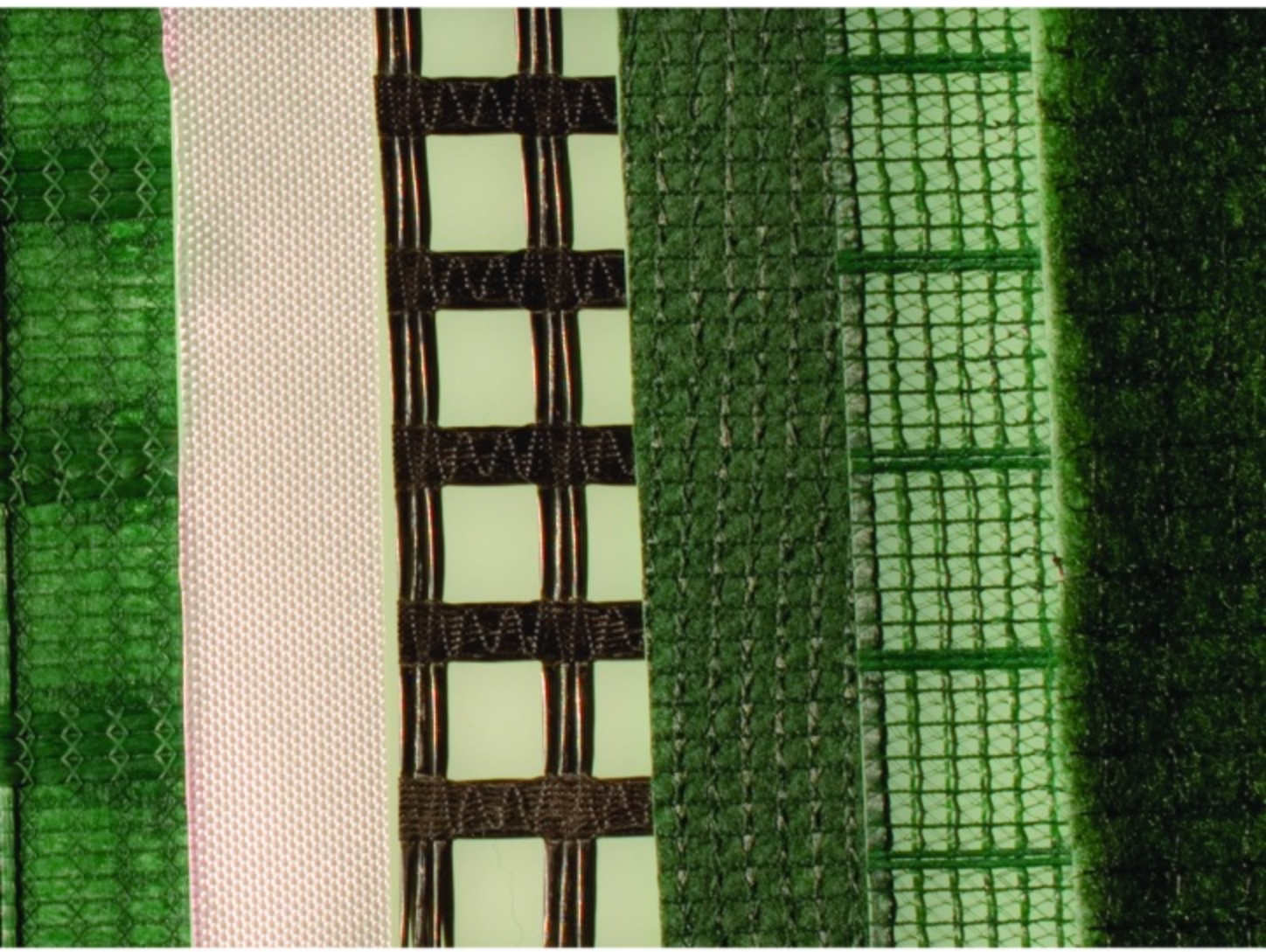
SEVEN STATES



GEOSYNTHETICS

CE EQA European Quality Assurance IGS ERA TECHNOLOGY TÜV CERT

GENERAL CATALOG

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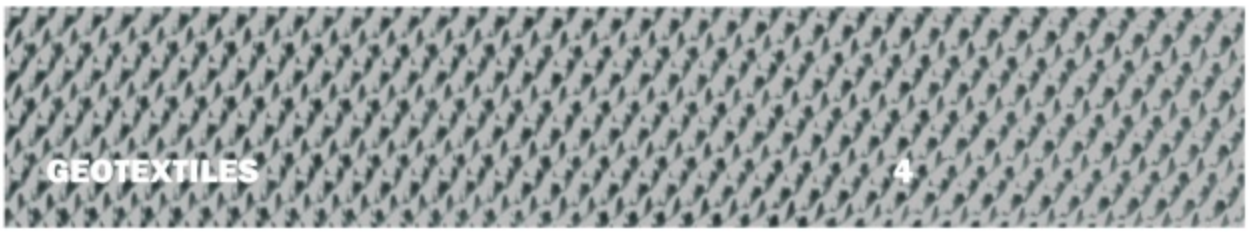
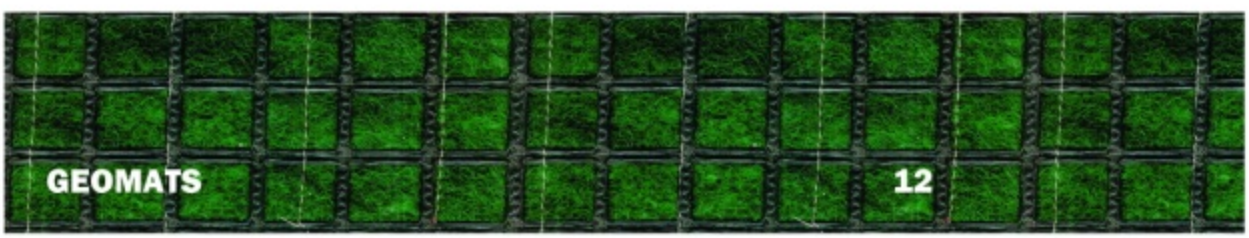
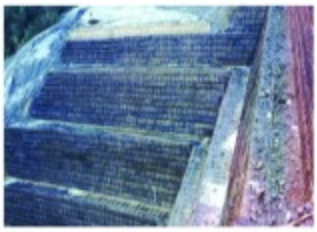




INTRODUCTION

Seven States was founded in October 1990, by starting to produce high-valued tarpaulin. Continuous diversification of the product range, geotextile was in operation by 1992. After two years, Seven States became the first manufacturer for producing geogrid in Taiwan. Today, with more than 15 years of practical experience with geosynthetic fabrics, Seven States continues to be dedicated in technological innovation and development in geotextile and geogrid applications for customers.



With full access to Seven States facilities and product lines, we have become a major supplier of high quality and tensile strength for geogrid and geotextile in worldwide. Our products are certified by famous laboratories such as EQA, TUV and ERA technology as well as our facilities which are in accordance with ISO 9001 and CE .

Woven Geotextiles

Woven geotextiles, because of their tightly knit structure and impressive bidirectional strength, can tolerate extremely high tensile loads.
The impressive strength of polyester yarns, along with having a specific gravity greater than water, make geotextiles an ideal solution for underwater reinforcement, as well. They are easy to place and provide extremely effective support against erosion and undesirable tidal effects.

The use of geotextiles makes it possible for the construction team to build stable embankments on weak foundation soils.

In addition, geotextiles invariably permit a cost savings over other construction methods.

RW70 - 70EN

RW150 - 150EN

RW400 - 400EN

PROPERTY	TENSILE STRENTH (kN/m)		ELONGATION AT BREAK		TEAR STRENGTH (N)		PUNCTURE STRENGTH	PERMITIVITY (sec-1)	APARENT OPENING SIZE	THICKNESS
	(MD)	(CD)	(MD)	(CD)	(MD)	(CD)				
RW100/50EN	>100	>50	<22%	<22%	>900	>450	>520	>0.05	<0.2 mm	>0.65 mm
RW100/100EN	>100	>100	<22%	<22%	>1300	>1300	>1000	>0.05	<0.14 mm	>0.75 mm
RW200/50EN	>200	>50	<22%	<22%	>1800	>450	>900	>0.04	<0.14 mm	>0.80 mm
RW300/50EN	>300	>50	<22%	<22%	>2500	>600	>1150	>0.04	<0.21 mm	>1.00 mm
RW400/50EN	>400	>50	<22%	<22%	>2600	>75	>1450	>0.01	<0.41 mm	>1.60 mm
RW500/50EN	>500	>50	<22%	<22%	>3000	>750	-	>0.01	<0.48 mm	>1.70 mm
TEST MEMTHOD	ASTM D-4595	ASTM D-4595	ASTM D-4595	ASTM D-4595	ASTM D-4533	ASTM D-4533	ASTM D-4833	ASTM D-4491	ASTM D-4751	ASTM D-5199

Woven Geotextiles

Product Characteristic

Under outdoor ultraviolet exposure, the tensile strength still remains high. Our product was tested accorded to ASTM D5970. After 12 months of outdoor ultraviolet exposure, the amount of tensile strength remains high.

Applications

- Separating
- Soil Strengthening
- Base Stabilization
- Ground Reinforcement
- Erosion Control
- Harbor Engineering
- River Engineering
- Highway Engineering
- Railway Engineering
- Foundation engineering

Without a Woven Geotextile

With a Woven Geotextile

GEOGRIDS

High Tenacity Polyester Geogrids

PVC Coated PET Geogrids

Seven-States geogrids are woven geogrids, made of 100% high tenacity PET yarns with PVC coating. Seven-States geogrids have many advantages for high level of microbiological resistance, easy construction even in winter time and high resistance during installation. Seven States Enterprise Co., Ltd. is capable of designing and manufacturing products precisely in accordance with requirements. The given values are indicative and correspond to average results obtained in our laboratories and in testing institutes.


RG35 - 20EP


RG55 - 30EP


RG80 - 30EP


RG100 - 30EP


RG150 - 30EP


RG200 - 40EP

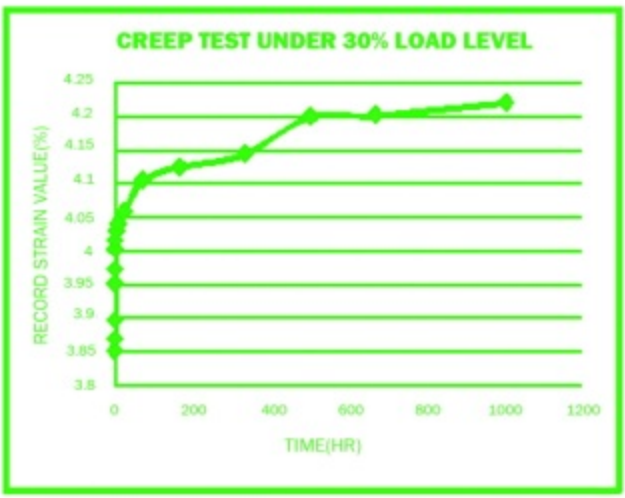
High Tenacity Polyester Geogrids

Product Characteristics

Under outdoor ultraviolet exposure, the tensile strength still remains high. Our product was tested accorded to ASTM D5970, after 12 months of outdoor ultraviolet exposure, the amount of tensile strength remains normal.

- **The reduction factor for creep rupture is low**

Our product was tested in GeoGrac Rapide UK and also tested by National Pingtung University of Science and Technology , Taiwan.
Test reports show that our geogrids keep their tensile strength for a long time.



- **The reduction factor for the installation damage is low.**

In order to have more specific data, the product was tested in different graded soil in order to have the complete analysis of the reduction factor for the installation damage.

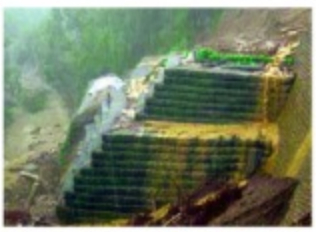
- **The factor of pullout resistance is high**

Because our product is woven by knotting, aggregates interlocking with geogrid is much more efficient.

Soil Type		Reduction factors				
	d50	60x30	100x30	150x30	200x30	Report Recommendation
Low plasticity silty clay	0.025	1.05	1.08	1.05	1.09	1,1
Poorly graded fine sand	0.25	1.06	1.12	1.1	1.12	1.11
Poor graded silty gravel	13	1.45	1.25	1.25	1.24	1.44
Clayey gravel	7	1.13	1.11	1.14	1.13	1.12
Well graded crushed stone	30	1.41	1.19	1.19	1.22	1.33

GEOGRIDS

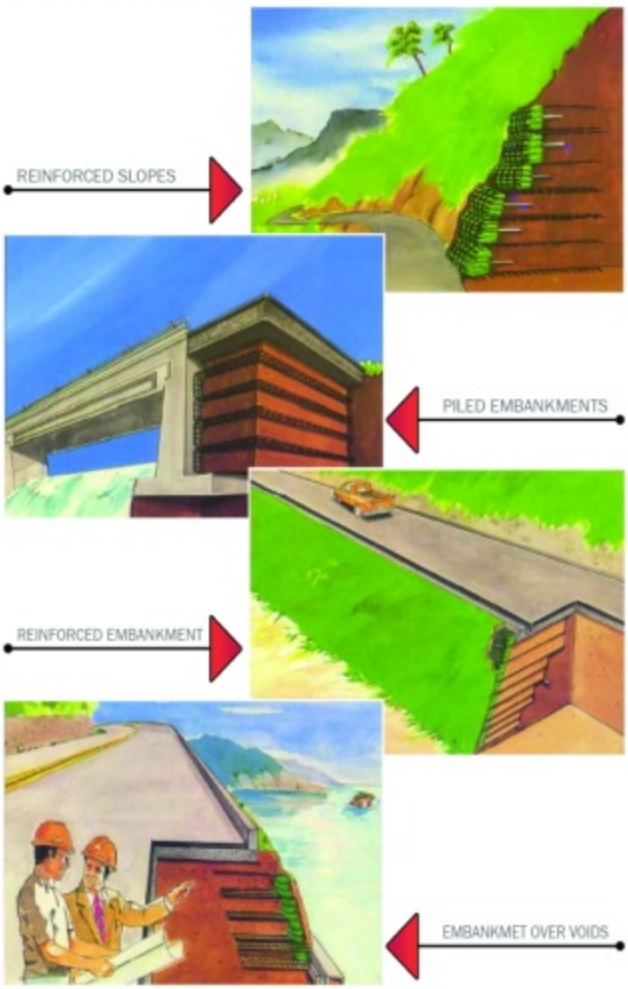
High Tenacity Polyester Geogrids

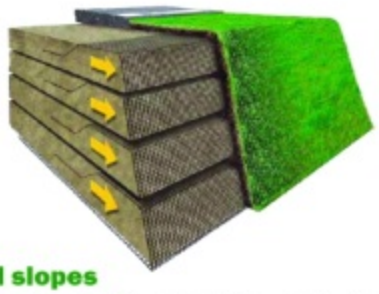


Advantages

- Low creep
- High quality raw material
- High resistance to chemicals
- High resistance to UV exposure
- High resistance to micro-organism
- High resistance to mechanical damage

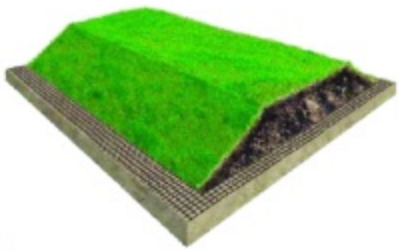
Geogrid Applications





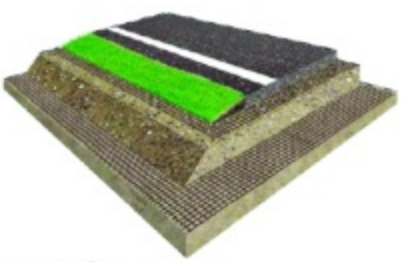
Steep reinforced slopes

Reinforcing soils with high strength and low elongation geosynthetics enables soil structures to stay stable under high loads with vertical or near-vertical surfaces. The soils are added internal shear resistance through geosynthetics, and when wrapping the geosynthetics over the surface for each layer, the horizontal forces on the vertical surface are also absorbed by the geosynthetics.



Embankments

Reinforcing the lower part of embankments prevents setting and sliding failures. The reinforcement distributes the vertical loads, and ensures horizontal stability by adding shear resistance at the base.



Asphalt reinforcements

Reinforcing the lower part of the asphalt layer adds internal shear resistance to the asphalt. When the underlying surface contracts and expands with the temperature and when heavy loads are applied to the asphalt the reinforcement absorbs the tensile strains and thereby prevents the asphalt from cracking.

GEOGRIDS

High Tenacity Polyester Geogrids for Retaining Walls

Segmental Retaining Wall

Keystone Retaining Wall

Wrap-Around Retaining Wall

Geocomposite Nonwoven

Geocomposite nonwoven is manufactured using either a blend of separate fiber deniers to achieve specified hydraulic, filtration or separation properties. Additionally, a combination of nonwoven layers with varying deniers can be produced to achieve specific filtration properties and considerably lengthen the durability of layers in road surfaces. These types of geosynthetics significantly reduce the occurrence of cracks and thus construction with geocomposite guarantees optimum cost due to longer service life.

Advantages

- Perform well with filtration and separation function
- High resistance to damage during installation
- Preserve natural appearance of slopes
- Cuts the construction costs and time
- Similar material characteristic of geocomposite and bitumen enable entrance of composite material
- Significantly lowers costs related to the transfer of earth to the construction site

Gabions

Gabions are double twisted hexagonal woven galvanized steel wire mesh compartmented baskets with a rectangular box shape. The compartments or cells are of equal size and dimension and are formed by internal diaphragms being placed within the basket. The compartments or cells are filled with natural stone and the diaphragms minimize stone migration within the basket providing even distribution of the stone fill throughout the basket even after structural movements. They are fastened together and used for retaining walls, revetments, slope protection, channel linings and other structures.

Advantages

- Flexibility
- Durability
- Strength
- Permeability
- Reliability and Longevity
- Low Construction Cost
- Aesthetic Appearance

Oceanic Gabions

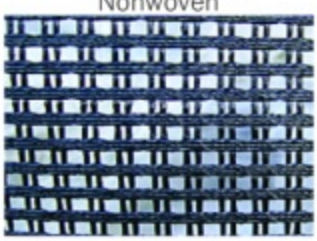
Oceanic Gabions are woven by geogrids' mesh compartmented baskets with a rectangular box shape. They are stone filled baskets used to stabilize the seafront. High tensile strength and flexibility of structure enable it to fit on different rugged terrain.

Advantages

- Flexibility
- Durability
- Strength
- Permeability
- Ecology
- Reliability and Longevity

Geocomposite Nonwoven

Geocomposite Nonwoven



Oceanic Gabion

Geocomposite Nonwoven

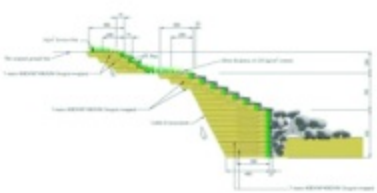
Oceanic Gabion

Gabion

Erosion Control with Geomats









Turf Geogrid Reinforcement Mat

Our Turf Geogrid Reinforcement Mat is made by Geogrid as basement and a dense three-dimensional permanent erosion prevention mat, made of thick polyamide or polyethylene filament fused where they cross. Over 95% of the volume of the mat is available for soil filling, which ensures positive integration and immediate stabilization of slope surfaces and when a layer of vegetation is established, this provides an enhanced environment for seed germination. Seven States Turf Geogrid Reinforcement Mat provides an integrated effective erosion control system for root systems as a result of permanent reinforcement. On steep slopes, it is sometimes used only with hydro-mulching acting as a protective layer.

Advantages

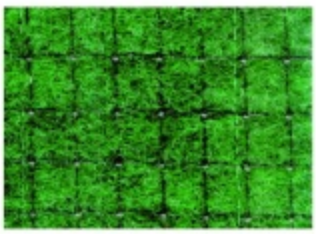
- Economical Installation
- Provides root systems with permanent reinforcement and offers an integrated, effective erosion control system.
- The effective thickness indicates the superior AHC(Area Holding Capacity) and can be considered as an indication of performance of the mat.

Erosion Blanket

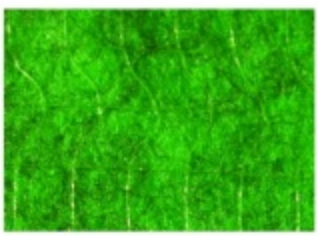
Seven States Erosion Control Blankets consist of 100% mattress grade polypropylene fiber mechanically bounded and covered on both sides by black polypropylene netting. The green polypropylene fiber is homogeneously blended and evenly distributed throughout the blanket. These elements allow Erosion Control Blanket to not only control erosion on slopes, but also enhance seed propagation. The hair-like web of green fiber mixes with and conforms to the soil surface, creating a root –like matrix. This matrix locks seed and fertilizer into the soil and holds the system in place for maximum germination and protection from runoff.

Advantages

- Easier to install
- Effective on less prepared, uneven surfaces
- Provides fiber reinforcement to soils
- More efficient transportation and storage

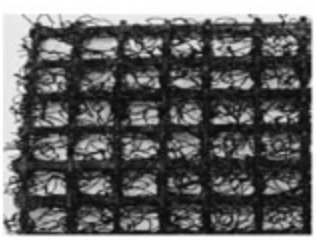


EROSION BLANKET



SUPER GEOMAT

TURF GEOGRID REINFORCEMENT MAT



TURF GEOGRID REINFORCEMENT MAT

Super Geomat

Suer Geo Mat is used on a gentle slope to preserve enough air and water for plant roots. As the roots grow, they tie firmly with the matrix and form an extremely stable cover of a slope.

Advantages

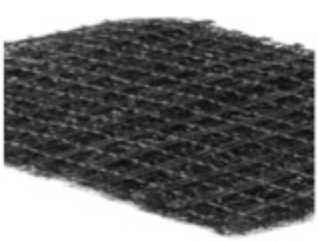
- Green
- Economic
- Keep water
- Easy to work
- Enable growth of vegetations

Synthetic Fiber Permanent Erosion Control & Turf Reinforcement Mat

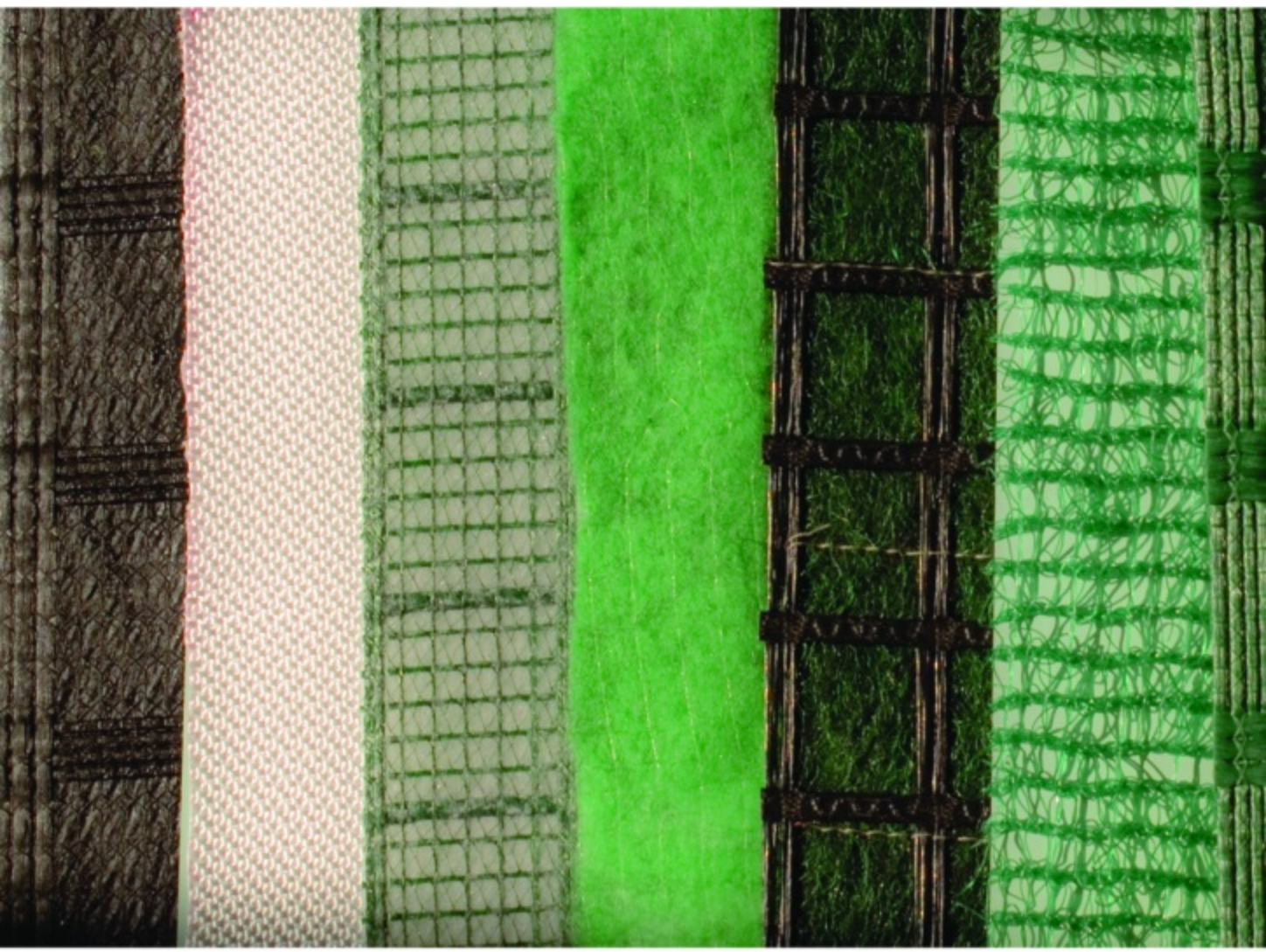
Synthetic Fiber Permanent Erosion Control & Turf Reinforcement Mat is manufactured to provide extended long term erosion protection and permanent vegetation reinforcement in applications where the establishment of vegetative ground cover is expected to take more than three to five years and design conditions exceed the performance limits of un-reinforced vegetation.

Advantages

- Permanent erosion control of slopes and channels
- Long term erosion protection of poorly vegetated surfaces
- Permanent Turf Reinforcement of properly vegetated surfaces



SYNTHETIC FIBER PERMANENT EROSION CONTROL & TURF



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