
Standard Specification for Geosynthetic Pavement Interlayer for Highway Applications

AASHTO Designation: M 355M/M 355-24¹

First Published: 2024

**Technical Subcommittee: 4g, Geosynthetics and Erosion Control
Products**



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1. SCOPE

- 1.1. This specification covers geosynthetic pavement interlayers used to improve the performance of a new or rehabilitated pavement structure primarily by resisting cracking. This is primarily a material purchasing specification and a review of design and construction practices is recommended.
- 1.2. This specification sets forth properties that shall be met or exceeded by the geosynthetic pavement interlayer being manufactured. The values stated in U.S. Customary or SI units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. In the context of quality systems and management, this specification represents a manufacturing quality control (MQC) document.
- 1.3. This specification is intended to assure both good quality and performance of geosynthetic pavement interlayers used as described in Section 1.1. The performance of pavement interlayers is highly affected by product type and construction practices. It is critically important to select a product that is appropriate for the climatic environment, current and forecast traffic, pavement type, and distress conditions and to install the product in accordance with the manufacturer’s guidelines.
- 1.4. This specification covers five types of geosynthetic pavement interlayers that include (1) paving fabrics, (2) paving mats, (3) paving grids, (4) paving composite grids, and (5) strip membranes. Designers should be aware that further categorization of these pavement interlayer types is based on properties from index testing rather than performance testing.
- 1.5. There are many different pavement crack types and the level of reflective crack potential for each type is associated with the origin of the crack. Cracks that form due to aging and environmental conditions (e.g., oxidation or block cracking) are considered environmental cracks and typically have low reflective crack potential. Cracks that form due to traffic conditions (e.g., alligator or wheel path cracking) are considered structural cracks and typically have high reflective crack potential. There are other types of cracks that fall outside these two types (e.g., freeze–thaw cracking, joint reflective cracking, shrink swell subgrade cracking) that should be treated independently. The pavement condition index in accordance with ASTM D4633 uses the terms “low,” “medium,” and “high” to describe the severity of cracking, but this does not define the reflective crack potential since the index is based on crack width. A moving truck wheel load will mobilize any of the above crack types in the bound layers of a pavement structure and, therefore, the percentage of truck traffic should be considered when determining the severity of reflective cracking.

2. REFERENCED STANDARDS

2.1. *ASTM Standards:*

- D8, Standard Terminology Relating to Materials for Roads and Pavements
- D123, Standard Terminology Relating to Textiles
- D146/D146M, Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing
- D276, Standard Test Methods for Identification of Fibers in Textiles
- D882, Standard Test Method for Tensile Properties of Thin Plastic Sheeting
- D1777, Standard Test Method for Thickness of Textile Materials
- D4354, Standard Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing
- D4439, Standard Terminology for Geosynthetics
- D4632/D4632M, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- D4759, Standard Practice for Determining the Specification Conformance of Geosynthetics
- D4873/D4873M, Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
- D5035, Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)
- D5261, Standard Test Method for Measuring Mass per Unit Area of Geotextiles
- D6140, Standard Test Method to Determine Asphalt Retention of Paving Fabrics Used in Asphalt Paving for Full-Width Applications
- D6637/D6637M, Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method
- D8102, Standard Practice for Manufacturing Quality Control of Geotextiles
- E96/E96M, Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials E154/E154M, Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

3. TERMINOLOGY

- 3.1. *geosynthetic pavement interlayer*—a single or multi-layer product consisting of manufactured planar geosynthetic materials installed full-width or placed locally beneath a single or multiple layers of asphalt paving; includes paving fabrics, paving mats, paving grids, paving composite grids, and strip membranes.
- 3.2. *manufacturing quality control (MQC)*—a planned system of inspections that is used to directly monitor and control the manufacture of a material that is factory originated. MQC is normally performed by the manufacturer of geosynthetic materials and is necessary to ensure minimum (or maximum) specified values in the manufactured product. MQC refers to measures taken by the manufacturer to determine compliance with the requirements for materials and workmanship as stated in certification documents and contract specifications.
- 3.3. *maximum value*—the highest sample value from documented MQC test results for a defined population from one test method associated with one specific property.
- 3.4. *minimum average roll value (MARV)*—for geosynthetic pavement interlayers, an MQC tool used to allow manufacturers to establish published values such that the user/purchaser will have a 97.7 percent confidence that the property in question, when tested, will meet published values. For