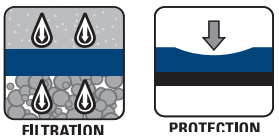
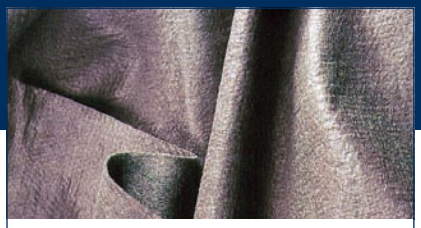
TENCATE Mirafi®



Mirafi® S-Series Nonwoven Polypropylene Geotextiles

for geomembrane liner protection, landfill gas collection, and landfill drainage systems



Mirafi® S-Series Nonwoven Geotextiles

TenCate develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

The Difference Mirafi® S-Series Nonwoven Geotextiles Make:

- Construction. Mirafi® S-Series polypropylene nonwoven geotextiles easily conform to the ground or trench surface for trouble-free installation.
- Strength. Mirafi® S-Series geotextiles withstand installation stresses with high puncture and tear resistance. They also have a UV retention strength of 80%.
- Strength. Mirafi® S-Series geotextiles are available in orange, white and earthtone as well as basic black. This variety offers a more appealing solution to the eye in these various applications.
- Drainage. High permittivity properties provide high water flow rates while providing excellent soil retention.
- Environmental. Mirafi® S-Series geotextiles are chemically stable in a wide range of aggressive environments.
- Cost Effective. Mirafi® S-Series geotextiles provide economical solutions to many civil engineering applications including a cost-effective alternative to graded-aggregate filters.

APPLICATIONS

Mirafi® S-Series nonwoven geotextiles are used in a wide variety of applications in the environmental market. These include separation, filtration, and protection applications.

Mirafi® S-Series nonwovens are used in critical subsurface drainage systems, soil separation, permanent erosion control, HDPE and other geomembranes in landfill construction. These geotextiles provide the required puncture strength and abrasion resistance to withstand installation and application stresses to create an effective long-term solution. Other applications for Mirafi® S-Series nonwovens in landfill applications include leachate collection systems and for gas collection and venting systems.

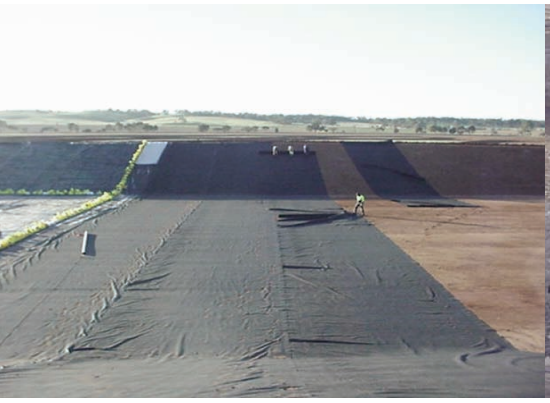
Nonwoven geotextiles play a critical role in the collection of liquids in waste containment systems. The nonwoven geotextiles prevent clogging of the collection pipes and drainage aggregates. The successful removal of these liquids is critical to the performance of the landfill site. Mirafi® S-Series geotextiles assist in maintaining an outlet for gases to escape from below the liner systems. Gases may also travel within the nonwoven fabrics laterally until it reaches a vent. For these collection systems to be effective, they must have a properly designed protective filter. Mirafi® S-Series geotextiles allow designers flexibility in finding an economic source of a specific aggregate grada

tion and assuring that the in-place aggregate provides effective filter performance.

INSTALLATION GUIDELINES*

Mirafi® S-Series should be handled and deployed in a way that prevents damage to the geotextile. The subgrade surface should even and free of debris of any kind. Adjacent panels of Mirafi® S Series geotextile shall be overlapped, sewn or heat-seamed unless another method of seaming is specified by the engineer. It is important that overlapped panels of nonwoven geotextile be continuously joined to prevent any migration of soil through the overlaps. Overlap requirements for Mirafi® S-Series geotextiles should be specified by the project engineer or agency or follow the most current AASHTO M288 geotextile installation guidelines in absence of project specifications. In windy conditions, the outside edges of deployed panels of Mirafi® S-Series geotextile should be weighted down with sandbags or an equivalent manner as directed by the project engineer or agency. The sandbags should remain in place until the adjacent geotextile panel is fastened or until an overlying layer of material is placed.

* These guidelines serve as a general basis for installation. Detailed instructions are available from your TenCate representative.



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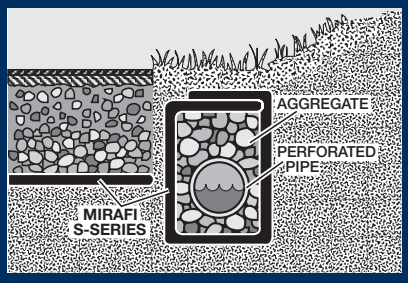
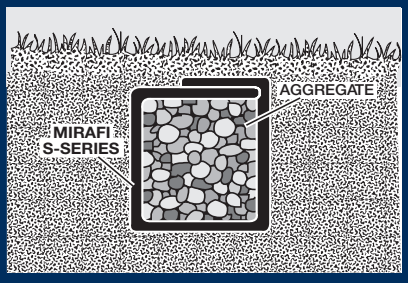
Property / Test Method	Units	S600	S800	S1000	S1200	S1600
MECHANICAL PROPERTIES						
Grab Tensile Strength						
ASTM D 4632						
Strength @ Ultimate	kN (lbs)	0.712 (160)	1.024 (230)	1.178 (265)	1.3789 (310)	1.891 (425)
Elongation @ Ultimate	%	50	50	50	50	50
Trapezoidal Tear Strength	kN	0.289	0.400	0.445	0.534	0.645
ASTM D 4533	(lbs)	65	85	100	120	145
CBR Puncture Strength	kN	2.003	2.670	3.115	4.005	5.340
ASTM D 6241	(lbs)	450	600	700	900	1200
UV Resistance after 500 hrs.	% strength	80	80	80	80	80
ASTM D 4355						
HYDRAULIC PROPERTIES						
Apparent Opening Size (AOS)	US Sieve	80	100	100	100	100
ASTM D 4751	mm	0.18	0.15	0.15	0.15	0.15
Permittivity	sec^{-1}	1.5	1.36	1.0	0.9	0.7
ASTM D 4491						
Flow Rate	$l/min/m^2$	4481	4074	3056	2648	2037
ASTM D 4491	$(gal/min/ft^2)$	110	100	75	65	50
Packaging						
Roll Width	m (ft)	4.5 (15)	4.5 (15)	4.5 (15)	4.5 (15)	4.5 (15)
Roll Length	m (ft)	91 (300)	91 (300)	91 (300)	91 (300)	45 (150)
Est. Gross Weight	kg (lbs)	104 (230)	130 (286)	164 (361)	189 (417)	240 (530)
Area	m^2 (yd^2)	418 (500)	418 (500)	418 (500)	418 (500)	418 (500)

*NOTE: Mechanical Properties and Hydraulic Properties shown are Minimum Average Roll Values (MARV). Apparent Opening Size (AOS) properties shown are Maximum Average Roll Values. (Values and methods could change witout notice)

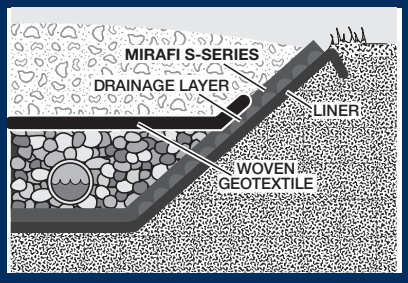
Mirafi® S-Series Nonwoven Geotextiles



Cut-off/Inceptor Drain



French Drain Without Pipe



Liner Protection Within a Landfill

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TENCATE materials that make a difference