

## SECTION 831 GEOTEXTILE AND IMPERMEABLE PLASTIC MEMBRANE

### 831.1 REQUIREMENTS

- A. Geotextile and Impermeable Plastic Membrane** shall meet the following requirements as applicable for the specified use. The Contractor shall submit a Certificate of Compliance verifying that the material meets the following specifications.

#### ENGLISH UNITS

<b>GEOTEXTILE (FABRIC) AND IMPERMEABLE PLASTIC MEMBRANE SPECIFICATIONS</b>									
<b>Fabric and Membrane Requirements (Minimum Roll Average)</b>									
Fabric and Membrane Property	Test Method	Drainage and Filtration	Erosion Control	Silt Fence	Separation & Stabilization		Drainage Structures	Embankment & Retaining Wall Reinforcement	Impermeable Plastic Membrane
					Woven	Non-Woven			
<b>PERFORMANCE CRITERIA DURING SERVICE LIFE</b>									
Equivalent or Apparent Opening Size, US Standard Sieve	ASTM D 4751	40-100	40-140	20-50	40-100	40-100	40-100	40-100	---
Thickness, Mils	ASTM D 1777	---	---	---	---	---	---	---	12
Permittivity, Sec-1	ASTM D 4491	0.2	0.1	0.01	0.05	0.1	0.3	0.005	<0.0000010 cm/sec (6)
Retention Efficiency, %	VTM-51-79(1)	---	---	75	---	---	---	---	---
<b>STRENGTH REQUIREMENTS</b>									
Wide Width Strip Tensile Strength, lbs/inch	ASTM D 4595(2)	40	65	65	130	65		200	80
Elongation at Failure, %	ASTM D 4595(2)	40 Min	20 Min	20 Min	20 Min	40 Min	50 Max	35 Max	20 Min
Burst Strength, psi	ASTM D 3786 Diaphragm Meth.	130	210	250	290	210	290	430	---
Trapezoid Tear Strength, lbs	ASTM D 4533 Any Direction	25	40	50	50	40	75	75	50
Puncture Strength, lbs	ASTM D 4833(3)	25	50	50	75	50	90	110	60
Seam Strength, lbs/inch	ASTM D 4884	40	65	65	130	65	160	200	---
<b>ENVIRONMENTAL REQUIREMENTS</b>									
Mildew/Rot Resistance, %	AATCC 30 1988(5)	100	100	100	100	100	100	100	100
Insect/Rodent Resistance, %	AATCC 24 1985(5)	100	100	100	100	100	100	100	100
Ultraviolet Resistance, % Strength Retention	ASTM D 4355	(4)	90	70	(4)	(4)	(4)	(4)	(4)

# GEOTEXTILE AND IMPERMEABLE PLASTIC MEMBRANE

## METRIC

<b>GEOTEXTILE (FABRIC) AND IMPERMEABLE PLASTIC MEMBRANE SPECIFICATIONS</b>									
<b>Fabric and Membrane Requirements (Minimum Roll Average)</b>									
Fabric and Membrane Property	Test Method	Drainage and Filtration	Erosion Control	Silt Fence	Separation & Stabilization		Drainage Structures	Embankment & Retaining Wall Reinforcement	Impermeable Plastic Membrane
					Woven	Non-Woven			
<b>PERFORMANCE CRITERIA DURING SERVICE LIFE</b>									
Equivalent or Apparent Opening Size, US Standard Sieve, $\mu\text{m}$	ASTM D 4751	425-150	425-106	850-300	425-150	425-150	425-150	425-150	---
Thickness, $\mu\text{m}$	ASTM D 1777	---	---	---	---	---	---	---	225
Permittivity, Sec-1	ASTM D 4491	0.2	0.1	0.01	0.05	0.1	0.3	0.005	<0.000010 mm/sec (6)
Retention Efficiency, %	VTM-51-79(1)	---	---	75	---	---	---	---	---
<b>STRENGTH REQUIREMENTS</b>									
Wide Width Strip Tensile Strength, kN/m	ASTM D 4595(2)	7	11	11	22	11		35	14
Elongation at Failure, %	ASTM D 4595(2)	40 Min	40 Min	20 Min	20 Min	20 Min	50 Max	35 Max	20 Min
Burst Strength, kPa	ASTM D 3786 Diaphragm Meth.	900	1450	1725	2000	1450	2000	2960	---
Trapezoid Tear Strength, N	ASTM D 4533 Any Direction	110	180	220	220	180	330	330	220
Puncture Strength, N	ASTM D 4833(3)	110	220	220	330	220	400	490	265
Seam Efficiency, %	ASTM D 4884	100	100	100	100	100	100	100	---
<b>ENVIRONMENTAL REQUIREMENTS</b>									
Mildew/Rot Resistance, %	AATCC 30 1988(5)	100	100	100	100	100	100	100	100
Insect/Rodent Resistance, %	AATCC 24 1985(5)	100	100	100	100	100	100	100	100
Ultraviolet Resistance, % Strength Retention	ASTM D 4355	(4)	90	70	(4)	(4)	(4)	(4)	(4)

- (1) Virginia Department of Highways and Transportation test method.
- (2) 8" wide x 4" length (200 x 100 mm) specimen tested at a strain rate of 10% (0.4 inch) (10 mm) per minute.
- (3) Using 5/16" (8 mm) diameter flat tipped steel cylinder centered with ring clamp.
- (4) Non-stabilized or low susceptible geotextiles should not be exposed to ultraviolet radiation for more than 5 day.
- (5) American Association of Textile Chemists and Colorists test procedures.
- (6) Permeability Coefficient (ASTM D 4491).