer Content of Prefabricated Bituminous Geomembranes \(BGM\)](#)
- D7056 [Test Method for Determining the Tensile Shear Strength of Pre-Fabricated Bituminous Geomembrane Seams](#) [7275 Test Method for Tensile Properties of Bituminous Geomembranes \(BGM\)](#)
- E96/E96M [Test Methods for Water Vapor Transmission of Materials](#) [Test Methods for Water Vapor Transmission of Materials](#)
- E154 [Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover](#)

3. Terminology

3.1 Definitions:

3.1.1 ~~prefabricated bituminous geomembrane (PFBGM), n—a material fabricated in a plant and consisting principally of a synthetic fabric, an oxidized or an elastomeric modified bitumen blend incorporating a filler.~~

3.1.2 For definitions of other geosynthetic terms, refer to Terminology

3.1.1 For definitions of geosynthetic terms used in this guide, refer to Terminology [D4439](#).

3.1.2 For definitions of terms related to bituminous materials, refer to Terminology [D1079](#).

3.1.3 ~~prefabricated bituminous geomembrane (PBG), n—a material fabricated in a plant and consisting principally of a synthetic fabric, saturated and coated with an oxidized or a polymer-modified bitumen compound incorporating a mineral stabilizer.~~

4. Significance and Use

4.1 To properly evaluate ~~prefabricated bituminous geomembranes, PBGM~~, tests must be performed according to specific test methods and procedures. Failure to follow this practice can result in data not representative of the material's characteristics and performance.

5. Test Methods

5.1 Recommended test methods for ~~prefabricated bituminous geomembranes, PBGM~~ have been grouped in categories and are listed in tables as follows:

5.1.1 ~~Table 1—BGM Basic Properties—~~ [PBG Basic Properties](#)

5.1.2 ~~Table 2—Performance-Related BGM Properties.—~~ [Performance-Related PBGM Properties.](#)

5.1.3 ~~Table 3—Properties of BGM Components.~~

5.1.4 ~~Table 4—Installation-Related BGM Properties.—~~ [Properties of PBGM Components.](#)

NOTE 1—The term “Basic” is used in this guide to identify a limiting number of properties that users will specify to characterize a ~~prefabricated bituminous geomembrane, PBGM.~~

TABLE 1 [PBG Basic Properties](#)

Property	Test Method
Terminology	D4439
Terminology	D4439 and
	D1079
Identification and Handling	D4873
Sampling	D4354
Thickness	D5199
Mass per Unit Area	D5261
Specific Gravity	D792
Tensile Properties, Wide-Width Strip Method	D4885
Tensile Properties	D7275
Index Puncture Resistance	D4833
Water Vapor Transmission	E96/E96M