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Geotextiles

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GEOTEXTILES

FOUR BASIC FUNCTIONS ARE DEFINED FOR THE GEOTEXTILE:

1. Filtration
2. Drainage
3. Separation
4. Reinforcement

FILTRATION
Filtration functions to restrict the migration of fine soil particles from a soil mass while remaining permeable to water movement greater than, or at least equivalent to the permeability of the protected soil.

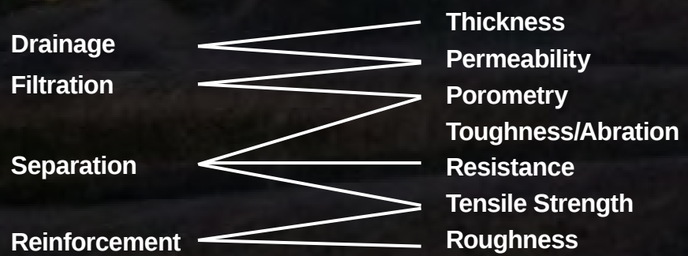
DRAINAGE
Water is conveyed along the plane of the geotextile due to its construction, and then to an outlet. Water may be vertically or horizontally conveyed. Drainage is related to the role of filtration, and is a function of the permeability of a geotextile and its pore opening size or porometry.

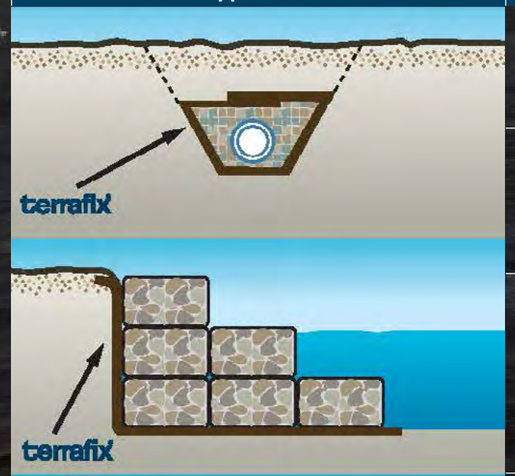
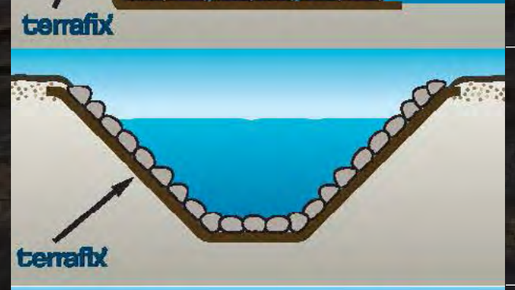
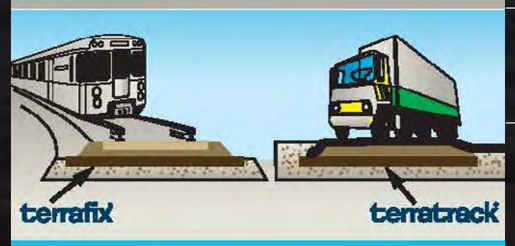
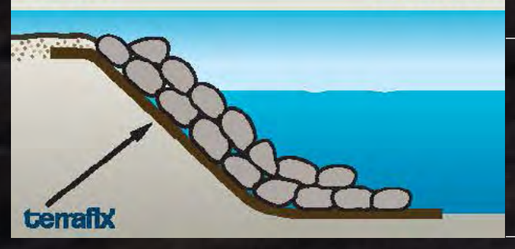
SEPARATION
Separation is the function which prevents two distinct soils or different materials from intermixing. The key factors for a geotextile to satisfy this function are porometry, toughness and strength.

REINFORCEMENT
This function involves the stabilization of a soil mass by provision of tensile strength to the soil-fabric system.

Geotextile selection can be expressed as a relationship between these 4 basic functions and the properties required by the design engineer in order to satisfy certain criteria, which would relate to a specific application.

The following diagram demonstrates these carious relationships:
FUNCTION / PROPERTIES REQUIRED IN GEOTEXTILE



Typical Application	Types of Application	Required Geotextile Functions	Recommended Geotextiles	Properties and Characteristics
	• Subdrains • French Drains • Foundation Drains • Trench Drains • Blanket Drains	Filtration Drainage	270R	• Good lateral drainage • Suitable for wide spectrum of soil permeabilities
			360R	• Used in weaker soil conditions • Usede in conjunction with coarser drainage materials
	• Gabion Lining • Retaining Walls • Drop Structure • Ditch Lining	Filtration Drainage	270R	• High permeability • Medium tensile strength at high elongation • Good filtration
			360R	• Medium puncture resistance • Good lateral drainage • Withstands more severe hydraulic conditiosn
	• Revetments • Channel Linings • Rivers/Creeks	Filtration Drainage Reinforcement	270R	• 12” maximum rip-rap size • Not to be used under severe hydraulic conditions
			360R	• 18” maximum rip-rap size • Medium tensile strength at high elongation
			420R	• Medium tensile strength at low elongation • Woven scrim reinforcement • 24” maximum rip-rap size
	• Lighter Coastal Applications	Filtration Drainage Reinforcement	420R 600R 800R	• 24” maximum rip-rap size • Good abrasion resistance • Medium to high strength at high elongation
	Roadways • Access Routes • Industrial Yards • Logging Roads	Separation Reinforcement	270R 24-15	• Good tensile strength at varied elongations • Good lateral drainage • Lateral permeability
			200W, 400W	• High tensile strength at low elongation
	Railways • Track Rehabilitation • New Track Construction	Separation Reinforcement Drainage	270R	• Under sub-ballast • In drainage ditches
			420R	• High abrasion resistance • Medium tensile strength at low elongation • Recommended for track rehabilitation • High permeability
	• Heavy Shore-line Protection • Coastal Protection • Scour Areas • Rockfill Structures • Dykes • Energy Dissipators	Filtration Drainage Reinforcement	600R 800R	• Very high strength at high elongation • Suitable for heavy armour stone to 3 ton maximum • High level of filtration
			1000R 1200R	• Highest strength non-woven geotextile manufactured • Recommended use with armour stone in excess of 3 ton • High level filtration

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NON-WOVENS

Property	Test Method	Unit	180R	270R	360R	420R
Weight	ASTM-D5261	g/m^2	84	108	164	212
Grab Tensile Strength	ASTM-4632	N	356	445	712	911
Grab Elongation	ASTM-D6432	%	50-105	50-105	50-105	50-105
Tear Resistance	ASTM-D4533	N	130	200	267	356
Puncture CBR[1]	ASTM-D6241	N	934	1320	1820	2380
Permittivity	ASTM-D4491	sec^{-1}	2.00	2.20	1.50	1.4
Water Flow	ASTM-D4491	l/min/m^2	6095	6095	4480	4000
Apparent Opening Size (A.O.S.)	ASTM-D4751	mm	0.300	0.300	0.212	0.212
U.V. Resistance	ASTM-D4355	% @ 500h	70	70	70	70

Property	Test Method	Unit	600R	800R	1200R	370RS
Weight	ASTM-D5261	g/m^2	260	312	435	445
Grab Tensile Strength	ASTM-4632	N	1110	1330	1690	1000
Grab Elongation	ASTM-D6432	%	50-105	50-105	50-105	n/a
Tear Resistance	ASTM-D4533	N	444	511	644	n/a
Puncture CBR[1]	ASTM-D6241	N	3110	3780	4820	n/a
Permittivity	ASTM-D4491	sec^{-1}	1.20	1.00	0.70	n/a
Water Flow	ASTM-D4491	l/min/m^2	3251	3055	2035	n/a
Apparent Opening Size (A.O.S.)	ASTM-D4751	mm	0.180	0.150	0.150	<0.075
U.V. Resistance	ASTM-D4355	% @ 500h	70	70	70	70

Note: 370RS is a Scrim-Nonwoven geotextile.

***Please contact Terrafix for higher Grab Tensile Strength geotextiles.**

WOVENS

Property	Test Method	Unit	24-15	200W	400W
Weight	ASTM-D5261	g/m^2	130	160	190
Grab Tensile Strength	ASTM-4632	N	900	1350	1417
Grab Elongation	ASTM-D6432	%	15	15	15
Tear Resistance	ASTM-D4533	N	337.5	540	540
Puncture CBR[1]	ASTM-D6241	N	3150	4185	4275
Permittivity	ASTM-D4491	sec^{-1}	0.20	0.20	0.20
Water Flow	ASTM-D4491	l/min/m^2	815 Avg.	610 Avg.	610 Avg.
Apparent Opening Size (A.O.S.)	ASTM-D4751	mm	0.45 max	0.45 max	0.45 max
U.V. Resistance	ASTM-D4355	% @ 500h	80	80	80

Note:
All values are MARV. The information contained has been compiled by Terrafix and is, to the best of our knowledge, true, and accurate. This information is offered without warranty
Final determination of suitability for use contemplated is the sole responsibility of the user. This information is subject to change without notice. 04-2021

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