

HYDROTEX™

Articulating Block AB300

Fabric Formed Concrete

Description

HYDROTEX™ Articulating Block Linings consist of a series of compartments (blocks) linked by an interwoven perimeter and revetment cables. Ducts interconnect the compartments and high strength revetment cables are installed between and through the compartments and ducts. Once filled, the Articulating Block Linings become a mattress of pillow shaped, rectangular concrete blocks. The interwoven perimeters between the blocks serve as a hinge to permit articulation. The cables remain embedded in the concrete blocks to link the blocks together and facilitate articulation. Some relief of hydrostatic pressure is accomplished through the filtration bands formed by the interwoven perimeters of the blocks.

Fabric formed concrete lining shall be Articulating Block (AB300) type with concrete blocks having finished nominal block dimensions of 558.8 mm x 254.0 mm, a finished average thickness of 76.2 mm, and a nominal mass per unit area of 166 kg/m². Concrete blocks shall be interconnected with embedded longitudinal (optional – and transverse) revetment cables in such a manner as to provide longitudinal and lateral binding of the finished articulating block mattress. The shear resistance of the concrete lining shall be a minimum of 92.77 kg/m², as demonstrated by full scale flume testing.

The fabric forms are composed of nylon or polyester yarns formed into a woven fabric. Forms are woven with a minimum of 50% textured yarns (by weight). Partially oriented (POY), draw-textured, and/or staple yarns are not used in the manufacture of the fabric. Each layer of fabric conforms to the physical, mechanical and hydraulic requirements Mean Average Roll Values listed in Table 1.0. The fabric forms are free of defects or flaws which significantly affect their physical, mechanical, or hydraulic properties.

Mill widths of fabric are a minimum of 2,133.6 mm. Each selvage edge of the top and bottom layers of fabric is reinforced for a width of not less than 34.3 mm by adding a minimum of 6 warp yarns to each selvage construction. Mill width rolls are cut to the length required, and the double-layer fabric separately joined, bottom layer to bottom layer and top layer to top layer, by means of sewing thread, to form multiple mill width panels with sewn seams on not less than 2,032 mm centers.

Fabric form panels are factory-sewn, by joining together the layers of fabric, top layer to top layer and bottom layer to bottom layer, into predetermined custom sized panels. Sewn seams are downward facing as shown on the Contract Drawings.

All sewn seams and zipper attachments are made using a double line of U.S. Federal Standard Type 401 stitch. All seams sewn are not less than 17.51 kN/m when tested in accordance with ASTM D 4884. Both lines of stitches are sewn simultaneously and be parallel to each other, spaced between 6.35 mm to 19.05 mm apart. Each row of stitching shall consist of 4 to 7 stitches per 25.4 mm. Thread used for seaming is polyester. Edges of the panels can be attached in the field by means of sewing or pre-attached zippers.

Blocks and Cables

Fabric forms are double-layer woven fabrics joined together by narrow perimeters of interwoven fabric into a matrix of rectangular compartments. Cords connect the two layers of fabric at the center of each compartment. The cords are interwoven in two sets of four cords each, one set shall cross from the top layer to the bottom layer and the other from the bottom layer to the top layer. Each cord has a minimum breaking strength of 28.02 kN/m when tested in accordance with ASTM D 2256. Fabric form compartments are offset in the lateral direction, to form a bonded concrete block pattern.

Fabric form compartments each have six ducts, two on each of the long sides and one on each of the short sides to allow passage of the cables and fine aggregate concrete between adjacent compartments. Revetment cables are installed in the longitudinal (optional – and lateral) direction between the two layers of fabric. Two longitudinal cables are on approximately 304.8 mm centers and pass through each compartment in a manner which provides for the longitudinal and lateral binding of the finished articulating block mattress. The cables enter and exit the compartments through opposing ducts.

Revetment cables are Polyester Revetment Cables. Cables are constructed of high tenacity, low elongation, and continuous filament polyester fibers. Cable shall consist of a core constructed of parallel fibers contained within an outer jacket or cover. The weight of the parallel core shall be between 65% to 70% of the total weight of the cable. Cables shall be nominally 6.35 mm in diameter and their rated breaking strength shall be not less than 1678 kg, or as specified by the Engineer.

The above is a standard guideline for the selection of revetment cables. The Engineer should consult with Hychem Infrastructure Technical Service for site specific revetment cable selections. Alternate cable strengths and constructions are available.

HYDROTEX™ Articulating Block AB300**Fabric Formed Concrete****Concrete Baffles**

Many times, the forms are fabricated with baffles. The baffles are flow-directing vertical geotextile walls constructed between fabric form layers. Baffles are an integral part of the fabric form design. Baffles are designed to support the panel section, determine the concrete area of the section and direct the flow of fine aggregate concrete for maximum efficiency. Baffles are installed at predetermined mill width intervals to regulate the distance of lateral flow of fine aggregate concrete. The baffles are designed to maintain a full concrete lining thickness along the full length of the baffle. The grab tensile strength of the baffle is not less than 31.52 kN/m when tested in accordance with ASTM D 4632.

Geotextile Filter Fabric

A geotextile filter fabric, as specified elsewhere, is placed on the graded surface approved by the Engineer.

Fine Aggregate Concrete

The Contractor shall provide a suitable fine aggregate concrete for proper filling of the fabric forms. Typical concrete mix proportions and sample mix designs can be provided by Hychem Infrastructure Technical Service, as well as installation means and methods.

Product Properties

Table 1.0 Property Requirements based on ASTM D4759 – HYDROTEX™ Fabric ^{1,2}			
	TEST METHOD	UNITS	MINIMUM AVERAGE ROLL VALUES
Physical Properties			
Composition of Yarns	-	-	Polyester
Mass Per Unit Area (double-layer)	ASTM D 5261	g/m ²	441
Thickness (single-layer)	ASTM D 5199	mm	0.381
Mill Width (Woven)		m	2.13
Mechanical Properties			
Wide-Width Strip Tensile Strength - MD TD	ASTM D 4595	kN/m	52.5 61.3
Elongation at Break - MD TD - Max.		%	15 15
Trapezoidal Tear Strength - MD TD	ASTM D 4533	N	667 778
CBR Puncture Strength	ASTM D 6241	N	5,560
Mullen Burst Strength	ASTM D 3786 (Mod.)	MPa	3.45 MPa
	TEST METHOD	UNITS	MINIMUM AVERAGE ROLL VALUES
Hydraulic Properties			
Apparent Opening Size (AOS)	ASTM D 4751	mm	0.425 – 0.6000
Flow Rate	ASTM D 4491	L/s/m ²	20.4 – 37.4

Notes:

¹ Conformance of fabric to specification property requirements shall be based on ASTM D 4759.

² All numerical values represent minimum average roll values (i.e., average of test results from any sample roll in a lot shall meet or exceed the minimum values) unless noted. Lots shall be sampled according to ASTM D 4354.





Safety

In an emergency, contact 000, the Poisons Information Centre (13 11 26 within Australia) or a doctor for advice. Please refer to the current SDS (Safety Data Sheet) and follow the prescribed safety precautions and handling procedures for the product.

Warranties and Disclaimers

Hychem® warrants that this product shall conform to the technical specifications published in the product literature. The quality and fitness of the product are dependent upon its proper use and application by the applicator. Hychem's role is limited to the manufacture and supply of the product and its components and does not extend to supervision or control of its application. It is vital that the person applying this product understands its properties and limitations and is appropriately trained and competent in the use of the equipment, methods and materials associated with its application. There are no warranties that extend beyond the description contained herein, except where provided in writing directly by Hychem® and executed under seal by a company officer.

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Technical and field support, where provided, does not constitute supervisory responsibility. Suggestions made by Hychem®, whether verbal or written, may be followed, modified or rejected by the owner, engineer or contractor, as they, and not Hychem®, are responsible for determining and carrying out procedures appropriate to a specific application.

Customer Responsibility

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