



Dewatering Tubes

For Large-Scale Filtration



Geotextile and Sludge Dewatering Tubes are commonly used in Waste Water Treatment Plants (WWTP's), agricultural ponds, dredging, and for coastal breakwater stabilization. Their long exteriors and high filtering abilities allow them to effectively remove waste and other pollution from a water area. Sludge dewatering tubes are available in many different circumferences and sizes and can even be customized to suit a specific location.



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Dewatering Tube Features

- Polypropylene Fabric
- Woven Geotextile Material
- UV Stabilized
- Filling Ports
- Lengths Ranging up to 250 ft.
(other lengths available by custom order)

Dewatering Tube Sizes and Lengths

Geotextile dewatering tubes are available in the following custom sizes:

- 15', 22.5', 30', 45', 60', 75', and 90' circumference
- 50', 100', 150', 200', and 250' lengths
- Custom lengths available
- Fill/discharge port every 50' of length

Dewatering Considerations

When planning a sludge tube program, it is necessary to consider dredging, pumping, and piping systems, as the sludge flow to these tubes must be controlled through a series of manifolds and valves. Other considerations include:

- Slurry/Sludge solids content
- Placement of inlets for distribution of sludge/solids in each tube
- Drainage of clear, free-flowing filtrate from each tube to retention area or reservoir

- Tube height should not exceed 5' and inflation rates of multiple tube applications
- Stability of additional layers of tubes (if filling a second layer tube)
- Safe locations for tubes with respect to potential hazards

When using sludge tubes, consider contacting a polymer specialist to treat the sludge. The correct use of a polymer can reduce the total time required for the project and provide savings on a sludge tube system. Dewatering tube systems must be carefully monitored during the tube filling operation. Periodic breaker tests should be done to ensure peak performance and to ensure that TSS thresholds are achieved.

To determine the best fabric for your conditions, a simple hanging bag test can be done. This test helps determine the correct fabric and pore size necessary for your conditions (consideration should be given to time and available real estate).

Sludge tubes are normally filled to 85% capacity with slurry mix capacity and then allowed to consolidate. Once consolidation has taken place the dewatering tubes are then refilled, and the cycle continues until the capacity of 85% consolidated solids is reached.

Sludge tubes should be left in place to dewater over a period of time to achieve the best volume reduction. Reduction rates depend on slurry, organics, and conditions. Once consolidated, the tube material can then be trucked to an off-site location for disposal or used as fill or compost.

Dewatering Tubes

Installation

Handling

Unload rolls with equipment that will not damage the geotextile fabric. No hooks, tongs, or other sharp instruments.

Dewatering tubes should not be dragged along the ground. Unroll the bag into position as directed.

Subgrade Preparation

- Grade the site to remove debris, rocks, roots, etc.
- Level the site from side to side with no more than a 0.5% grade from end to end.

Build Containment Berm

If required, build a containment berm around the dewatering site perimeter.

- The height of the containment berm should generally be approximately 33% to 67% of the potential dewatering tube height.
- A trench should be excavated next to the containment berm, sloped to provide drainage to the opposite (lower) side of the dewatering site.

Impermeable Liner Placement

If required, install an impermeable geomembrane (thickness as directed by the site engineer) over the entire dewatering site, including the drainage trench and perimeter berm.

A medium weight nonwoven geotextile may be used to help protect the geomembrane. Consult your project engineer for specifications.

Drainage Rock Placement

Place drainage rock, sand, or other free draining granular material and cover the entire site with the exception of the drainage trench and containment berms. The engineer may require these structures to be covered.

- Some projects may utilize a geonet as an alternative drainage media.

Dewatering Tube Deployment

Unroll and deploy the dewatering tube on top of the drainage media starting on the upper end of the dewatering site. Use the loop straps to correctly align the geotube.

Polymer System Set Up

Set up your make down polymer injection system with the polymer best suited for your project.

After injecting the polymer into the sludge stream, collect a sample of the flocced material prior to pumping the treated sludge into the dewatering tube to ensure the desired results.



Begin Dewatering

To start pumping treated sludge into the geotextile dewatering tube, attach your discharge line to the filling port(s).

- The use of a multiple port manifold may be required to efficiently fill multiple geotubes' tube/ports.
- Do not exceed the design parameters of your specific geotube.
- Dewatering tubes can be topped off multiple times, but do not exceed the design parameters.

Remove Dewatered Material

Once the material has dewatered, the geotube becomes full, or the project is completed, cut open the dewatering tube to remove the dewatered solid material.

Storage

Geotubes are wrapped in a UV protective cover. If stored outdoors for a prolonged period, elevate the geotubes from the ground and cover with a tarpaulin or opaque plastic. Ensure they are adequately protected from:

- Moisture
- UV radiation
- Chemicals that are strong acids or bases
- Temperatures in excess of 140°F

Dewatering Tubes

Specifications

Standard Dewatering Tube Sizes

Standard black or tan geotextile dewatering tubes are available in the following sizes:

| | |
|----------------------|---|
| Length* | 50' / 100' / 150' / 200' / 250' |
| Width (flat) | 7.5' / 15' / 22.5' / 30' / 37.5' / 45' |
| Circumference | 15' / 22.5' / 30' / 45' / 60' / 75' / 90' |
| Filling Ports | Every 50' |

*Other lengths and custom sizes available on request.



Geotextile Fabric Specifications

| Property | Test Method | English | Metric |
|-----------------------------|--------------|---|-------------------|
| Wide Width Tensile | ASTM D-4595 | 5,400 x 7,500 lbs/ft (450 x 625 lbs/in) | 79.0 x 109.0 kN/m |
| Wide Width Elongation | ASTM D-4595 | 17 x 13% | 17 x 13% |
| CBR Puncture | ASTM D-6241 | 2,000 lbs | 8,900 N |
| Puncture Strength* | ASTM D-4833* | 250 lbs | 1,113 N |
| Trapezoidal Tear | ASTM D-4533 | 280 x 300 lbs | 1,246 x 3,600 N |
| Apparent Opening Size | ASTM D-4751 | 40 US Sieve | 0.425 mm |
| Permittivity | ASTM D-4491 | 0.260 sec-l | 0.260 sec-l |
| Water Flow Rate | ASTM D-4491 | 20 g/min/sf | 805 l/min/sm |
| Factory Seam Strength | ASTM D-4884 | 400 lbs/sf | 69.7 kN/m |
| UV Resistance @ 1,200 Hours | ASTM D-4355 | 70% | 70% |

*Historical averages (current values not available): Puncture Strength ASTM D-4833 is not recognized by AASHTO M288 and has been replaced with CBR Puncture ASTM D-6241.

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Phone: (+1) 772-646-0597 | info@geiworks.com

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