

3D Drainage Mat (Pico3DDrain™)

(1) Product Definition



Structural Matrix

A flexible geosynthetic material formed by thermally bonding randomly oriented polymer fibers. Its highly porous, interconnected void network allows for omnidirectional water flow, rapid infiltration, and temporary water storage within the matrix for balanced moisture control.



Adaptive Resilience

Unlike rigid drainage boards, it conforms perfectly to irregular surfaces and undulating terrain. It maintains consistent drainage performance under differential settlement, dynamic loading, and complex soil conditions, preventing clogging and failure in challenging environments.



Engineering Applications

Essential in landfill leachate collection, tunnel waterproofing systems, road subgrade stabilization, and basement waterproofing. Also a key component in green infrastructure like green roofs, retaining walls, and stormwater management systems.

“Pico3DDrain™ delivers reliable, long-term subsurface water management through superior permeability and structural flexibility.”

Pico Lab

(2) How It Works

1

01. Water Infiltration

Engineered porosity allows rainwater and runoff to bypass surface pooling, rapidly permeating the top layer to initiate the management process.

2

02. Fiber Matrix Capture

A dense micro-fibrous structure acts as a natural filter, trapping sediment, debris, and fine pollutants to purify inflow and prevent downstream clogging.

3

03. 3D Flow Movement

The interconnected 3D spatial network redistributes water both laterally and vertically, evenly balancing hydraulic pressure to avoid localized saturation.

4

04. Drainage and Storage

Excess water is channeled to subsurface reservoirs or municipal drainage, recharging groundwater tables while mitigating the risk of urban flooding.

(3) Key Benefits



Omnidirectional Drainage

Operates efficiently in all directions, eliminating stagnation and hotspots across the entire installation area.



Flexible Conformability

Molds seamlessly to uneven terrain, curves, and complex subgrades without structural compromise.



Anti-Clogging

Self-cleaning fiber matrix prevents particle buildup, ensuring decades of low-maintenance use.



High Void Ratio

Exceptional porosity maximizes water storage and rapid permeability for peak stormwater absorption.



High Load Resistance

Structurally robust to withstand heavy traffic, machinery, and compaction without deformation.



Lightweight Install

Easy to transport and deploy, drastically reducing labor costs and project timelines.

Long-Term Stability: UV-stabilized and chemically inert, the system resists degradation in extreme climates, ensuring a 50+ year lifespan.

(4) Applications

	Landfills leachate drainage systems
	Tunnel waterproofing and drainage layers
	Road and railway subgrades & foundations
	Basement exterior wall and foundation drainage
	Green roofs and rooftop garden drainage
	Sports fields, golf courses & playgrounds
	Landscape & commercial garden drainage

(5) Technical Specifications

Model	Thick (mm)	CS (kPa)	TS (kN/m)	Elon (%)	Kv (m/s)	Apert	Rate
DM10	1.0	≥200	≥1.5	≥100	10 ⁻²	85%	Fast
DM20	2.0	≥300	≥2.5	≥120	10 ⁻²	82%	Fast
DM30	3.0	≥400	≥3.5	≥130	10 ⁻²	78%	Med
DM40	4.0	≥500	≥4.5	≥140	10 ⁻³	75%	Med
DM50	5.0	≥600	≥5.5	≥150	10 ⁻³	72%	Slow