



DRAINTUBE™

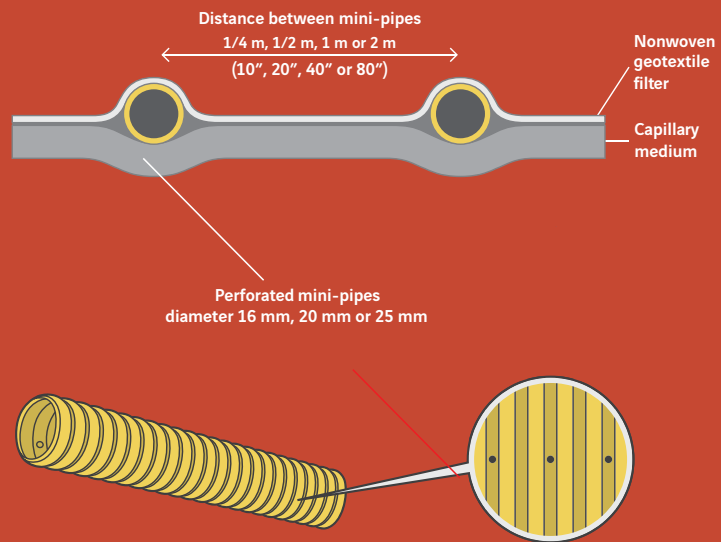
FOR TAILINGS AND
MINING APPLICATIONS

DRAINTUBE™ the Drainage you want!

Fluid control is critical for most civil engineering applications. The pore pressure developed in soils can compromise the stability of installations. Over the past 10 years, **DRAINTUBE™** drainage geocomposites is being used to eliminate interstitial pressure and to ensure the long term performance in environmental and civil engineering projects.

DRAINTUBE™ is a combination of various geotextile layers (filtration, separation and protection layers) that are needle punched together with integrated perforated mini-pipes for high capacity drainage.

Based on the experience gained over many years of draining waste storage facilities, **DRAINTUBE™** is especially suited to mining related drainage. The mining industry requires customized solutions specifically adapted to the following situations:



Drainage for Waste Storage Covers/Caps

Caps play a key role in protecting the environment. For acidic tailings or deposits, these caps eliminate Acid Rock Leaching by limiting reactivity with the atmosphere.

With its flexibility in terms of hydraulic drainage, filtration and puncture resistance, **DRAINTUBE™** technology provides a wide range of drainage solutions for runoff water and/or biogas in capping applications for tailing/mining waste storage sites.

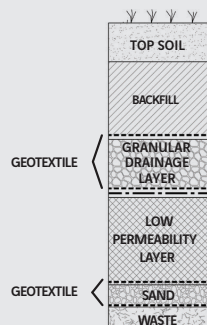
Needle-punching layers of non-woven geotextiles together insure:

- high friction angles with the ground and/or geomembranes, resulting in higher factors of safety for slope stability,
- specific filtration opening sizes providing compatibility with backfill soils.

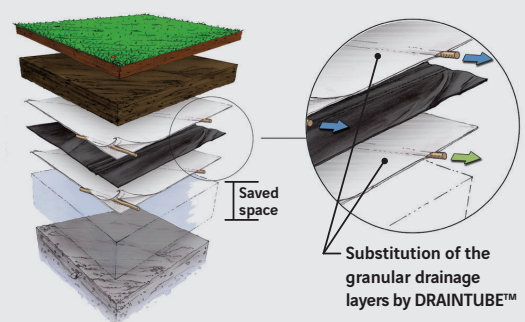
DRAINTUBE™ is not only an excellent technical alternative to granular layers but also helps lower environmental impacts by reducing or eliminating the need to produce and/or transport these materials.



Traditional solution



Optimized solution with DRAINTUBE™

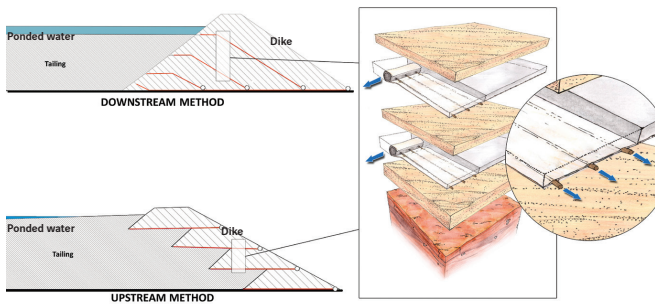


Tailings Dam Drainage

Tailings dams are often built using the upstream method because they are more economical. The limitation of this method is the eventual rise in the water table within the structure, creating stability problems. Safety can be greatly increased through the use of **DRAINTUBE™** between built-up sections.

Another issue in mining operations is the management of sand and its storage using dykes. To ensure complete safety of work sites, the stability of these dykes is a key design challenge. The saturation rate of sand and the slopes depends on the nature of the sand. Permeability of the sand, its internal cohesion and lastly, its saturation needs to be controlled. **DRAINTUBE™** is used at various levels in dyke construction, between two layers of soil, to accelerate desaturation of the layers and hence increase the overall stability of the structure.

Optimized solution with **DRAINTUBE™**



Groundwater Drainage Under Storage Ponds

(Freshwater, Leachate, Mining Waste)

DRAINTUBE™ is installed below impermeable geomembranes in storage ponds. The presence of a high water table can create hydrostatic pressure below the liners. This pressure becomes even more critical when the emptying/filling of these ponds is frequent and/or rapid. This can lead to the formation of "whales" and permanent damage to the geomembrane. **DRAINTUBE™** allows this pressure to dissipate and ensures proper functioning of the pond over time.

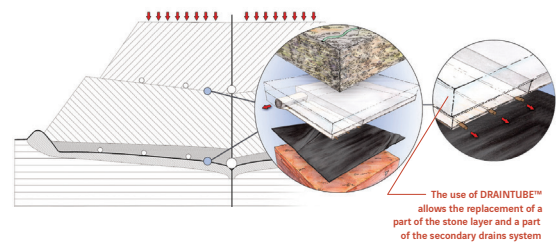


Leachate Drainage in Metals Extraction Using Heap Leaching Techniques

Heap Leach Pads pose a particular challenge. Their economic viability depends on the quality of drainage and the efficient recovery of metals. They require both protection of the geomembrane against puncture and a complete and rapid collection of the metals-rich solution.

In addition, their design must comply with strict requirements regarding stability and isolation from the environment. **DRAINTUBE™** is widely used beneath waste storage sites involved in the collection of leachate and for the preservation of impermeable barriers. Once confined, **DRAINTUBE™** is capable of bearing very high compressive loads. Finally, because of the high chemical stability of its components, **DRAINTUBE™** does not undergo advanced degradation, even at high temperatures. With its excellent hydraulic capacity, **DRAINTUBE™** has proven to be an efficient substitute for a portion of the granular and perforated pipe network.

Traditional solution Optimized solution with **DRAINTUBE™**

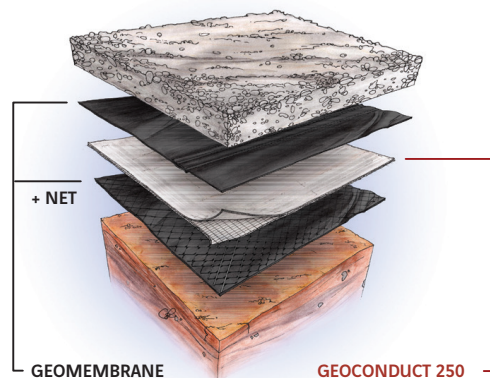


Leak Detection and Geomembrane Protection

A double liner system using geomembranes allows an increase in overall system safety against environmental risks.

Leak detection through geo-electrical methods post installation ensures that even the smallest leaks can be discovered and repaired to maintain the complete impermeability of the system.

GEOCONDUCT 250-550 allows geo-electrical detection of leaks while also providing puncture protection to the geomembrane.



DRAINTUBE™ OFFERS:

3 perforated pipes size options: 16, 20 and 25 mm

4 perforated pipe spacing options: 2 m, 1 m, 1/2 m, 1/4 m (80", 40", 20", 10")

Multiple geotextile options

Available transmissivity between 2.5×10^{-4} to 4×10^{-3} m²/s at $i=0.1$

No change in transmissivity up to 2500 kPa (50,000 psf)

Low creep reduction factor

No geotextile intrusion

Standard roll size: 3.98 m x 75 m (13.1'x246')

Faster and easier to install than other types of geocomposites, no tying required!

Consistent QA/QC

Cost Optimisation



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