



Standard Guide for the Selection of Test Methods for Flexible Polypropylene (fPP) Geomembranes¹

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1. Scope

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

1.2 This guide includes test methods for three types of flexible polypropylene geomembranes including smooth non-reinforced sheet, textured nonreinforced sheet, and scrim-reinforced sheet.

1.3 This guide is intended to aid all personnel involved in the selection, manufacture, installation, or evaluation of flexible polypropylene geomembrane sheet.

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 412 Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension²
- D 413 Test Methods for Rubber Property—Adhesion to Flexible Substrate²
- D 471 Test Method for Rubber Property—Effect of Liquids²
- D 573 Test Method for Rubber—Deterioration in an Air Oven²
- D 618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing³
- D 638 Test Method for Tensile Properties of Plastics³
- D 696 Test Method for Coefficient of Linear Thermal Expansion of Plastics³
- D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact³
- D 751 Test Methods for Coated Fabrics⁴
- D 790 Test Methods for Flexural Properties of Unreinforced

and Reinforced Plastics and Electrical Insulating Materials³

- D 792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement³
- D 882 Test Methods for Tensile Properties of Thin Plastic Sheeting³
- D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheeting³
- D 1149 Test Method for Rubber Deterioration—Surface Ozone Cracking in a Chamber²
- D 1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature³
- D 1238 Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer³
- D 1505 Test Method for Density of Plastics by the Density-Gradient Technique³
- D 1603 Test Method for Carbon Black in Olefin Plastics³
- D 2136 Test Method for Coated Fabrics—Low-Temperature Bend Test²
- D 2137 Test Method for Rubber Property—Brittleness Point of Flexible Polymers and Coated Fabrics²
- D 3389 Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform, Double-Head Abrader)⁴
- D 3417 Test Method for Heats of Fusion and Crystallization of Polymers by Thermal Analysis⁵
- D 4218 Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique⁵
- D 4364 Practice for Performing Accelerated Outdoor Weathering of Plastics Using Concentrated Natural Sunlight⁶
- D 4437 Practice for Determining the Integrity of Field Seams Used in Joining Flexible Polymeric Sheet Geomembranes
- D 4439 Terminology for Geotextiles⁷
- D 4545 Practice for Determining the Integrity of Factory Seams Used in Joining Manufactured Flexible Sheet Geomembranes⁷
- D 4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products⁷

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² *Annual Book of ASTM Standards*, Vol 09.01.

³ *Annual Book of ASTM Standards*, Vol 08.01.

⁴ *Annual Book of ASTM Standards*, Vol 09.02.

⁵ *Annual Book of ASTM Standards*, Vol 08.02.

⁶ *Annual Book of ASTM Standards*, Vol 08.03.

⁷ *Annual Book of ASTM Standards*, Vol 04.09.