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Technical Data Sheet for Flexible Australian Concrete Mats with Biodegradable Nutritional Geotextile Underlay

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1. DESCRIPTION

A Flexible Concrete Mat with a Biodegradable Nutritional Geotextile Underlay and manufactured with a UV stabilised interlocking geogrid.

2. MATERIALS

Australian Concrete Mats are manufactured from individual concrete blocks tied together with high strength knitted polypropylene bi-axial geogrid. Each block is tapered, and interlocked and includes connections that prevent lateral displacement of the blocks within the mats when they are lifted for placement.

2.1. Concrete Blocks

The furnished blocks are manufactured with concrete conforming to the cement requirements of AS 3600 and to the aggregate requirements of AS 2758. Blocks shall have a minimum weight of 0.75kg per block and placed no further than 40mm apart. Material weight per square meter shall not exceed 45kg. Blocks shall have a 58mm profile, a flat-top pyramid shape, and a coarse finish without protrusions. Concrete shall have a minimum compressive strength requirement of Table 1 and certified by a third party.

TABLE 1: Concrete Compressive Strength Requirements	
AGE	REQUIRED COMPRESSIVE STRENGTH
7 - Day	42.5 Mpa
28 - Day	55.5 MPa
NOTE: Concrete reaches its optimum 40mpa strength 28 days after pouring.	

2.2. Polyester Bi-Axial Geogrid – SGB80

Stratagrid™ Biaxial (SGB) is a polyester (PET) geogrid reinforcement for soil. These high-performance geogrids are constructed of high molecular weight polyester yarns knitted together with a proprietary coating. Strata Grid is engineered to be mechanically and chemically durable and designed to resist degradation in harsh construction installation stage, in aggressive soil environments and exposure to water with pH range: low pH (,4 pH) to high pH (>9 pH).

StrataGrid geogrid is made with high tenacity PET yarns. It is especially designed for reinforcement of walls, slopes and embankments on soft soils, road foundations, and supporting structures, fills and slopes.

When combined with the revetment mat, this will yield a high tenacity, low elongating, and continuous filament polyester geogrid that is embedded within the base of the concrete blocks.

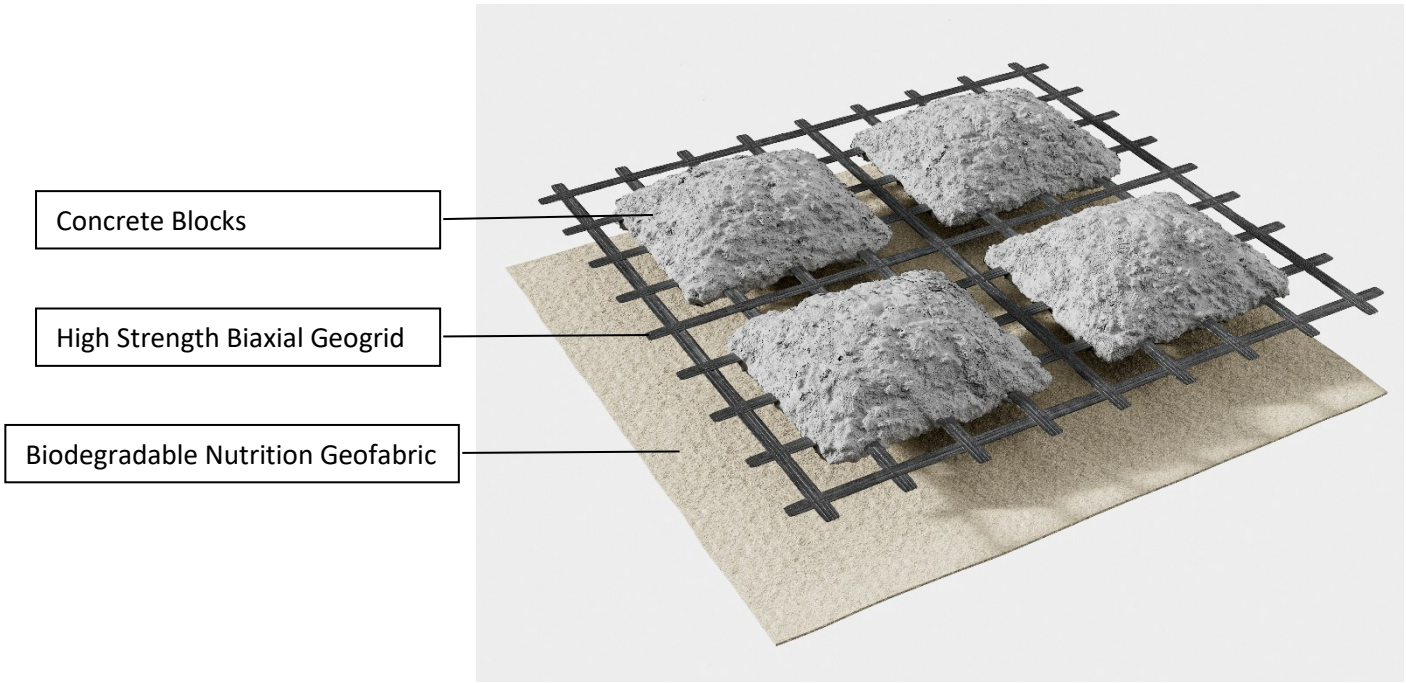
For saltwater applications refer to the notes from supplier: Notes on functionality of StrataGrid™ in saltwater environment. This can be downloaded from our website or request your copy from ACM directly.

Ensure the geogrid meets the requirements of Table 2.

TABLE 2: SGB80 - Polyester Bi-Axial Geogrid			UNIT	SGB80
MATERIAL PROPERTIES				
Nominal Tensile Strength (ASTM D 6637 / EN ISO 10319)		MD	kN/m	84
			min.	80
		CMD	kN/m	84
			min.	80
Elongation at Nominal Strength (ASTM D 6637 / EN ISO 10319) (+/-2%)		MD	%	10
		CMD	%	10
Tensile Strength at (ASTM D 6637 / EN ISO 10319) (min)	2% strain	MD	kN/m	22
		CMD		15
	5% strain	MD	kN/m	45
		CMD		25
PHYSICAL PROPERTIES				
Aperture size (+/- 2mm)		MD	mm	40
		CMD		40
Rib width (+/- 1mm)		MD	mm	10
		CMD		10
Roll width			m	2.55
Roll length			m	285
Roll area			sqm	726.75
Mass per unit area (+/- 10%)			g/m2	500
MD = machine direction / CMD = cross-machine direction				

2.3.Underlayment Materials -Biodegradable Nutritional Geofabric Underlay Cloth

TABLE 3: Biodegradable Nutritional Geofabric Data – 200gsm		
ITEM	**UNIT**	**VALUE**
Mass	g/m2	>=180
Weight Variation	%	5
Thickness	mm	2.3
Tensile Strength	KN/m	MD2.0
		CD2.7
Elongation	%	MD120
		CD127
Puncture Strength	N	650
Sieve Size	mm	1.8
Available Nutrients		Nitrogen - 9%
		Phosphorous - 1%
		Potassium - 2%
		Calcium, Magnesium,
		Iron, Sulphur



3. **MATS SHIPMENT**

Mats will be rolled for shipment. Upon delivery, rolls may be left exposed for up to 30 days. If exposure will exceed 30 days, cover or tarp the rolls to minimise UV exposure and the Biodegradable Nutritional Geotextile underlay breaking down.

4. PERFORMANCE

Full-scale laboratory testing performed by an independent third-party testing facility with associated engineered calculations certifying the hydraulic capacity of the proposed Flexible Concrete Mat meets the following requirements:

TABLE 4: Performance Data	
TEST - ASTM 6460	*(Refer to Australian Concrete Mats Hydraulic Performance Review)*
Expected Design Life	50+ years Non-Vegetative, 100+ years Vegetative
Percentage Open Area	20%
Ultimate Tensile Strength - Biaxial	80x80 kN/m
Critical Flow Shear Stress for Initial Scour	1.149 kPa
Maximum Flow Velocity	5.79m/sec
Manning's n	0.05

5. EQUIPMENT

Provide the proper equipment to place the mat that will not damage the mat material or disturb the soil subgrade and seed bed.

6. CONSTRUCTION

Prior to installing Australian Concrete Mats, prepare the subgrade as detailed in the plans. All subgrade surfaces to be smooth and free of all rocks, stones, sticks, roots, and other protrusions or debris of any kind that would result in an individual block being raised more than 20mm above the adjoining blocks. When seeding is shown on the plans, provide subgrade material that can sustain growth.

Ensure the prepared subgrade provides a smooth, firm, and unyielding foundation for the mats.

Install mats to the line and grade shown on the plans and per the engineers' requirements. When vegetation is required, distribute the seed on top of the Geofabric cloth. Cover with topsoil and water.

The engineer or authorised representative will provide technical assistance during preparation and installation of the concrete block mats as needed. Provide a minimum 450mm deep concrete mat embedment toe trench at all edges exposed to concentrated flows. Recess exterior edges subject to sheet flow a minimum of 150mm. Provide fastening or anchoring as recommended by the engineer for the site conditions.

Concrete Mats are not to be driven on until 28 days from manufacturing date on label of each mat.

7. MEASUREMENT

This item will be measured by the square metre or linear metre.

8. ANCHORING

Anchoring is to be designed by an engineer for the water flow rates, soil and site conditions.

Note: The Australian Concrete Mat Install Anchor Handling Guide is only a guide. Each site has differing circumstances and characteristics.

9. JOINING STRIPS

We recommend using joining strips under longitudinal joins to minimise scouring under the mats.
Refer to the joining strip notes in the Australian Concrete Mats Install Anchor and Handling Guide.

10. MORE INFORMATION

For more information, please visit our website www.ConcreteMats.com.au.

Contact our office. sales@concretemats.com.au or telephone 02 5629 1223 or M. 0480 234 521