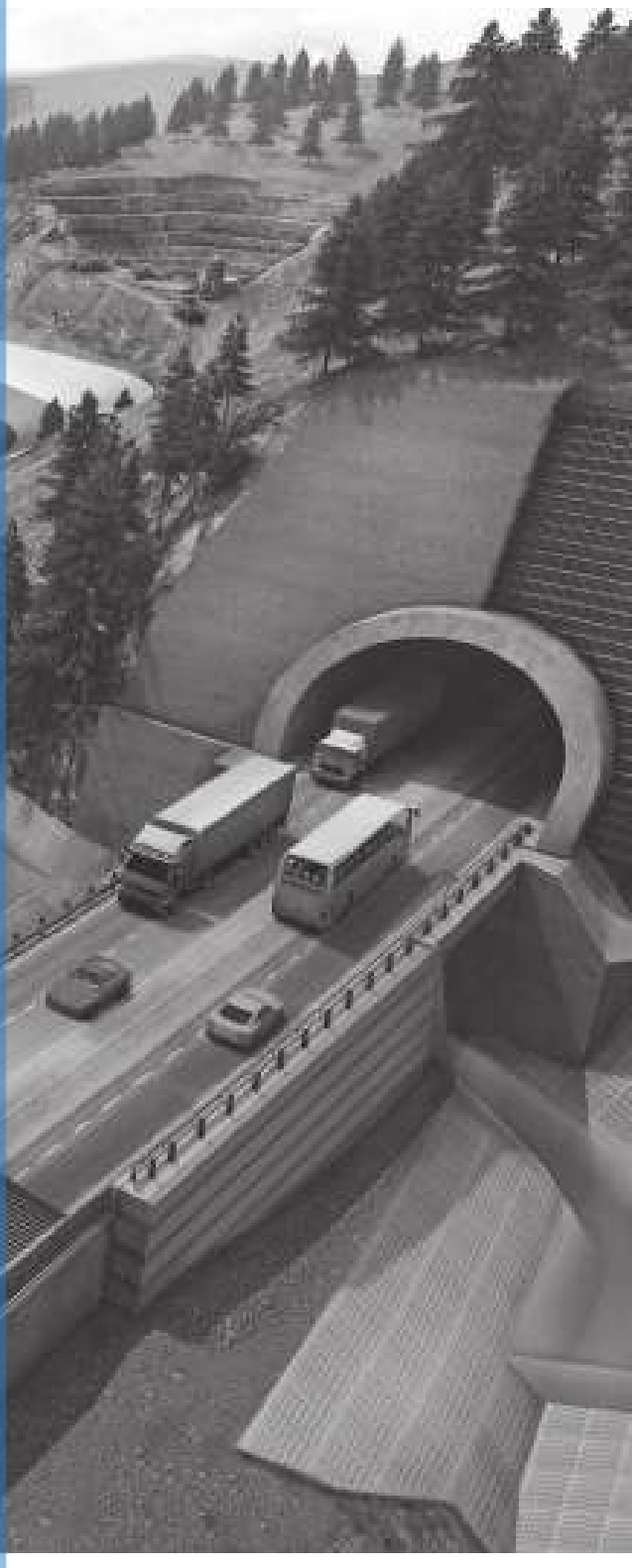
GEOMAS
GEOKOMPOZiT

Geosynthetic Solutions



We protect our nature

GEOMAS
GEOKOMPOZiT

INDEX

Geomas Geokompozit, a leading member of the İzomas Group of Companies, stands out as a key solution partner in the fields of construction and geotechnical engineering. Since its establishment, Geomas Geokompozit has continued its engineering activities by offering technological, economical, environmentally friendly, and long-lasting products and systems to the market for infrastructure and superstructure projects.

As a result of its commitment to innovation and the national economy, Özarı Tekstil was founded in 2003, followed by Geomas Geokompozit in 2009, introducing numerous geosynthetic products that meet international standards. The company has initiated projects that have shaped the construction and geotechnical engineering fields. It manufactures geosynthetic products such as geosynthetic clay liners, geotextiles, and drainage geocomposites in its own factories. Additionally, Geomas Geokompozit continues the design, sales, and marketing activities for geosynthetic products like geogrids, geomembranes, and erosion control mats, produced globally by its business partners.

Geomas Geokompozit, with its principle of providing engineering solutions tailored to problems, not only supplies products but also offers versatile, economical, and environmentally friendly solutions. Prioritizing customer satisfaction, the company collaborates with its clients to enhance the quality of its services and solutions, aiming to establish a mutually beneficial relationship. Geomas Geokompozit's continuous growth is driven by its innovative and expert team, commercial synergy, commitment to excellent service, and respect for the environment. With the solutions it provides for the civil engineering and construction sectors, it has succeeded in becoming one of the world's leading companies.

Geomas Geokompozit, with its customer-focused and environmentally conscious approach, provides contractors and projects in various sectors with fast, economical, and technological turnkey solutions. Embracing the principle of sustainability, the company enhances customer satisfaction and solution quality through environmentally friendly production processes and technological innovations, maintaining its leadership in the industry.

1 Transportation

Techgrid geogrids and Techtex G geosynthetic composite materials play a crucial role in strengthening the ground in road, railway, and airport construction projects. These materials not only offer economic advantages by reducing the amount of structural material required but also contribute to a 40% reduction in the global CO2 footprint, providing an environmentally friendly solution. Techgrid and Techtex G, which ensure long-lasting performance, deliver solutions for creating durable and sustainable structures. Additionally, they contribute to economic growth and environmental sustainability.

1.1 Highway and Airport Pavements

Transportation

The Tech series geosynthetics are materials specifically designed for road surfaces, offering high tensile strength and low creep characteristics to enhance the durability of asphalt layers. These products play an effective role in extending the lifespan of roads by resisting high traffic loads in the areas where they are applied.

- Prevents reflective cracking in pavements by reducing it by 70%-80%.
- Regulates load distribution and resists the formation of tire ruts.
- Increases the load-bearing capacity of the pavement, enhancing durability.
- Improves the rigidity and load-bearing capacity of the reinforcement layers.
- Significantly reduces costs by decreasing the thickness of road fill layers.

Geodrain and Techtex drainage system in road construction

Techgrid and Techtex soil reinforcement and separation in road structures

Techtex

Geodrain

Hightex Grid

1.2 Highway and Airport Base and Subbase Stabilization

Transportation

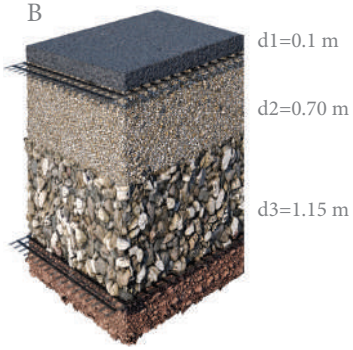
The use of appropriate Tech series geosynthetics within road fills during the construction of road structures such as highways, railways, airports, mining roads, construction sites, and parking areas provides significant benefits.

- It increases the load-bearing capacity of the road layer, creating a more durable structure.
- By absorbing the stresses that occur, it extends the lifespan of the road structure.
- It reduces the thickness of the base, subbase, and granular layers.
- It prevents the formation of wheel ruts, giving the road a homogeneous structure.

A

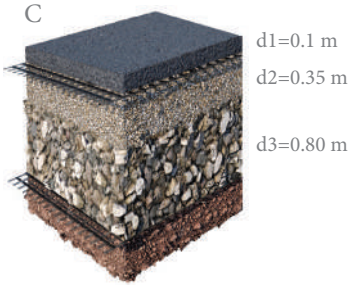
A) Unreinforced road structure (an unreinforced road layer allowing for 1.5 million vehicle passes).

B

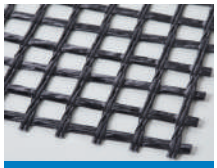


B) The reinforced version of layer A (allows for 30 million vehicle passes).

C



C) Layer C with reduced thickness, allowing for 1.5 million vehicle passes.



Techgrid D

Hightex Grid

Techtex

Geodrain

The use of Techgrid D for ground stabilization in airport construction.

1.3 Railway Construction Reinforcement and Stabilization

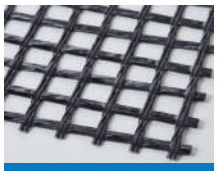
Transportation

Our Tech series geosynthetic products have two main applications in railway lines.

In railway construction, the subbase needs to be reinforced on weak soils with low bearing capacity to ensure the ballast layer functions effectively. Techgrid and Techtex products are used in areas with soft subsoil to increase the load-bearing capacity above the weak soil and provide stability to the sub-ballast layer.

The mechanical stabilization of the upper ballast layer allows railway lines with firm subsoil to tolerate more traffic and reduces maintenance intervals. Through the use of Techgrid geogrids for mechanical stabilization, the settlement rate of the track is minimized. Bentoshield Gridual not only stabilizes the ground but also prevents the upward movement of groundwater with its sodium bentonite layer, thus protecting the superstructure from deterioration.

The general use of geogrids in railway lines:
- It reduces the rate of ballast settlement.
- It ensures the long-term preservation of the track's geometry and structural characteristics.
- It nearly triples the maintenance cycle.
- It reduces ballast fragmentation caused by traffic.
- It increases the load-bearing capacity of the subsoil, reducing the need for stable materials
- It prevents the migration of groundwater into the superstructure.
- It increases the load-bearing capacity of the subsoil, reducing the need for the use of stable materials.

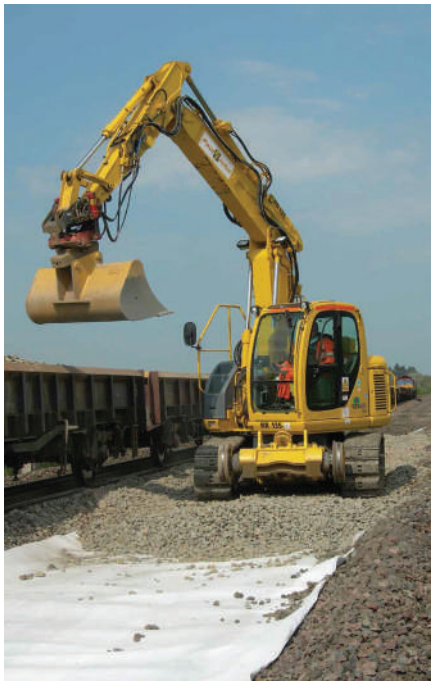


Techgrid D

Techtex

Geodrain

The use of Techgrid and Techtex for increasing the load-bearing capacity of the ground.



1.4 Use of Bentoshield in Tunnels

Transportation

Protex Polylock is a puncture-resistant and self-healing insulation material that creates an impermeable layer by utilizing the unique swelling properties of modified sodium bentonite. Thanks to this special formulation, it is resistant to differential settlement, freeze-thaw cycles, and wet-dry cycles, making it more durable compared to passive membranes (such as PVC or HDPE). Due to its active and dynamic structure, it is particularly preferred in metro and highway tunnels.

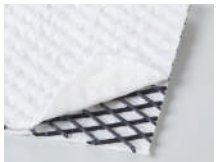
- Protex Polylock can be applied by nailing it into place, eliminating the need for protective geotextile layers that are required by passive systems like PVC and HDPE membranes, which add extra costs.
- Injection flanges are not used.
- Waterstop bands are not required in tunnel annular spaces.
- The application process is faster and more cost-effective.

Techfiber macro synthetic fibers provide safety, durability, and sustainability in shotcrete coatings or permanent precast segment liner applications.

- Long-lasting structures are built with concrete through increased flexural strength.
- Your structures are reinforced with improved impact resistance.
- With high performance, the lifespan of your structures is extended.
- It provides advantages with increased ductility.
- It provides ease of transportation, storage, and application.
- It can be applied twice as fast compared to mesh units.
- It offers reliable performance with high resistance to alkalis, acids, and salts.
- It provides a significantly reduced carbon footprint.

Protex Poly-lock

Techtex



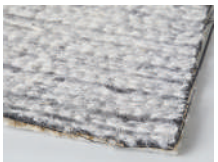
Geodrain

1.5 Erosion Control in Transportation Routes

Transportation

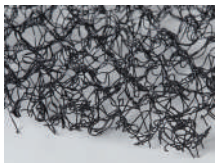
Embankments constructed for structures such as highways, railways, airports, or irrigation channels can be exposed to various weather conditions during and after the construction process. Freeze-thaw cycles and surface deformations, in particular, can lead to erosion, compromising the stability of the ground. This erosion can cause structural problems in the long term.

Techmat geomat, with its three-dimensional fiber structure, helps control erosion by allowing fine and coarse soil particles to anchor in place. After the application of Techmat, green areas can be created by planting vegetation on the surface, if desired. Additionally, the erosion control mat is commonly used in combination with geosynthetic clay liners and drainage geocomposites. This combination enhances ground protection and improves drainage performance, providing a comprehensive solution for soil stabilization and erosion prevention.

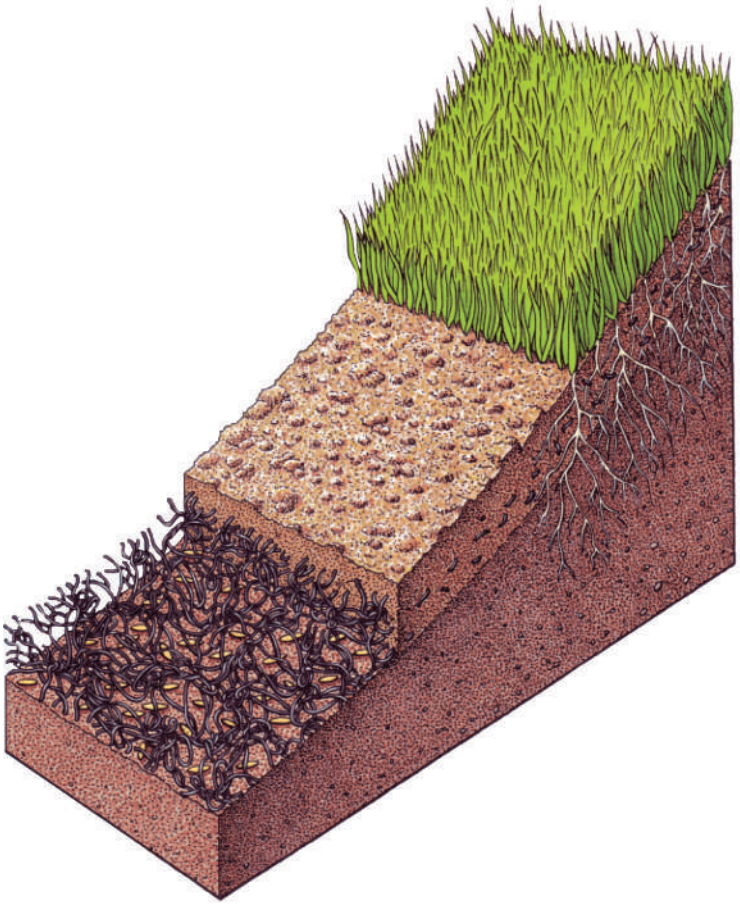


Bentoshield Max

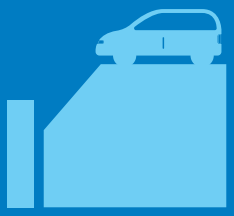
TechMat B20



Techmat



2 Retaining Walls



Geosynthetic-reinforced retaining structures are systems with specific tensile strength that enhance and modify the strength values of the ground they are applied to. These structures are used in slope stabilization, bridge approach embankments, and the rehabilitation of road fills and riverbeds.

Geosynthetic-reinforced retaining walls, compared to conventional methods such as reinforced concrete and stone walls, are much safer and longer-lasting systems due to their flexible behavior. This flexibility allows them to better adapt to ground movements and environmental changes, reducing the likelihood of structural failure and increasing durability.

These retaining walls, which operate based on the limit equilibrium principle, offer at least 50% cost savings compared to traditional systems. Additionally, they present a unique aesthetic by being environmentally friendly and blending seamlessly with nature.

Calculations performed using international programs;

- Internal stability
- Sliding check
- Global failure analysis
- Settlement analyses

2.1 Geosynthetic Reinforced Retaining Walls

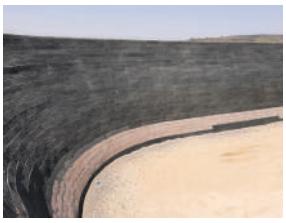
Retaining Walls

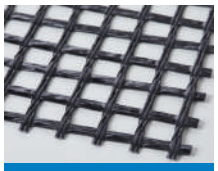
Geosynthetic-reinforced retaining walls offer cost-effective solutions by combining a wide range of design options with high stability and quick on-site installation. The construction of high retaining walls, necessary for supporting approach embankments, road fills, and slopes, is safely achieved using geosynthetic products.

Geosynthetic-reinforced retaining walls work by resisting the weight of the soil through passive resistance. The most notable advantage of reinforced soil solutions is their inherent internal reinforcement. Geosynthetic-reinforced retaining walls successfully combine engineering and aesthetic solutions, making them highly effective in various applications.

- Distributed and concentrated loads allow the fill to support itself by counteracting the load transferred to the underlying ground.
- The drainage of retaining walls and embankments, which provide slope stability, effectively manages water and prevents the formation of unwanted water accumulation.
- The controlled drainage of water is achieved using Geodrain Net drainage geocomposites.
- Provides erosion control on sloped surfaces.





Techgrid D

Techtex

Geodrain

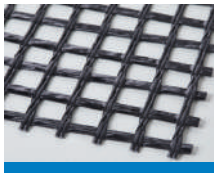
2.2 Wrapped Retaining Wall

Retaining Walls

Wrapped retaining walls are systems designed for surfaces with slopes up to 70°, suitable for residential, highway, railway, airport, and riverbank constructions. A wrapped retaining wall is a combination of Techgrid M geogrids, known for their high tensile strength, steel units, and plant-retaining geosynthetic covers. The system creates an aesthetically pleasing and functional retaining structure that blends with nature. This is achieved by spraying grass seeds onto the surface or planting ivy roots, which grow to cover the steel units with greenery along the slope.

Geosynthetic-reinforced walls, capable of reaching unlimited heights, can be used to create perimeter walls for residential projects or to eliminate elevation differences by supporting structures on top of them. These walls also help prevent landslides and erosion, contributing to environmental protection. Vegetation support includes maintaining plant cover on steep slopes to protect the soil structure, prevent erosion, and enhance landscaping. Effective connections between layers supported by Techgrid geogrids create strong and durable retaining walls, ensuring stability and longevity.

- It enables quick and economical construction (100-150 m^2 of wall area per day).
- Platform space is maximized on sloped terrains.
- Differential settlements are tolerated.
- The use of available space is optimized.
- It allows the use of fill materials gained on-site.
- It offers high resistance to earthquakes.
- It does not require the construction of load-bearing structures like foundation beams.
- 120 yıl tasarım ömrü sunar.



Techgrid M

Techtex

Geodrain

İstanbul Finance Center Wrapped Retaining Wall

3 Residential, Industrial Areas and Sports Complex

To achieve quality living conditions in the spaces where we spend almost all of our daily lives, such as residential areas, workplaces, and sports facilities, it is essential to choose structures that are built with longevity, environmental friendliness, and sound engineering. As Geomas, we add value to our living spaces with our economical and eco-friendly geosynthetic solutions while minimizing the CO2 footprint you leave on the world.

3.1 Waterproofing with Bentoshield Max

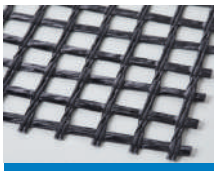
Residential, Industrial Areas and Sports Complex

The use of Bentoshield Max in residential and industrial areas ensures 100% waterproofing in key structural components such as foundations, retaining walls, and pile caps. Even in aggressive environments (such as those with chemical, biological, or seawater exposure), Bentoshield Max materials, with polymer additives, provide full protection against water ingress.

When selecting the Bentoshield product, the following considerations should be taken into account:

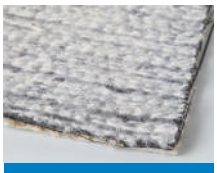
- Chemical composition of groundwater,
- Groundwater level,
- Load to be applied on Bentoshield

These factors are crucial to optimizing the effectiveness of Bentoshield Max and the waterproof protection it provides to the structure. With the correct selection, structures can be long-lasting and resistant to various environmental influences.



Techgrid D

Geodrain



Bentoshield Max

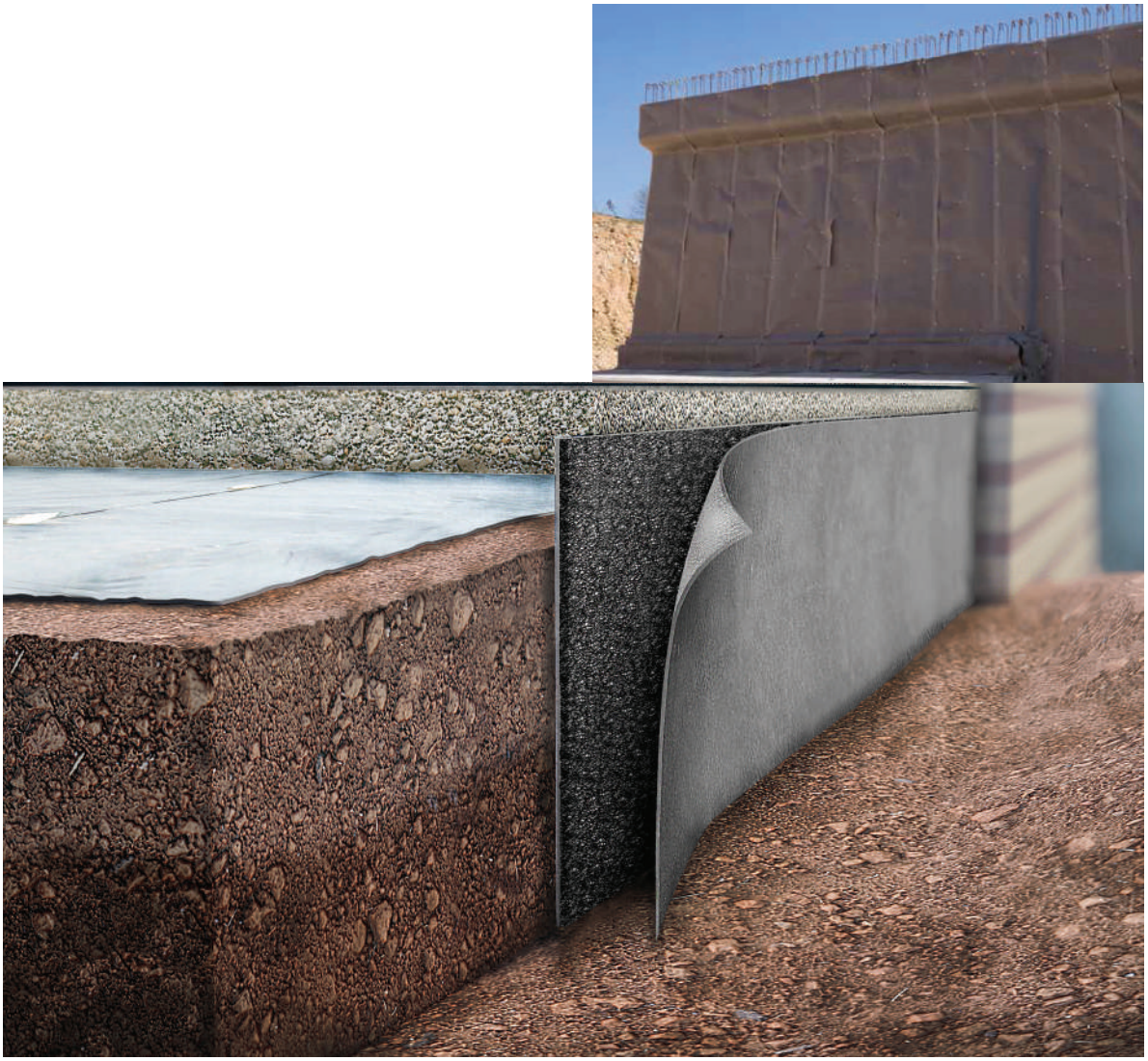
3.2 Easy Application Drainage Geocomposite

Residential, Industrial Areas and Sports Complex

Water accumulating in a building structure or ground can lead to deterioration over time. To prevent such issues, one or two layers of Geodrain Net are used. Geodrain Net is a drainage geocomposite designed as an alternative to traditional materials like gravel. It consists of a high-density polyethylene (HDPE) core that is sandwiched between two or three-dimensional geotextiles. The appropriate Geodrain Net geocomposite for structural drainage is selected based on an analysis of various parameters.

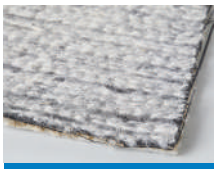
- Load on the drainage layer,
- Required drainage capacity,
- The material and soil characteristics where drainage will occur (e.g., soft, hard, contaminated),
- Hydraulic gradient,
- Dimensions of the area to be drained,

Proper evaluation of these parameters ensures that the Geodrain Net product effectively performs water drainage. This way, structures are protected from water-related damage, extending their lifespan and maintaining their integrity.



Techtex

Geodrain



Bentoshield Max

4 Mining

Mining operations face various engineering challenges during the phases of operation, installation, and closure. In this context, geosynthetic products play a key role in offering economical and technical solutions for mining operations. These materials are used for purposes such as slope stabilization, water management, tailings containment, and erosion control, providing durability and environmental protection while optimizing operational efficiency.

Geosynthetic solutions are critical engineering tools for overcoming challenges faced by mining operations and providing sustainable solutions. These solutions are particularly effective in the following areas:

- Waste storage and settling ponds
- Retaining walls
- Dewatering

These products, as an important engineering tool, provide mining operations with solutions that are economical, environmentally sustainable, and supportive of long-term success. Additionally, they reduce the carbon footprint left on nature by up to 48%.

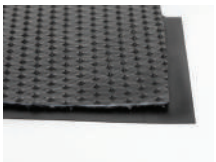
4.1 Mining Waste Storage Facilities and Retaining Walls

Mining

The use of Bentoshield Max, Techtex, and Geoliner products in mining waste storage areas ensures the creation of impermeable layers that comply with waste management regulations. These products offer the most optimal benefit-cost ratio, making them highly efficient and cost-effective solutions for waste containment in mining sites.

The retaining structures of crusher plants, perimeter walls of mining sites, and embankments of waste storage dams can be constructed using Techgrid geogrids, allowing for construction without height limitations.

These solutions not only ensure compliance with waste management regulations but also represent a significant step toward a sustainable future by minimizing the long-term environmental impacts of mining sites. Through the use of geosynthetic products, mining operations can enhance both their operational efficiency and environmental responsibility.



Geoliner

Techtex

Geodrain

Bentoshield

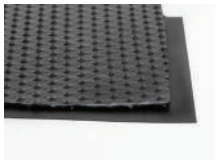
An impermeable layer was created in the mining waste site using Bentoshield..

4.2 Dewatering and Waste Storage

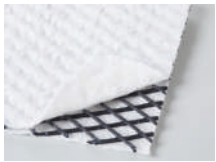
Mining

In mining areas, waste dams must be constructed for the storage of solid-liquid mixed waste materials generated from the processing plant. These waste dams are typically complex projects that require significant costs and long construction durations due to the need for careful design and engineering to ensure stability, environmental safety, and compliance with regulations.

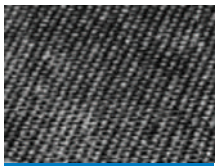
The Techtube (Geotextile tube) product, developed as an alternative to traditional waste dams, is used by pumping solid-liquid waste into the tube, with polymers being added during the process. Thanks to the polymers we have developed, the chemical and physical properties of the water seeping out of the Techtube become equivalent to that of tap water, allowing the water to be reused in the facility. The TechTube system prevents the entrapped solid waste from mixing with the environment and ensures the recovery of vital water resources.



Geoliner



Geodrain



Techtube

5 Environmental and Solid Waste Storage Areas

The solid waste storage regulations establish important standards and requirements for the creation of impermeability systems. These standards and requirements impose compliance obligations on the companies preparing and implementing the projects. Therefore, it is crucial to use the right combination of geosynthetic products to ensure proper sealing and environmental protection. Selecting the appropriate geosynthetics for solid waste management not only ensures regulatory compliance but also enhances the durability and sustainability of waste storage facilities.

At Geomas, we will assist you in selecting the most suitable geosynthetic products for your projects with the innovative solutions we have developed. This allows you to create a cost-effective, environmentally friendly, and durable impermeability system that meets both your project's requirements and regulatory standards. Geomas' expertise and wide range of products will significantly contribute to the successful completion of your project.

5.1 Environmental and Solid Waste Storage Areas

Environmental and Solid Waste Storage Areas

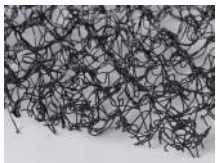
Geosynthetic materials such as Bentoshield, Techtex, Techgrid, and Geodrain Net are utilized for landfill sites, pond construction, and dewatering processes. These materials, which integrate seamlessly with nature, provide environmentally protective solutions. By being used in various applications, geosynthetic materials offer eco-friendly and sustainable solutions aimed at preserving the environment. The purposes of these materials include:

- Creating a natural impermeable layer with Bentoshield.
- Constructing ground reinforcement and embankment structures with Techgrid.
- Reducing the final product volume by dewatering industrial and agricultural waste with Techtube.
- Ensuring the separation of soil and waste sediments and protecting HDPE geomembrane material with Techtex.
- The Geodrain Net material, with nonwoven geotextile on one side, provides drainage of leachate for 120 years, even under a load of 800 kPa, by being used instead of drainage gravel on HDPE geomembrane.

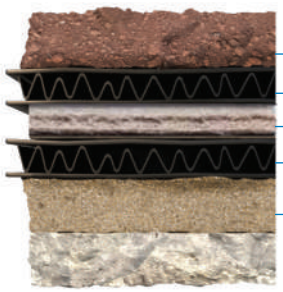
Techtex

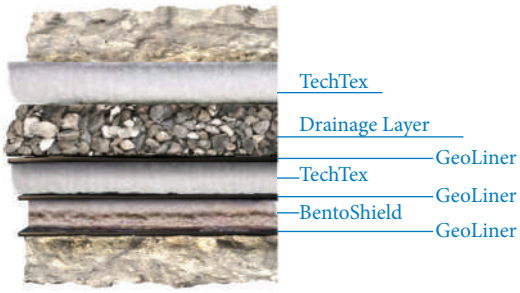
Geodrain

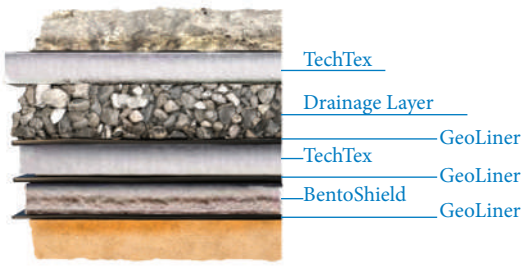
Bentoshield

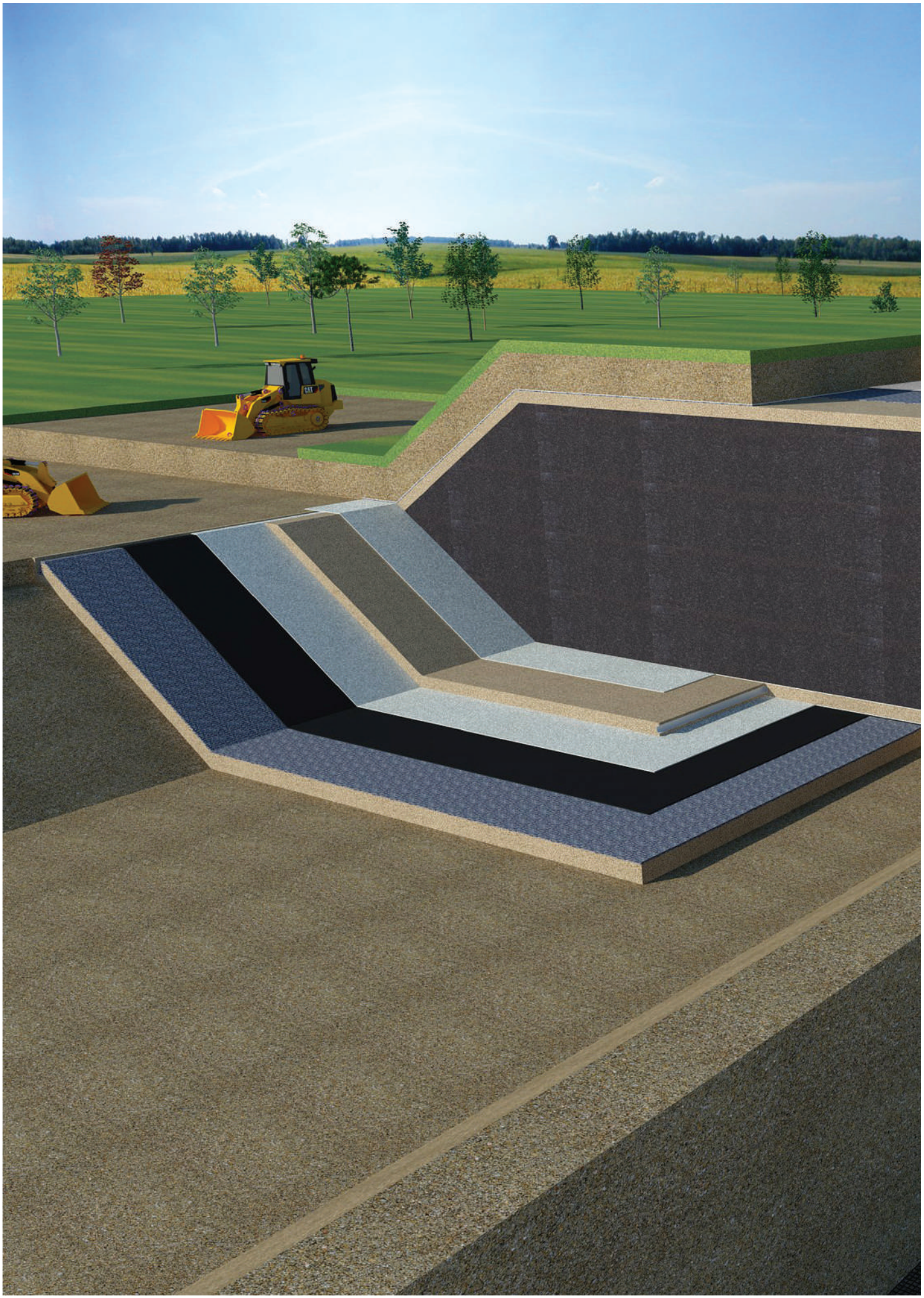


Techmat









6 Hydraulic Structures

In areas such as dam construction, stream and river rehabilitation, watershed restoration, lake area creation, urban water channel construction, and the protection of submarine pipelines, we offer both economical and environmentally friendly engineering solutions with Geomas geosynthetic products, developed to suit challenging manufacturing conditions.

Geomas' geosynthetic products are designed in harmony with nature and offer an environmentally friendly approach when used in various challenging construction projects. These products not only provide economic advantages but also stand out for their durability, contributing to the successful completion of projects.

Geomas continues to provide environmentally friendly engineering solutions that deliver excellent performance under challenging construction conditions, thanks to its expertise and wide range of products.

6.1 Stream, River and Watershed Rehabilitation

Hydraulic Structures

It is necessary to protect roads, railways, and residential areas from floods that may occur in areas below sea level. Care should be taken to ensure that these protective structures are environmentally friendly and provide engineering solutions that integrate with nature without affecting natural watercourses.

- Using Techmat, Techmattress, and Techflex geosynthetic products, erosion on the slopes and beds of streams and rivers is controlled, soil loss is prevented, and stability is ensured.
- By using the Bentoshield product in concrete-lined channels, leachate is prevented, and vegetation growth is inhibited.
- It provides environmentally friendly impermeability and enhances the stability of structures.
- The embankments created in stream and riverbeds are protected against erosion using Techmat erosion control blankets.

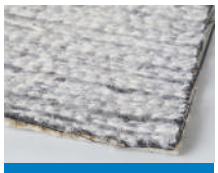
Geomas' geosynthetic products provide effective protection against floods in areas below sea level by offering solutions that protect nature and ensure stability.

Techmat

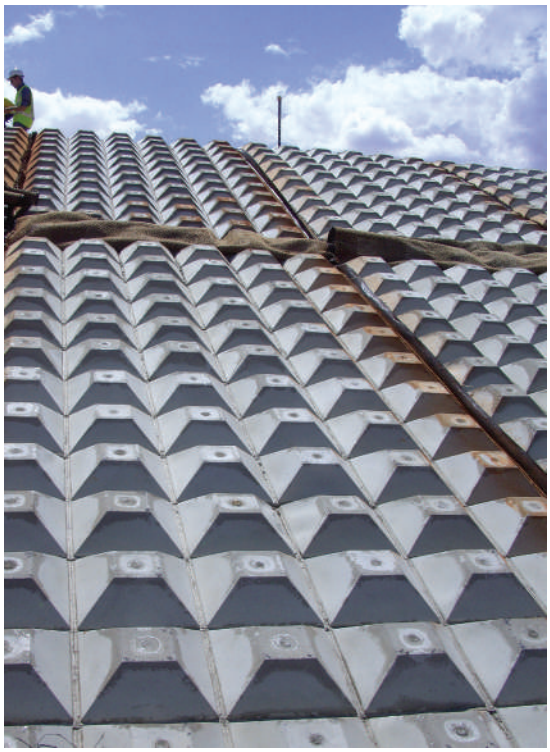
Techtex

Techmattress

Techflex



Bentoshield



Erosion control with TechFlex in the Roy Hill project.

6.2 Use of Geosynthetic Clay Liner and Geogrid in Lake and Pond Embankments

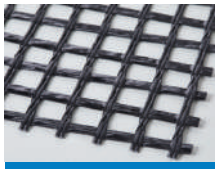
Hydraulic Structures

In lake and pond embankments, the use of Techgrid products for reinforcement strengthens the structural fill, while the Bentoshield product can be used instead of natural clay to reduce the amount of clay fill. Additionally, reinforcing the fill helps prevent future stability problems. In soils with insufficient bearing capacity, Bentoshield Gridual can be used beneath the embankment fill to increase the soil's bearing capacity, prevent settlement, and stop groundwater from seeping into the fill. The use of geosynthetic products reduces construction costs, offering a more effective engineering solution.

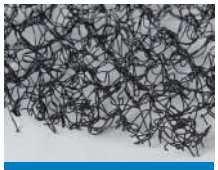
Bentoshield

Techtex

Geodrain



Techgrid D

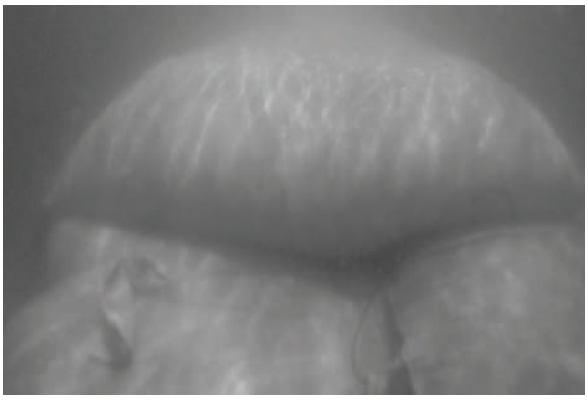


Techmat

6.3 Subsea Pipelines

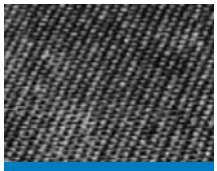
Hydraulic Structures

Subsea pipelines can shift and deteriorate over time when exposed to strong currents due to insufficient weight. Wastewater pipelines, discharge lines, and cable conduits are also vulnerable to external forces. Therefore, at Geomas, we offer high-strength geosynthetic solutions using our Techflex and Techmattress products, which conform to the seabed and the shape of the pipes without deforming.

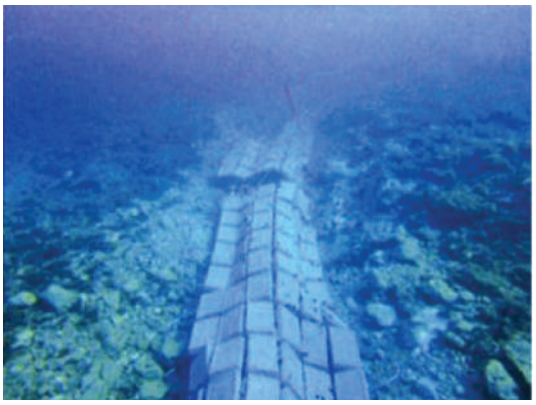


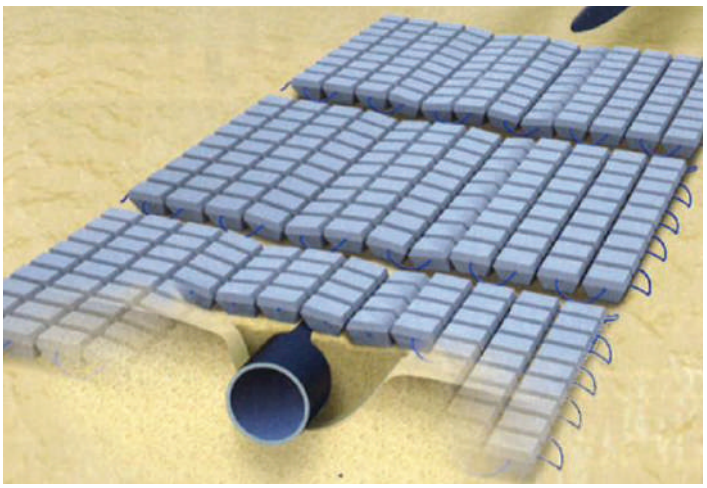
Techmattress

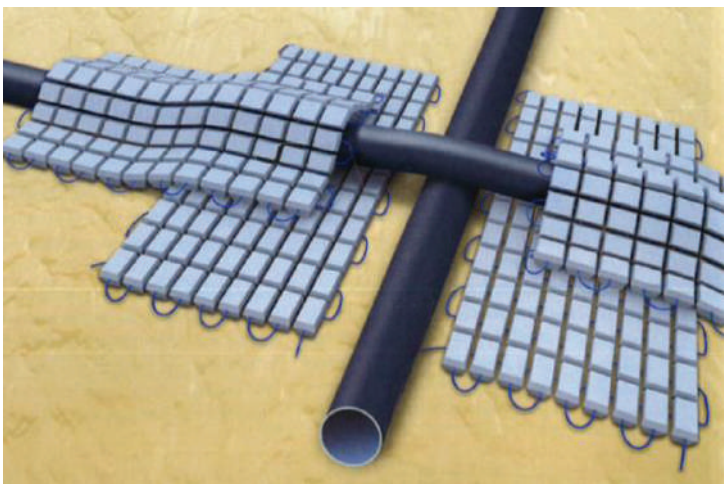
Techflex

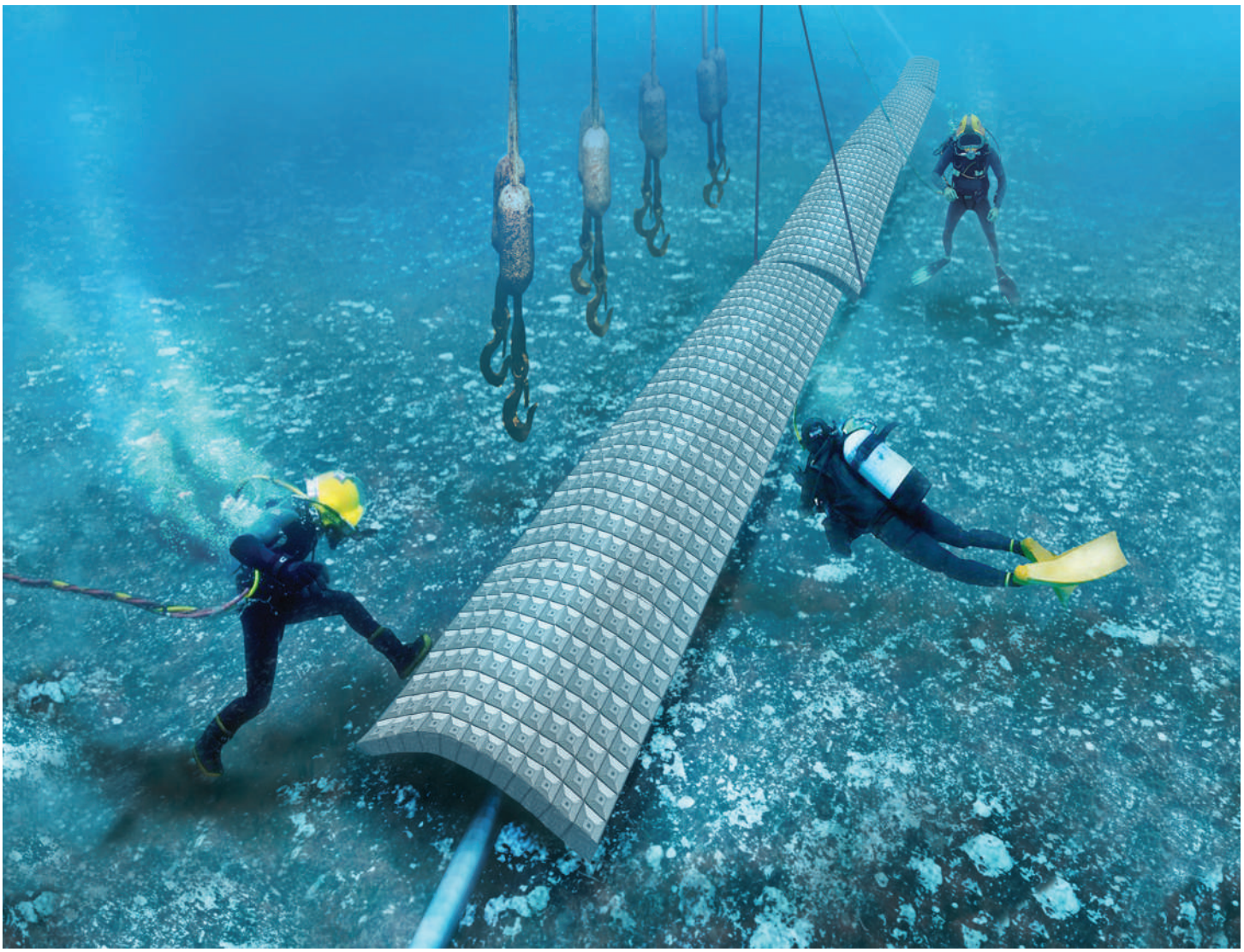


Techtube









7 Coastal Protection

Due to global warming, sea levels are rising every day worldwide, and countries are experiencing land loss. By using the geosynthetic products we manufacture to prevent coastal erosion, we can create a structure that is both environmentally friendly and helps reduce the carbon footprint.

7.0

Coastal Protection

Coastal Protection

In order to protect and restore coastal areas, environmentally friendly engineering products that are compatible with nature are being developed and manufactured. Among these products, Techtube, Techbag, Techtex, and Techrock stand out as advanced versions of geocomposite products, offering high strength, durability, and longevity.

With Techtube, Techbag, Techtex, and Sandmax;

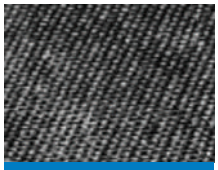
•Coastal protection structures are built both underwater and on land.
•Beach alignment is maintained during erosion control.
• Scour that may occur in the foundations of structures such as houses and hotels located by the seaside is prevented.
•An economical and ecological solution is provided compared to traditional measures such as rock and granular materials.
• It is manufactured in an economical and environmentally friendly manner by being filled with a natural water-sand mixture taken from the sea or the site.
• It is positioned either perpendicular or parallel to the shoreline to break the wave force.

Geomas solutions offer an economical and sustainable approach while protecting structures and the environment in coastal areas.


Sandmax


Hightex Grid


Hightex Pet


Techtube


Techtex

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