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Technical Data Sheet for Australian Concrete Articulated Concrete Block Mats with Polypropylene Rope.

[CODES: AB12.2412.PP16]

1. DESCRIPTION

An Articulated Concrete Block Mat is a concrete block revetment mat system designed to control various types of erosion due to water, wind and vehicular traffic.
The system is made up of a 2.4m long x 1.2m wide x 120mm in height mats that are placed side by side and clamped together to provide one homogeneous system.
The mats consist of concrete blocks interlocked by with Polypropylene Rope. Each mat is made up of concrete blocks that are tapered, consisting of a 3x6 blocks pattern to making up a mat.
The interconnecting cable allows the Mats to articulate and form to the terrain and contour of the ground.

2. MATERIALS

Articulated Concrete Block Mats are manufactured from individual concrete blocks interconnected together with Marine Grade Polypropylene Rope.

TABLE 1: Manufacturing Material Information

PRODUCT CODE	CONCRETE BLOCKS	INTERCONNECTING MATERIAL	BREAKING STRAIN (Approx)
AB12.2412.PP16	50 MPA, Wet-Cast Portland Cement	16mm Polypropylene Rope	4500kg

2.1 Concrete Blocks [Code:AB12.2412]

Each mat is typically 2400x1200mm, made from 18 individual 50 MPA concrete blocks interlocked by Polypropylene rope, which connect through each block in both directions. There is a 15mm spacing (at base) between blocks to provide an opening. The finished blocks are manufactured with concrete conforming to the cement requirements of AS 3600 and to the aggregate requirements of AS 2758. Blocks have a minimum weight of 34kg per block and placed no further than 15mm apart. Material weight per square meter is approximately 214kg. Each block has a 120mm high profile, 290x290mm on the top face and 390x390mm at the bottom face.

Concrete shall have a minimum compressive strength requirement as per Table 2 and certified by a third party.

TABLE 2: AB Block Mats Manufacturing Values and General Characteristics

Mat Dimensions	1200mm W x 2400mm L x 120mm H
Mat Weight (Approx)	214kg per m^2 or 616kgs per mat
individual Concrete Block Size (Approx)	Top face: 290x290mm, Bottom face: 390x390mm, Height 120mm
Blocks Per Mat	18 blocks per mat
Spacing between blocks	115mm (at top) and 15mm (at base)

TABLE 3: Concrete Compressive Strength Requirements	
AGE	REQUIRED COMPRESSIVE STRENGTH
7 - Day	38MPa
14 - Day	50MPa
28 - Day	61MPa
NOTE: Concrete reaches its optimum 50MPa strength 28 days after pouring.	

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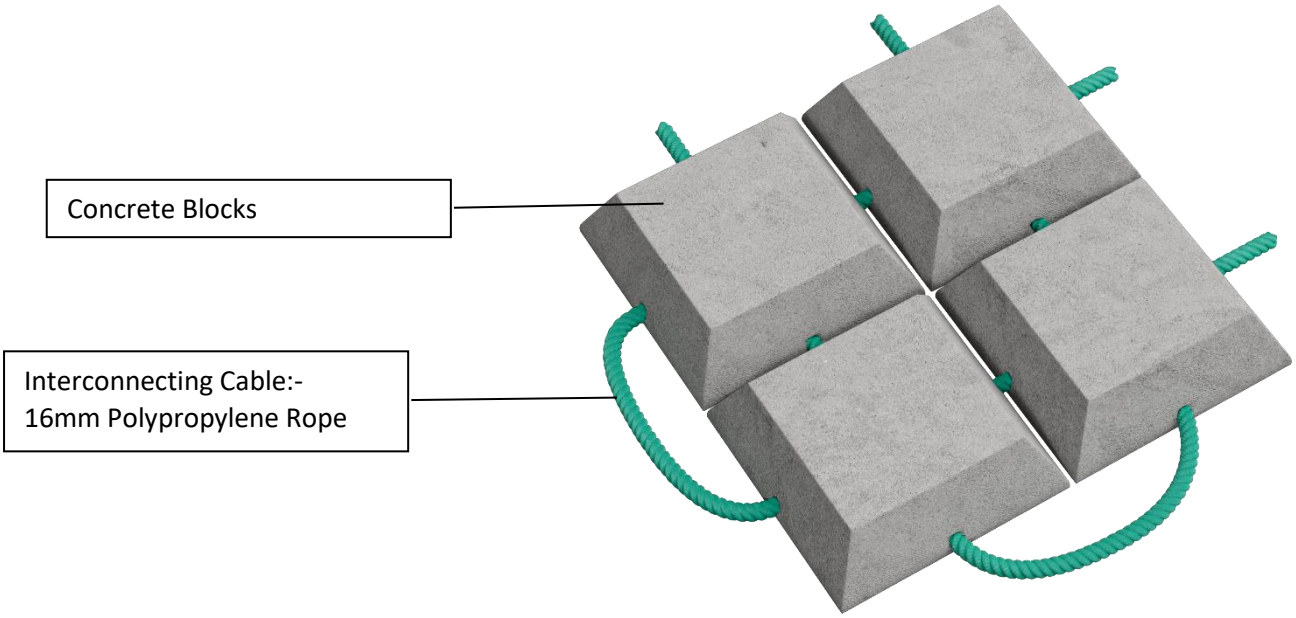
2.2 Interconnecting Cable - 16mm Polypropylene Marine Rope

CHARACTERISTICS*

- Donaghy's Aquatec Marine and Industrial Rope
- 3 Strand Hawser Laid PP/PE Crushed Mono Rope
- Ø16mm = 4500 kilo break load
- Blended p/e and p/p, giving the good handling of p/e and the strength of p/p.
- UV resistant
- Abrasion and shock load resistant
- Is not affected by water.
- Does not absorb water.
- Rope allows greater articulation of concrete blocks.

TABLE 4: Aquatec Rope Fibre Characteristics						
Fibre Type	**Description**	**Specific Quality**	**Sensitive to**	**Resistant to**	**Heat Reaction**	**Strength & Elongation**
PP (Polypropylene)	Continuous filament fibre.	Low density (0.91), contributing to lightweight and buoyant performance.	Stable under typical service conditions, with known limitations only in exposure to strong oxidising agents and certain high-temperature organic solvents. Long-term UV exposure is managed through the use of stabilised materials to maintain performance.	Resistant to a wide range of acids and alkalis under normal environmental conditions.	Thermoplastic behaviour, softening and melting at approximately 165°C when exposed to elevated temperatures or flame.	High tenacity with reliable recovery from stretch. Typical elongation at break for rope applications is in the range of 25–30%.
Polyethylene	Continuous filament fibre.	Low density (0.95), providing a balance of strength and flexibility.	Performs reliably in standard environments, with limitations primarily in exposure to high-temperature aromatic solvents and strong acids. Effects of prolonged UV exposure are controlled through material stabilisation to support long-term durability.	Resistant to most acids, alkalis, greases, oils, and a broad range of organic solvents.	Thermoplastic behaviour, softening at approximately 100°C and melting between 110–120°C under elevated temperature conditions.	High tenacity with strong recovery after stretch. Typical elongation at break is up to approximately 50%.

TABLE 5: Aquatec Rope Technical Data*						
*(*Referenced from Donaghy's Aquatec Information Sheet – Request your copy from ACM directly.)*						
RANGE/TECHNICAL						
3 Std		**Hawser Laid PP/PE Crushed Mono Rope Green/Gold Fleck**				
Product Code	**Plt Qty**	**Description**	**Weight (kg)**	**Breaking (Kn)**	**Force (Kg)**	**UOM**
ROS1634	16	Aquatec 16mmx 250m Green w Gold Fleck	29	44.1	4500	Coil



3. TRANSPORT

Articulated Concrete Block Mats can be stacked (up to 4 layers) on a pallet for transportation. Pallets should not be stacked more than 2 high on top of each other. Upon delivery, mats may be left exposed for up to 90 days. If exposure will exceed 90 days, cover or tarp the mats to minimise UV exposure.

TABLE 6: Transport and Handling Block Mats Size and Weight Detail			
For safety and ease of transport and handling the AB Block Mats are stacked and strapped onto a large pallet for transportation. Loops of rope or cable are overhanging from sides of mats stacks.			
[Code: AB12.2412]	ONE MAT (No Pallet)	PALLET w 2 MATS	PALLET w 4 MATS
DIMENSIONS	1200.W x 2400.L x 120.H	1200.Wx 2400.L x 390.H (inc Pallet)	1200.W x 2400.L x 650.H (inc Pallet)
WEIGHT (kg) *(Dry Weight)*	616kg	1300kg (inc Pallet)	2550kg (inc Pallet)

4. CLAMPS

Stainless Steel Cable Clamps should be used to connect adjoining Articulated Concrete Block Mats. The standard placement of clamps shall be placed 800mm centres connecting adjoining mats together. A minimum of 4 clamps per mat. In areas of high-water flow velocities exceeding 3.5 m per second we recommend the clamps should be designed by an Engineer who is familiar with the project and site conditions.

5. ANCHORING

Anchoring is to be designed by an engineer for the water flow rates, soil and site conditions. Individual mats can be placed next to each other and joined together using cable clamps. Mats are tethered together using the external rope or cable loops.

Anchoring the mats down will require an engineer's design. This is to be completed by an engineer who is familiar with the design parameters of the project. Eg soil condition, hydraulic flow rates and loads.

Note: The Australian Concrete Block Mat Install Anchor Handling Guide is only a guide as each site has differing parameters.

6. PERFORMANCE

To date no full-scale laboratory testing has been performed by an independent third-party testing facility with associated engineered calculations to certify the hydraulic flow capacity of the Articulated Concrete Block Mat. This will be updated when available.

TABLE 7: AB Block Mat Performance Values – [CODE: AB12.2412.PP16]	
Breaking Strain	Approx 4500kg
Expected Design Life)	50+years Non-Vegetative, 100+ years Vegetative
Percentage Open Area	20%
Modulus of Rupture (load capacity)	14.2 – 16.4 MPa
Maximum Flow Velocity	*See noted above. To request calculation formulas contact our office on; sales@concretemats.com.au*

7. EQUIPMENT

Provide the proper equipment to place the mat that will not damage the mat material or disturb the soil subgrade. The individual mats require a minimum four-point lift system design, using a spreader bar and lifted by adjacent loops.

8. CONSTRUCTION

Prior to installing prepare the subgrade as detailed in the plans that have been designed by an engineer for the project. 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. Finish and level the top layer of soil/rock as per project engineer design. 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.

9. MEASUREMENT

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

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