

## Geotube® GT1000 Series Woven Geosynthetics for Containment in Hydraulic and Marine Applications

### OUR COMPANY

TenCate develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

### OUR PRODUCT

Geotube® containment technology is a proven, cost effective method to help protect shorelines, rebuild beaches and reclaim land from bodies of water.

The Difference Geotube® Marine Containment Technology Makes:

- Circumferential Seaming. Reduces the stress concentration on seams and allows the flexibility to fabricate any tube circumference.
- Rigid Mechanical Ports. Offers reinforcement at the port connection and more strength than textile sleeve ports.
- Flat End Technology. Provides consistent height at tube end junctions, thus eliminating the need to overlap.

Geotube® containers are manufactured from high modulus polypropylene engineered woven geosynthetics fabricated with high strength seaming techniques to produce tubular containers with ensured integrity during filling and operational life.

Typically the sizes of Geotube® containers range from 15 ft to 50 ft circumference. These containers have specially designed rigid mechanical ports which enable the uniform filling of sand, while water is drained through the permeable skin of the tubular containers. This results in a compact sand-filled, mass gravity structure that is settlement free and erosion resistant.

### OUR APPLICATIONS

TenCate Geosynthetics has solutions for erosion protection used in Hydraulic & Marine structures. This includes structures used for both coastal/marine and waterways engineering. TenCate provides a range of containment solutions for the cores of dykes and levees. Dykes and levees are used to prevent flooding, enable construction to occur within calm water and protect from storm activity.



Jetties are used to provide land access for boat traffic while groynes provide erosion protection to the littoral movement of sand.

Breakwaters reduce water forces offshore before they reach land thus preventing erosion.

TenCate provides a range of geotextile and containment solutions to prevent erosion around offshore structures. These solutions include the creation of wetlands, artificial islands, and underwater structures.

### OUR SERVICE

TenCate offers complete application technical assistance. Our comprehensive service includes assistance during design, specification and throughout the process. TenCate makes the difference.



## Geotube® GT1000 Series Woven Geosynthetics for Containment in Hydraulic and Marine Applications

Geotube® GT1000 series are engineered woven geosynthetics composed of high-tenacity polypropylene multifilament yarns, which are woven into a stable network such that the yarns retain their relative position. Geotube® GT1000 Series are inert to biological degradation and resistant to naturally encountered chemicals, alkalis, and acids.

TenCate Geosynthetics Americas is accredited by a2La (The American Association for Laboratory Accreditation) and Geosynthetic Accreditation Institute - Laboratory Accreditation Program (GAI-LAP).

Geotube® GT1000M is black in color. Geotube® GT1000MB is tan in color.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Wide Width Tensile Strength (at ultimate)	ASTM D4595	lbs/in (kN/m)	1142 (200)	1142 (200)
Wide Width Tensile Elongation	ASTM D4595	%	20 (max.)	20 (max.)
Factory Seam Strength	ASTM D4884	lbs/in (kN/m)	913 (160)	
CBR Puncture Strength	ASTM D6241	lbs (kN)	4000 (17.8) <sup>1</sup>	
UV Resistance (% strength retained after 500 hrs)	ASTM D4355	%	85	

Hydraulic Properties	Test Method	Unit	Minimum Average Roll Value
Apparent Opening Size (AOS)	ASTM D4571	U.S. Sieve (mm)	30 (0.60)
Water Flow Rate	ASTM D4491	gal/min/ft <sup>2</sup> (l/min/m <sup>2</sup> )	20 (815)
Permittivity	ASTM D4491	sec <sup>-1</sup>	0.35

Physical Properties	Test Method	Unit	Typical Value <sup>1</sup>
Mass/Unit Area	ASTM D5261	oz/yd <sup>2</sup> (g/m <sup>2</sup> )	33 (1119)

<sup>1</sup> ASTM D4439 Standard Terminology for Geosynthetics: typical value, n—for geosynthetics, the mean value calculated from documented manufacturing quality control test results for a defined population obtained from one test method associated with on specific property.

### How Geotube® Marine Containment Technology Works

Building a marine containment structure with Geotube® technology is a three-step process.

In the *filling* stage, the Geotube® container is filled with dredged sand or similar materials. The Geotube® containers are constructed of a unique fabric, specially engineered for a marine structure.

In the *containment* stage, the durable and high retention fabric allows the dredged materials to fall out of suspension and form a dense monolithic structure.

In the final stage, *structural*, the contained and densified material serves as a structural mass. When utilized with an accompanying Scour Apron, the Geotube® container may be utilized as a sand dune core or other shoreline re-nourishment or erosion prevention medium.



Step 1: Filling



Step 2: Containment



Step 3: Structural

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