Designation: ~~D6461/D6461M – 16~~ D6461/D6461M – 16a

Standard ~~Specification~~Specifications for Silt Fence Materials[1]

This standard is issued under the fixed designation D6461/D6461M; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers requirements and test methods for geotextile fabrics and associated components used in temporary silt fence applications. ~~This~~Table 1 is a material purchasing specification based on AASHTO M288. Table 2 is a specification to be used in areas of high water flow.

1.2 ~~This specification is~~Both specifications are applicable to the use of a geotextile as a vertical permeable interceptor designed to remove suspended soil from overland, nonconcentrated water flow. The function of a temporary silt fence is to trap and allow settlement of soil particles from sediment laden water. The purpose is to greatly limit the transport of eroded soil from ~~the construction site~~ construction sites and other areas affected by water runoff.

NOTE 1—It should be noted that proper installation and maintenance are critical for the effective functioning of silt fence.

1.3 The tests used to characterize the silt fence are intended to ensure good workmanship and quality and are not necessarily adequate for design purposes in view of the wide variety of possible sediments and performance objectives.

1.4 The values stated in either SI units or inch-pound 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. Combining values from the two systems may result in non-conformance with the standard.

NOTE 2—Although ~~this~~the Table 1 specification should be acceptable in most erosion control applications, it should be noted that an alternative silt fence specification ~~with~~for a higher water flow rate, listed in Table 2, may be required by the engineers in areas that are susceptible to higher water ~~runoff.~~runoff; using Table 2 specification will minimize safety hazards such as hydroplaning in these areas.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D123 Terminology Relating to Textiles
D276 Test Methods for Identification of Fibers in Textiles
D653 Terminology Relating to Soil, Rock, and Contained Fluids
D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products(RECPs) 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
D4491 Test Methods for Water Permeability of Geotextiles by Permittivity
D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles
D4751 Test Methods for Determining Apparent Opening Size of a Geotextile
D4759 Practice for Determining the Specification Conformance of Geosynthetics
D4873 Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
D6637 Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method

2.2 *AASHTO Standard:*

M288-15 Standard Specification for Geotextile Specification for Highway Applications[3]

[1] This specification is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.25 on Erosion and Sediment Control Technology.

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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.

[3] Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, http://www.transportation.org.

TABLE 2 Temporary Silt Fence Material Property Requirements Under High Water Flow Conditions

		Test Methods	Units	Supported[A] Silt Fence	Type of Value
Grab Strength		ASTM D4632	N [lb]		
	Machine Direction			1157N [260 lb]	MARV
	X-Machine Direction			801N [180 lb]	MARV
Permittivity		ASTM D4491	sec-1	1.0	MARV
Apparent Opening Size		ASTM D4751	mm (US Sieve #)	0.60 (30)	Max. ARV
Ultraviolet Stability		ASTM D4355	% Retained Strength	70 % after 500 h of exposure	Typical

[A]Silt fence support shall consist of 14 gage [1.63mm] steel wire with maximum openings of 6 by 6 in. [150 by 150mm] or prefabricated polymer mesh of 200 by 200 lb/ft [2900N/m] in accordance with Test Method D6637.

3. Materials and Manufacture

3.1 Fibers used in the manufacture of geotextiles for silt fence, and the threads used in joining geotextiles by sewing, shall consist of long-chain synthetic polymers composed of at least 95 % by weight of polyolefin or polyester. They shall be formed into a stable network such that the filaments or yarns retain their dimensional stability relative to each other, including selvages.

3.2 Geotextiles and related materials used for temporary silt fence shall conform to the physical requirements of Sections 7 and 8.

3.3 All property values, with the exception of apparent opening size (AOS), in this specification represent minimum average roll values (MARV) in the weakest principle direction (that is, average test results of any roll in a lot sampled for conformance or quality assurance testing shall meet or exceed the minimum value provided herein). Values for AOS represent maximum average roll values.

4. Sampling, Testing, and Acceptance

4.1 Silt fence shall be subject to sampling and testing to verify conformance with this specification. Sampling for testing shall be in accordance with Practice D4354. Acceptance shall be based on testing of conformance samples obtained using Procedure A of Practice D4354. A lot size for conformance or quality assurance sampling shall be considered to be the shipment quantity of the given product or a truckload of the given product, whichever is smaller.

4.2 Testing shall be performed in accordance with the test methods referenced in this specification for the indicated application. The number of specimens to test per sample (see Terminology D653) is specified by each test method. Geotextile product acceptance shall be based on Practice D4759. Product acceptance is determined by comparing the average test results of all specimens within a given sample to the specification MARV. Refer to Practice D4759 for more details regarding geotextile acceptance procedures.

TABLE 1 Temporary Silt Fence Material Property Requirements

		Test Methods	Units	Supported[A] Silt Fence	Unsupported[A] Silt Fence	Type of Value
Grab Strength		ASTM D4632	N [lb]			
	~~Machine Direction~~			~~400 N~~	~~550 N~~	~~MARV~~
	Machine Direction			400N [90 lb]	550N [124 lb]	MARV
	~~X-Machine Direction~~			~~400 N~~	~~450 N~~	~~MARV~~
	X-Machine Direction			400N [90 lb]	450N [101 lb]	MARV
Permittivity		ASTM D4491	sec-1	0.05	0.05	MARV
Apparent Opening Size		ASTM D4751	mm (US Sieve #)	0.60 (30)	0.60 (30)	Max. ARV
Ultraviolet Stability		ASTM D4355	% Retained Strength	70 % after 500 h of exposure	70 % after 500 h of exposure	Typical

[A]Silt fence support shall consist of 14 gage [1.63mm] steel wire with maximum openings of 6 by 6 in. [150 by 150mm] or prefabricated polymer mesh of 200 by 200 lb/ft [2900N/m] in accordance with Test Method D6637.