

## SECTION 716 - GEOTEXTILES

## 716.01 General Requirements.

(A) Fibers used in the manufacture of geotextiles and the threads used in joining by sewing includes long chain polymers. Polymers include at least eighty-five (85) percent by weight of polypropylenes, polyethylenes, polyesters, or polyamides. The Contractor shall form the fibers into a network so that the filaments or yarns retain dimensional stability to each other including selvages. Thread used for factory or field sewing shall be of contrasting color to the fabric. The manufacturer shall make the thread of high strength polypropylene, polyester, or polyamide thread. The thread used to sew geotextiles shall be at least as ultraviolet resistant as the basic fabric.

(B) The Contractor shall submit a manufacturer's certificate of compliance and certified test results on the product, tested within six (6) months of the submittal. The Contractor's submittal shall include the following:

(1) Manufacturer's name, current address and telephone number.

(2) Full product name by trademark and product number.

(3) Geotextile polymer type(s).

(4) Recommended geotextile use.

(5) Six (6) square yards of geotextile sample with machine direction marked clearly on the sample. Machine direction means the direction perpendicular to the axis of the geotextile roll).

The Contractor shall cut the geotextile samples from the geotextile roll with scissors, sharp knife, or other suitable method that produces a smooth geotextile edge and does not cause geotextile ripping or tearing. The Contractor shall not take samples from the outer wrap of the geotextile roll nor the inner wrap next to the core. If the manufacturer is to sew the geotextile seams at the factory, the Contractor shall submit at least one (1) sewn sample with a minimum of two (2) yards of seam length per sample and with a minimum of eighteen (18) inches of geotextile width on each side of the seam for each geotextile direction (machine or cross-machine direction) product sewn.

(C) Sampling of geotextiles shall be according to ASTM D 4354. The Contractor should express geotextile property values in terms of "Minimum Average Roll Values" (MARV) and should compare directly to the corresponding specification values in MARV. The minimum average property value on rolls within a shipment or lot of geotextile rolls shall meet or exceed the values required in the contract.

(D) The Contractor shall package the geotextile in rolls of the length \*|  
and width according to the contract or ordered by the Engineer. The \*|  
Contractor shall wind the geotextile itself uniformly onto suitable \*|  
cylindrical forms or cores to aid in handling and unrolling. The \*|  
Contractor shall package each roll of fabric and the form or core \*|  
individually in a suitable sheath, wrapper or container. |

(E) The Contractor shall identify each roll by a tag or label securely \*|  
affixed on the outside end. This tag or label shall list the following \*|  
required information: |

- (1) A unique roll number, serially designated. |
- (2) Manufacturer's lot number or control numbers. |
- (3) Name of fabric manufacturer. |
- (4) Date of manufacture. |
- (5) Brand name of the product. |
- (6) Manufacturer's style or catalog designation of the fabric. |
- (7) Roll width in feet. |
- (8) Roll length in feet. |
- (9) Gross weight of entire package including fabric, core, wrapping \*|  
or container, and identification tag. |
- (10) Net weight of fabric alone. |

(F) The Contractor shall handle and store the geotextile according to \*|  
ASTM D 4873. The Contractor shall keep the geotextile dry and store off \*|  
the ground. The Contractor shall not expose the material to sunlight or \*|  
other forms of light that contains ultraviolet rays for more than five \*|  
(5) calendar days during shipment or storage. \*|

**716.02 Geotextiles For Permeable Separator Applications.** The woven or non- \*|  
woven geotextile shall conform to Subsection 716.01 - General Requirements. \*|  
Geotextiles shall be rot proof, mildew and chemical resistant and conform to |  
the following MARV for every test property listed below: |

PROPERTY	TEST PROCEDURE	REQ'T
Tensile Strength, Grab (lbs.) (minimum)	ASTM D 4632	180
Burst Strength (psi) (minimum)	ASTM D 3786	210
Puncture Resistance (lbs.) (minimum)	ASTM D 4833	75
Trapezoid Tear Strength (lbs.) (minimum)	ASTM D 4533	75
<sup>1</sup> Apparent Opening Size (US Std Sieve)	ASTM D 4751	70-120
Ultraviolet Degradation, 150 hrs. (% Strength Retained) (minimum)	ASTM D 4355	70

<sup>1</sup> The Engineer may adjust the Apparent Opening Size (AOS) requirement when less than 50% of soil particles by weight passes US No 200 sieve or when permeability (ASTM D 4491) of geotextile is equal to or less than the permeability of the soil.

716.03 Geotextiles for Underdrains. Woven or non-woven geotextile shall conform to Subsection 716.01 - General Requirements. Geotextile shall be rot proof, mildew and chemical resistant and conform to the following minimum average roll value (MARV) for every test property listed below:

PROPERTY	TEST PROCEDURE	REQ'T
Tensile Strength, Grab (lbs.)	ASTM D 4632	180 min.
Burst Strength (psi)	ASTM D 3786	290 min.
Puncture Resistance (lbs.)	ASTM D 4833	80 min.
Trapezoid Tear Strength (lbs.)	ASTM D 4533	50 min.
Seam Strength (lbs.)	ASTM D 4884	160 min.
* Apparent Opening Size (US Std Sieve)	ASTM D 4751	70-120
Ultraviolet Degradation, 150 hrs. (% Strength Retained)	ASTM D 4355	70 min.

\* The Engineer may adjust the Apparent opening Size (AOS) requirement when less than 50% of soil particles by weight passes US No. 200 sieve or when permeability (ASTM D 4491) of the geotextile is equal to or less than permeability of the soil.

716.04

716.04 Paving Fabric. The paving fabric shall conform to Subsection 716.01 - \* General Requirements. They shall be nonwoven, needle punched, and heat bonded on one (1) side, manufactured from polyester, polypropylene, or polypropylene-nylon material. The paving fabric shall be rot proof, mildew and chemical resistant and conform to the following MARV for every test property listed below.

PROPERTY	TEST PROCEDURE	REQTS
Tensile Strength, Grab, either direction (lbs.)	ASTM D 4632	90 min.
Elongation at Break, either direction (%)	ASTM D 4632	50 min.
Fabric Thickness (mils)	ASTM D 461	30 - 50
Melting Point (Deg F)	ASTM D 276	325 min.
Weight (oz./sq. yd.)	ASTM D 3776	3.5 - 5