



**SKAPS**  
**HYDROTEX**



**WATER IS LIFE**  
**HENCE PROTECTING**  
WATER INFRASTRUCTURE IS LIFE ESSENTIAL

FABRIC - FORMED CONCRETE EROSION CONTROL AND ARMORING SYSTEM

## PARTNERSHIP EXCELLING EXPERTISE AND INNOVATION

SKAPS INDUSTRIES is the leader in the manufacturing of geosynthetic and nonwoven drainage products for environmental and civil use in the U.S., India and other countries around the world. In collaboration with Synthetex, leading manufacturer and principal supplier of HYDROTEX™ - highly engineered fabric formed concrete erosion control and scour protection systems, we bring you a range of advanced protective solutions for water infrastructure.

## SOLUTIONS ENSURING GOOD HEALTH OF WATER INFRASTRUCTURE - PRODUCT RANGE

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### FILTER POINT (FP) LININGS

Filter Point Linings provide erosion resistant, permeable concrete linings for structures constructed over firm subgrades and relatively low hydrostatic loads. Its double-layer fabric form is joined by interwoven filter points (drains) to form a concrete lining with a deeply cobbled appearance.

Filter Point Linings were the first type of fabric formed concrete system developed. As the use of this technology has spread worldwide, a variety of other forms have been developed to meet specific job requirements.

#### APPLICATIONS

Ditches, channels, canals, streams, rivers, ponds, lakes, reservoirs, marinas and port & harbour areas.

#### KEY STRENGTHS

- ▼ Its relatively high coefficient of hydraulic friction helps in reducing flow velocity and wave run up.
- ▼ The filter points provide for the relief of hydrostatic uplift pressures, increasing the system's stability.



### FILTER BAND™ (FB) LININGS

Filter Band Linings are similar to Filter Point Linings, providing an effective and highly permeable concrete lining that resists erosive forces. Filter Band differs from Filter Point in that its form creates interconnected, tubular concrete elements that are separated by large interwoven filter bands.

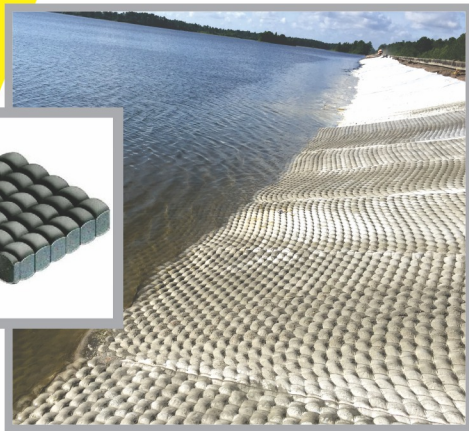
#### APPLICATIONS

Filter Band Linings are specified in situations similar to those for which Filter Point might be specified, but which also require greater relief of uplift pressures, higher reduction of flow velocities or greater reduction of wave run up.

#### KEY STRENGTHS

- ▼ The Filter Bands provide for greater reduction of uplift pressures than Filter Point Linings.
- ▼ Filter Band achieves greater reduction of flow velocity or wave energy than Filter Point due to its biaxial alignment of the tubular elements which create two directionally-determined coefficients of hydraulic friction.





## UNIFORM SECTION (US) LININGS

Uniform Section Linings are similar to traditional concrete slope paving. They create a solid, high quality concrete lining with a relatively low hydraulic resistance and uniform cross section.

### APPLICATIONS

These linings are used to reduce the infiltration or exfiltration of aggressive waste and chemical fluids into or out of open channels and basins.

They are also used to reduce exfiltration in arid regions where open channels and basins require watertight linings.

### KEY STRENGTHS

- ▼ Uniform Section Linings are resistant to leachate and most chemicals.
- ▼ They protect geosynthetic liners from mechanical damage, exposure to UV light and freeze-thaw cycles.
- ▼ These self-supporting, high strength linings permit construction on steep side slopes and replace the conventional use of clay or sand as liner protection.
- ▼ Placement of the forms and concrete filling can be performed without the use of equipment on the liner as tensile strength and abrasion resistance of the fabric protect the liner from the pumped concrete.



## ENVIROMAT™ (EM) LININGS

Enviromat Linings are erosion control linings for enhanced vegetation growth, which are installed to provide protection to vegetation against periodic high flows. After installation, vegetation can be planted within the open structure of the lining. Enviromat Linings are comprised of concrete-filled elements and unfilled areas that allow for the establishment of vegetation. Once the concrete sets, the defined unfilled and interwoven areas are opened by cutting the fabric and are planted or are filled with topsoil and seeded.

### APPLICATIONS

Enviromat Linings are used in drainage ditches and on the upper slopes of channels, canals, lakes, reservoirs, rivers and other water courses as well as for embankments subject to heavy run-off.

### KEY STRENGTHS

- ▼ Within a growing season, a vegetated cover will normally extend over the lining, resulting in an erosion control system with the desired hydraulic, ecological and aesthetic features.

## ARTICULATING BLOCK (AB) MATS

Articulating Block Mats form cable-reinforced concrete block mattresses that resist erosive forces. They are often constructed where a revetment is exposed to frontal attack by wave force. The AB fabric form consists of a series of compartments linked by an interwoven perimeter. Ducts interconnect the compartments, and high strength revetment cables are installed between and through the compartments and ducts. Once filled, the AB Mats become a mattress of rectangular concrete blocks. The interwoven perimeters between the blocks serve as hinges to permit articulation. The cables remain embedded in the concrete blocks to link the blocks together and facilitate articulation.



### APPLICATIONS

AB Mats are typically used to protect coastlines, canals, rivers, lakes, reservoirs, underwater pipelines, bridge piers, and other marine structures from propeller wash, ship wakes, wind waves, currents and high velocity flows. They are also used in environmental construction for landfill caps, down chutes and collector channels.

### KEY STRENGTHS

- ▼ Excellent erosion control, especially where wave run-up and velocity flow is high
- ▼ Articulating block mats are easy to install and environment friendly
- ▼ Articulating Block Mats are cost-effective, sustainable and also offer flexibility of use

## HYDROCAST™ ARMOUR UNITS

Hydrocast Armour Units are monolithic concrete structures which replace heavy rip rap and large precast concrete armour units. The rectangular fabric forms, when filled, assume a flattened cylindrical cross section and range in size from roughly 80 kg to in excess of 60,000 kg (80-60,000 kg) per unit. Available in custom sizes and shapes, the dimensions of the form control the concrete armour unit's length, width, height and weight.

### APPLICATIONS

Armour Units have the mass and stability for the construction of gravity sea walls and revetments, groins, levees, dikes, dams, check dams and other civil & marine structures subject to attack by waves or rapidly flowing water.



### KEY STRENGTHS

- ▼ Since Hydrocast Armour Units are filled in place, they adapt to variations in the subgrade and are ideal for preventing or repairing scour at dam aprons, bridge piers and abutments.
- ▼ Hydrocast installations do not require de-watering, a crucial advantage in emergency repair situations.

# ADVANTAGES THAT DELIVER EXCELLENCE IN EROSION PROTECTION

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Hydrotex Fabric Forms, manufactured by SKAPS Hydrotex have been used in millions of square meters of installations worldwide. In the process, we have established a new benchmark in erosion protection by outperforming traditional solutions like concrete slope paving, gabions, precast concrete blocks and rip rap.

Manufactured drawing from our rich experience and expertise, our erosion control systems have performed “as specified” and delivered reliable erosion control, even in the most severe conditions.



## MORE STABILITY, MORE RELIABILITY

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Hydrotex Linings and Mats, with permissible shear stress in excess of 60 lbs/ft<sup>2</sup> (2.87 kN/m<sup>2</sup>), have greater hydraulic efficiency and higher stability than riprap and concrete slope paving because of several factors. It can mitigate uplift forces due to outflow and excess pore water pressure, reduce hydraulic uplift by slowing channel velocities and conform to soil contours to reduce the potential for scour.

## REDUCED UPLIFT PRESSURES

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Many styles of Hydrotex Linings and Mats can accommodate severe uplift pressures. These uplift pressures often cause the failure of traditional concrete slope paving. Unlike traditional methods, fabric forms can be manufactured with built-in filter drains that reduce the mean phreatic level and pore pressures within the underlying soil.

## MANAGEMENT OF HYDRAULIC FLOW

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Many Hydrotex fabric forms construct concrete linings and mats with deeply patterned surfaces. These patterns reduce flow velocity, wave run up and down rush, while imparting stability to the system. By choosing the correct type of form, in-channel flow can be slowed, reducing downstream velocities and discharge turbulence. Or a hydraulically efficient, smooth form (such as Uniform Section) can be chosen to maximize drainage from a given area.

## EASE OF INSTALLATION

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Hydrotex Linings, Mats and Armour Units are filled in place by pumping fine aggregate concrete into fabric forms. Hydrotex fabric forms are delivered to the jobsite ready-to-fill and require no additional forming materials. Installation consists of preparing the area, laying out the forms and filling them with fine aggregate from a small line concrete pump. As wood or steel forming is not required, a much smaller crew can handle a Hydrotex installation and fabric forms can be installed without dewatering the site.

## ENVIRONMENTAL COMPATIBILITY

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The fabric used in the forms filters the concrete mix, allowing excess mixing water to escape while retaining the cement solids. EM linings have been designed to provide defined areas that can be cut out after installation so that native vegetation can be planted or seeded to create a more natural appearance. Hydrotex Linings and Mats are free of hazardous projections that could endanger pedestrians, animals, vehicles or boats.

## ADAPTION TO SOIL CONTOURS

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Filled-in-place fabric forms accommodate uneven contours, curves and subgrades at the time that they are filled. Consequently, the soil and the concrete protection are in intimate contact, reducing the chance of underscour. Some forms create discrete concrete units, attached to each other with fabric perimeters and/or embedded cables. As a result, the concrete mats can articulate to adapt to uneven settlement.

## EASE OF MOBILIZATION

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Fabric forms are extremely lightweight, so they can be rapidly shipped anywhere in the world. Once the site is prepared, simple hand tools and a concrete pump are all that is needed to fill the forms. In areas with difficult or restricted access, the concrete can be pumped to the forms from as far away as 250 meters. Because of the low mobilization costs, it can be practical to install fabric forms on jobs as small as 10 sq. meters. Regardless of the job size, the ease of mobilization and transportation and the reduced equipment requirements mean that the job goes in faster and at less cost per square unit of protected area.

## PERFORMANCE WITH COST-EFFICIENCY

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Hydrotex systems outperform rip rap, gabions, precast concrete blocks and concrete slope paving, yet are less expensive and far easier to install. The result is a more cost-effective erosion control system with greater hydraulic efficiency, higher permissible velocities and improved stability, durability and performance.



# WHY SKAPS HYDROTEX ?

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## A WIDE RANGE OF SOLUTIONS

SKAPS Hydrotex Fabric Forms are available in a wide variety of form styles. Made out of high strength, specially woven fabric, each style is suitable for a specific set of project parameters and differing site conditions. SKAPS Hydrotex Fabric Forms can also be custom manufactured according to specified requirements.

## PROVEN IN THE LAB AND IN THE FIELD

All SKAPS Hydrotex products are manufactured in accordance with industry standards and are evaluated in an advanced hydraulics laboratory at a leading research facility. Also precise design values have been derived by flume testing of SKAPS Hydrotex Linings and Mats to help you in selecting suitable fabric form style and mass per unit area to resist the expected hydraulic loading.

## BACKED WITH TECHNICAL EXPERTISE

Group has onboard an expert team of technical, manufacturing and field personnel who work as an extension of your team to derive the design solutions that meet strict performance, aesthetic, cost and construction criteria. Our team is able to provide technical and design assistance, system specifications, cost estimates and construction drawings. Thus, with SKAPS Hydrotex you are assured of quality materials, superior technical support, competitive prices and a commitment to excellence.



## MOST TYPICAL APPLICATIONS

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- Drainage Ditches
- Channels and canals
- Streams, Rivers and Bayous
- Lakes and Reservoirs
- Coastal and Intracoastal Shorelines
- Jetties and Groins
- Dikes and Levees
- Dune Protection
- Beach Renourishment
- Seawall and Bulkhead Scour Protection
- Boat Launching Ramps
- Wildlife Crossings
- Low-water Stream Crossings
- Embankments
- Underwater Pipeline Covers
- Bridge Abutments and Piers
- Check Dams
- Dams and Spillways
- Ponds and Holding Basins
- Landfill Caps
- Down Chutes
- Water Control Structures

LININGS AND MATS: TYPICAL INSTALLED DIMENSIONS, WEIGHTS AND VOLUME					
Products & Sizes	Average Thickness mm (inches)	Mass Unit Ares kg/m <sup>2</sup> (lb/ft <sup>2</sup> )	Concrete Coverage m <sup>2</sup> /m <sup>3</sup> ( ft <sup>2</sup> /yd <sup>3</sup> )	Varies With Product	
<b>FILTER POINT LININGS</b>				<b>Filter Point Spacing mm (inches)</b>	
SKAPS FP220	55 (2.2)	120 (25)	16.6 (136)		125 (5)
SKAPS FP300	75 (3)	165 (34)	12.1 (100)		165 (6.5)
SKAPS FP400	100 (4)	220 (45)	9.1 (75)		200 (8)
SKAPS FP600	150 (6)	330 (68)	6.1 (50)		255 (10)
SKAPS FP800	200 (8)	440 (90)	4.6 (38)		305 (12)
SKAPS FP1000	250 (10)	550 (113)	3.6 (30)		355 (14)
SKAPS FP1200	300 (12)	660 (135)	3.0 (25)		405 (16)
<b>FILTER BAND™ LININGS</b>				<b>Filter Band Spacing mm (inches)</b>	
SKAPS FB400	100 (4)	220 (45)	9.1 (75)		200 (8)
SKAPS FB800	200 (8)	440 (90)	4.6 (38)		400 (16)
<b>UNIFORM SECTION LININGS</b>					
SKAPS US300	75 (3)	165 (34)	12.1 (100)		
SKAPS US400	100 (4)	220 (45)	9.1 (75)		
SKAPS US600	150 (6)	330 (68)	6.1 (50)		
SKAPS US800	200 (8)	440 (90)	4.6 (38)		
SKAPS US1000	250 (10)	550 (113)	3.6 (30)		
SKAPS US1200	300 (12)	660 (135)	3.0 (25)		
SKAPS US1600	400 (16)	880 (180)	2.3 (19)		
<b>ENVIROMAT™ LININGS</b>				<b>Open Vegetated Area, %</b>	
SKAPS EM250	65 (2.5)	138 (28)	14.6 (120)		20
SKAPS EM400	100 (4)	220 (45)	9.1 (75)		20
<b>ARTICULATING BLOCK MATS</b>				<b>Mass Per Block, kg (lb)</b>	<b>Nom, Block, Dimension, mm (inches)</b>
SKAPS AB300	75 (3)	165 (34)	12.1 (100)	23.5 (52)	560 x 255 (22 x 10)
SKAPS AB400	100 (4)	220 (45)	9.1 (75)	43 (95)	560 x 355 (22 x 14)
SKAPS AB600	150 (6)	330 (68)	6.1 (50)	93 (205)	560 x 510 (22 x 20)
SKAPS AB800	200 (8)	440 (90)	4.6 (38)	158 (350)	560 x 560 (22 x 26)
SKAPS AB1000	250 (10)	550 (113)	3.6 (30)	250 (550)	890 x 510 (35 x 20)
SKAPS AB1200	300 (12)	660 (135)	3.0 (25)	400 (880)	890 x 685 (35 x 27)

Note: Values shown are typical and will vary with weight of concrete and field conditions.



#### HEADQUARTERS :

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