Geosynthetics

Solutions Portfolio

AMANCO wavin

About
us

We are Wavin, a provider of innovative solutions for the construction and infrastructure industry on several continents.

We are one of the oldest brands on the market, backed by **more than 60 years** of experience, we are prepared to tackle some of the world's greatest challenges: water supply, sanitation, climate-resilient cities and construction performance.

Wavin is part of Orbia, a community of companies united by a shared purpose: to advance life around the world. Wavin has **more than 12,000 employees in more than 40 countries** around the world and operates under brands such as Wavin, Amanco Wavin, Pavco Wavin and Bidim Wavin.

We currently have an **innovation and development center,** the most relevant in Europe for plastic materials; We developed, together with KWS, a prototype of Plastic Roads for cycle paths and roads, made from plastics recovered from the oceans, thus contributing to the conservation of the planet.

We are the **largest manufacturer of Geosynthetics in Latin America,** we have **5 production plants and distribution centers,** we have participated in the development of successful transportation infrastructure projects, urban, mining, civil construction, environmental, oil, energy and gas throughout the continent, which has allowed us to understand the complexity of our geography and soils in order to propose new, technically and economically **efficient solutions** to engineering.

What are **Geosynthetics?**

Geosynthetics are construction materials made from plastic resins that improve, change or maintain soil characteristics, thanks to their mechanical and hydraulic properties.

In addition, Geosynthetics solve problems of civil engineering, pavements and geothecnics. Geosynthetics are mainly used for **reinforcement, drainage and erosion control.**

The flexibility and adaptability facilitate the installation even in difficult conditions. Geosynthetics are very important to develop engineering projects that **last over time, with less investment and environmental impact vs. traditional construction methods.**

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Geosynthetics

Woven Geotextiles

Synthetic fabrics with high tensile strength, low deformation and excellent hydraulic properties. Ideal for soft soil stabilization, road reinforcement, mechanically stabilized walls, embankments and foundations.

Advantages and Benefits

- High tensile strenght.
- High resistance to chemical and biological degradation.

Non-Woven Geotextiles

Synthetic fabric made from polypropilene fibers randomly interlaced. Non woven geotextiles have excellent hydraulic properties and puncture strenght. Ideal for separation, filtration, drainage, membrane protection and pavement recaping.

Advantages and Benefits

- Elongation higher than %50.
- High resistance to chemical and biological degradation.
- High puncture strenght.
- Low rate of clogging thanks to its porosity greater than %70.

High Modulus Geotextiles

High Modulus Geotextiles (HR) are synthetic fabrics made from yarns with high mechanical properties to achieve high tensile strenght and low deformability.
Geotextiles HR are ideal for soft soil stabilization, load support and reinforcement of high retaining walls or embankments

Advantages and Benefits

- Tensile strenght up to 400 kN/m.
- Resistant to critical conditions in tropical environments.
- High modulus to control deformations in soft soils.

Woven Geotextiles HF

Is an innovative solution designed and manufactured with an exclusive structure to provide three dimensions: Drainage, Reinforcement and Separation. With a combination of polymers, have directional flow channels, which contribute to the structures drainage. It can be used for subgrade stabilization, load support, reinforced slopes and walls, and flexible formworks.

Advantages and Benefits

- **Drainage:** Have the capacity to transport water in their plane
- **Reinforcement:** Increase the mechanical behavior of the structures.
- **Separation:** Generates a separation barrier between fine and aggregate materials.

Geo-Drain

Planar/Road/HF
Drainage system developed for water evacuation in all type of infrastructure projects. The use of Geodrain leads to an adequate and fast water management. The Geodrain is of easy installation, less cost against traditional french filter because of the reduction in the consumption of quarry gravel.

Advantages and Benefits

- Fast and easy collection and evacuation of the water.
- Cost reduction because of the reduction in the aggregate material consumption.
- Easy transportation to worksite.
- Long lasting projects.

TecDren

Is a laminar Geocomposite conformed by a nonwoven geotextile and a polyethylene sheet with advanced protuberances to generate flow channels to evacuate sub superficial water from the structures. Tecdren is ideal for draining concrete walls, foundation plates, sports fields and green roofs.

Advantages and Benefits

- Protects the waterproofing system of the wall.
- Reduces consumption of aggregate materials.
- Higher compression strength.
- Less execution time compared to the traditional sub-drainage system.

Geobags

Bags made of Woven Geotextile to be filled with site or quarry material to conform protection barriers, dykes, fillers, hydraulic protections, among other applications. The Geobags have a system of slings to allow lifting and transportation to places of difficult access.

Advantages and Benefits

- High permeability in the lower and upper lids to prevent pore pressure excess.
- The bag has low permeability in the body to simulate a core that prevents frontal infiltration.

Geotextile Tubes

Geotextile Tubes are tubular elements manufactured with woven geotextiles, which are infilled with dredge material or slurry (water and sand). Geotubes are used to developed hydraulic structures such as dikes, dams, piers or artificial islands, as well as for sludge dewatering.

Advantages and Benefits

- Good behavior against erosion and undermining processes.
- Easily adapts to any surface.
- Reduces the effect of waves and resists different flow rates.
- Optimizes construction time due to ease of installation.
- No requires formwork or specialized equipment.

Geobox

Containers made of Woven Geotextiles to be filled with site or quarry material to generate protective barriers, dykes, piers, hydraulic protections, among other applications.

Advantages and Benefits

- Flexible, highly permeable and elastic formwork that fits with the ground surface.
- Lightweight and easy to to transport and handle.
- Made of high mechanical strength Geotextile.

Geomattresses

Flexible and durable amphibious solutions for works in dry or underwater conditions. This solution is conformed by high density polyethylene (HDPE) geogrids, a totally inert material, without corrosion or decomposition processes under extreme conditions such as salt water, industrial dumping or leachate.

Advantages and Benefits

- Resistant to high velocity flows.
- The system can be lifted.
- Flexible solution, adapts to the ground surface.
- Provide mechanical, chemical, biological and UV resistance.

Concrete Bag

It is a flexible and permeable formwork made from flat polypropylene tapes that form a textile of excellent characteristics, it is filled with mortar or concrete. Concrete Bags are manufactured according to project dimensions and specifications to optimize on-site operation, use and installation.

Advantages and Benefits

- Automatic sealing.
- Lightweight, easy to handle and transport.
- Flexible formwork that fits the ground surface during the filling process.

Flexocreto

The Flexocreto is a flexible formwork composed by a double-layer synthetic fabric, with interlaced filtration points manufactured with high-tenacity nylon or polyester fibers. It becomes a practical and economical solution for erosion control, riverbank protecion or channels revetment.

Advantages and Benefits

- Easily adapts to any surface.
- Reduces the effect of waves and resists different flow rates.
- Offers good behavior in stopping erosive and/or undermining processes.

Ecomatrix

Is a temporary erosion control mat that protects the soil surface from erosion caused by natural events such as rain and wind. It offers partial wet and heat storage to promote the development of vegetation.

Advantages and Benefits

- Preserves soil moisture that helps to promote seed germination.
- Biodegradation or photodegradation (once degraded, the mat integrates into the natural soil).
- Protect seeds and plants during precipitation or strong winds, allowing better vegetation establishment.

Agromat

Temporary Erosion Control mat made of natural fibers of fique and/or coconut, between one or two meshes of the same natural material or polypropylene; it stands out for its excellent ability to resist the erosive agents while it is biodegraded finally integrating into the soil.

Advantages and Benefits

- Allow the passage of sunlight facilitating germination and plant development.
- Retains and releases moisture, creating a microclimate between the soil and the Agromat.

Permanent Mats

Permanent mats made of non degradable or synthetic fibers, filaments or meshes processed through a three-dimensional matrix, flexible with UV stabilization and resistant to chemicals that inhabit the natural environment of the soil.

Advantages and Benefits

- 40% increase in seed germination and plant growth during the first 21 days.
- 60% more tensile strength to ensure structural integrity during and after installation.
- Adapts to different ground conditions.
- Resistant to enviromental and flow conditions.

Biaxial Geogrid

Two-dimensional chemically inert polypropylene structures. Produced by an extrusion process ensuring high tensile strength and a high elasticity. Ideal for reinforcement of pavements, embankments and foundations structures.

Advantages and Benefits

- Increases the service life of the pavement structures.
- Granular thickness reduction thanks to the mechanical contribution of the geogrid.
- Less enviromental impact due to the reduction in the transport and consumption of quarry materials.

Uniaxial Geogrid

Manufactured from high density polyethylene (HDPE), Uniaxial Geogrids have a high tensile strength and are inert to chemical and biologica ldegradation. Thanks to the mechanical properties, Uniaxial Geogrids are ideal for soil retaining walls, reinforced slopes and embankments.

Advantages and Benefits

- High friction with aggregate materials developed by the interlocking mechanism at the nodes.
- High tensile strenght with low elongations.
- Low installation damage due to its rigid structure.

Fiberglass Geogrid

High performance geogrid with low elongation and high strenght in both directions, installed between asphalt layers to control cracking reflection, fatigue cracking and plastic deformations.

Advantages and Benefits

- Increase fatigue behavior of pavements exposed to cyclic loads.
- The use of Fiberglass Geogrids can increase the number of load cycles by up to 12 times before the crack reflection, resulting in longer life of the pavements.

Geocell

3D Geosynthetic with a honeycomb shape, developed to confine granular materials, increasing mechanical properties, resilient modulus and reduce deformations.

Advantages and Benefits

- Thickness reduction of the pavement granular layers.
- Replacement of high specification granular materials with site materials.
- Decrease in initial project costs and increase in the road service life.

Geomembrane

HDPE and LLDPE

Flexible, laminar and conintuous plastic sheet made of polyetilene, used as a waterproof barrier to liquids or other fluids in environmental or civil engineering projects, specifically designed for conditions exposed to UV rays.

Advantages and Benefits

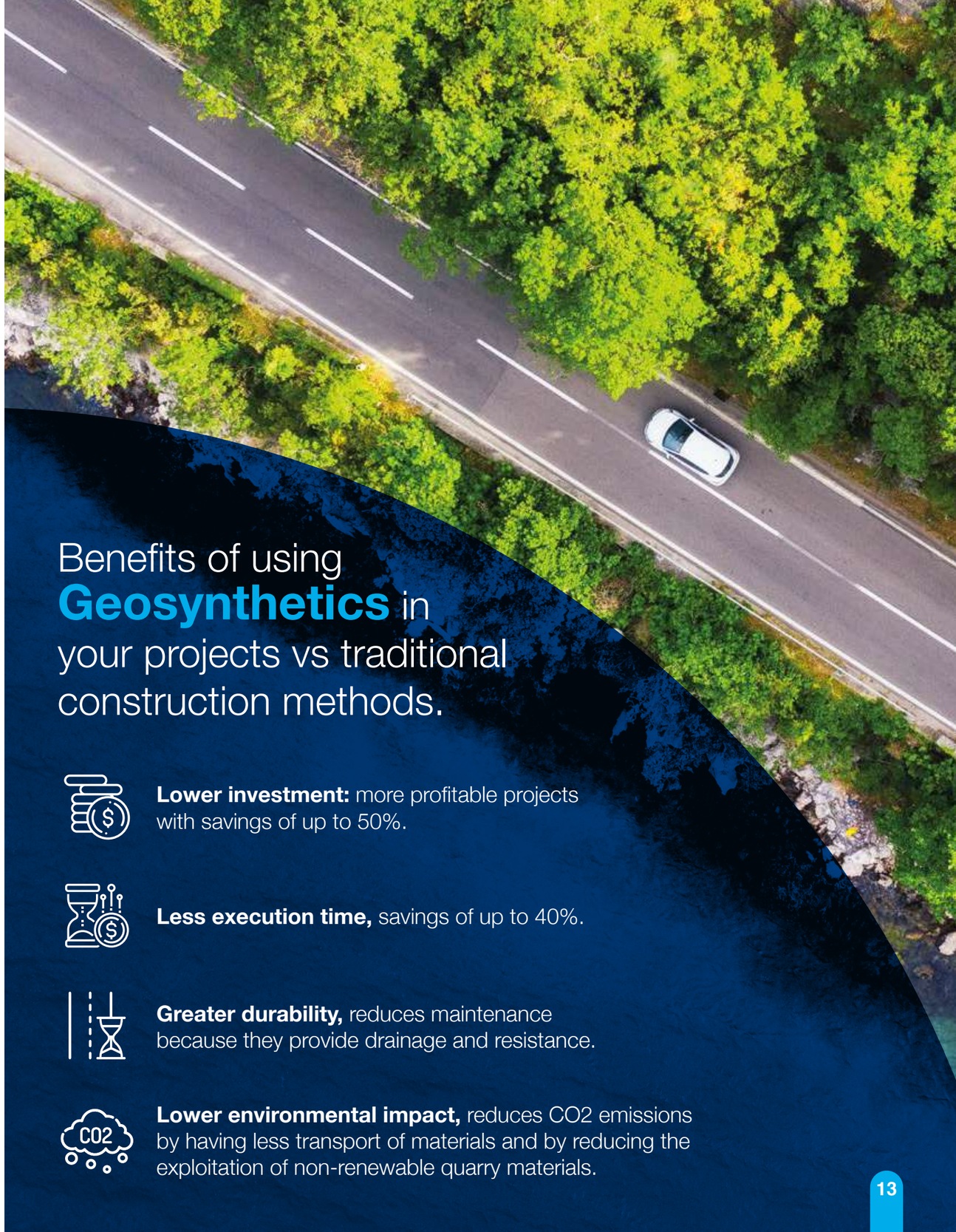
- Prevents the infiltration of contaminated liquids into the soil.
- Construction of waterproof systems.
- Easy to handle and install, fitting to the surface of the ground.
- Do not absorb moisture.

Tunnel Membrane

High flexible barriers made from PVC resins, developed to avoid infiltration of water or gasses in underground structures.

Advantages and Benefits

- Comfort and road safety for the user.
- Increased service life of the coating concrete.
- Reduction of hydrostatic pressures over the excavation.
- Self-extinguishing and do not generate hazardous gases.



Benefits of using **Geosynthetics** in your projects vs traditional construction methods.

Lower investment: more profitable projects with savings of up to 50%.

Less execution time, savings of up to 40%.

Greater durability, reduces maintenance because they provide drainage and resistance.

Lower environmental impact, reduces CO2 emissions by having less transport of materials and by reducing the exploitation of non-renewable quarry materials.

Guranteed
solutions

Our **modern laboratories and production processes** operate under **international quality control systems,** which enable the development of innovative solutions with high standards to ensure **proper performance** of projects.

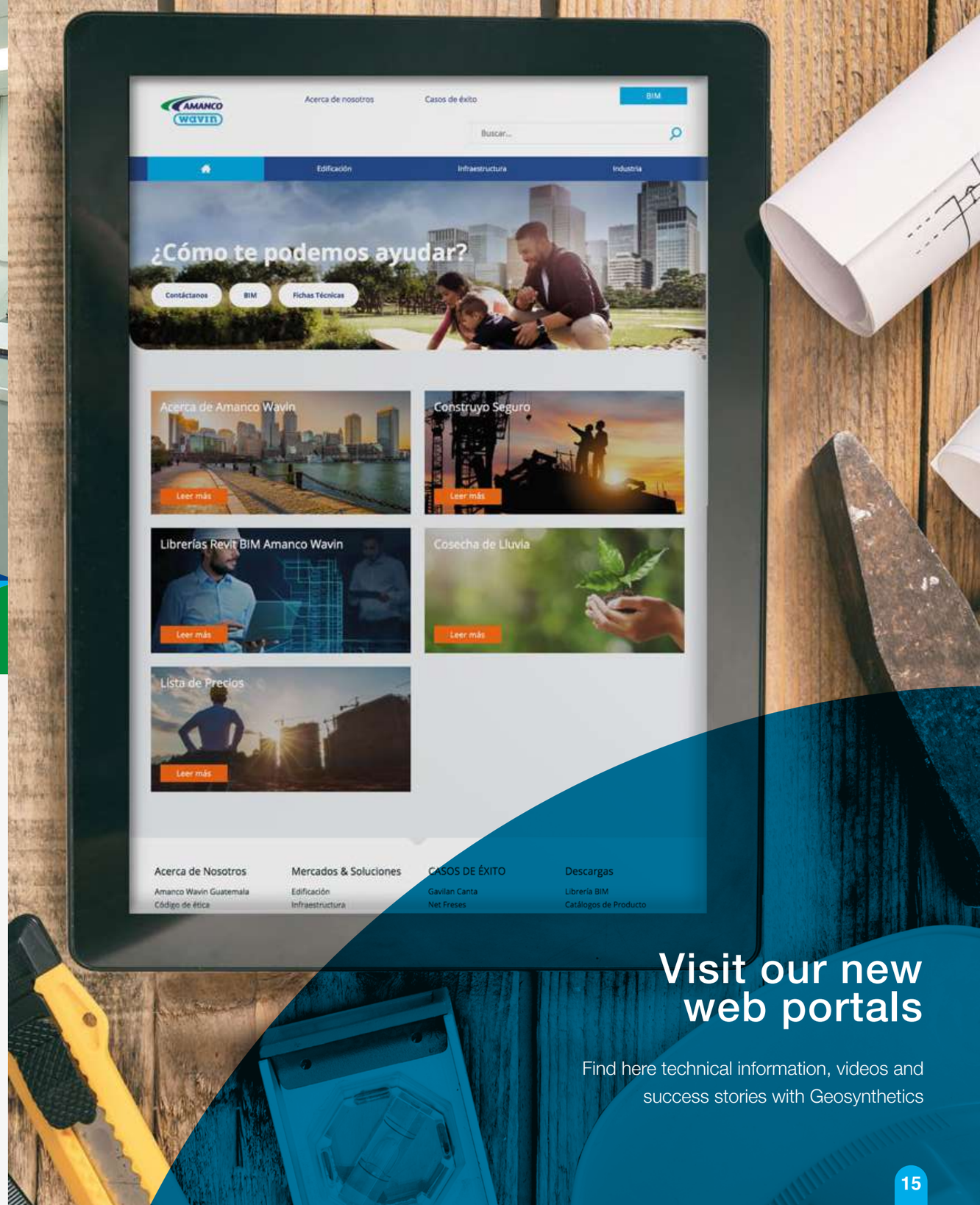
GAI LAP
Manufacturers QC Lab.
(Accredited Laboratories Colombia and Peru)

ISO 9001*
Quality management systems.

ISO 14001*
Environmental management systems.

OHSAS 18001*
Occupational health and safety management systems.

**(Colombia, Mexico and Brazil certified plants)*



Visit our new web portals

Find here technical information, videos and success stories with Geosynthetics

Applications of **Geosynthetics**

By installing Geosynthetics solutions in your projects, you replace traditional construction methods with more sustainable and cost-effective alternatives, in sectors such as: **transport infrastructure, oil, mining, environmental and construction of civil works.**

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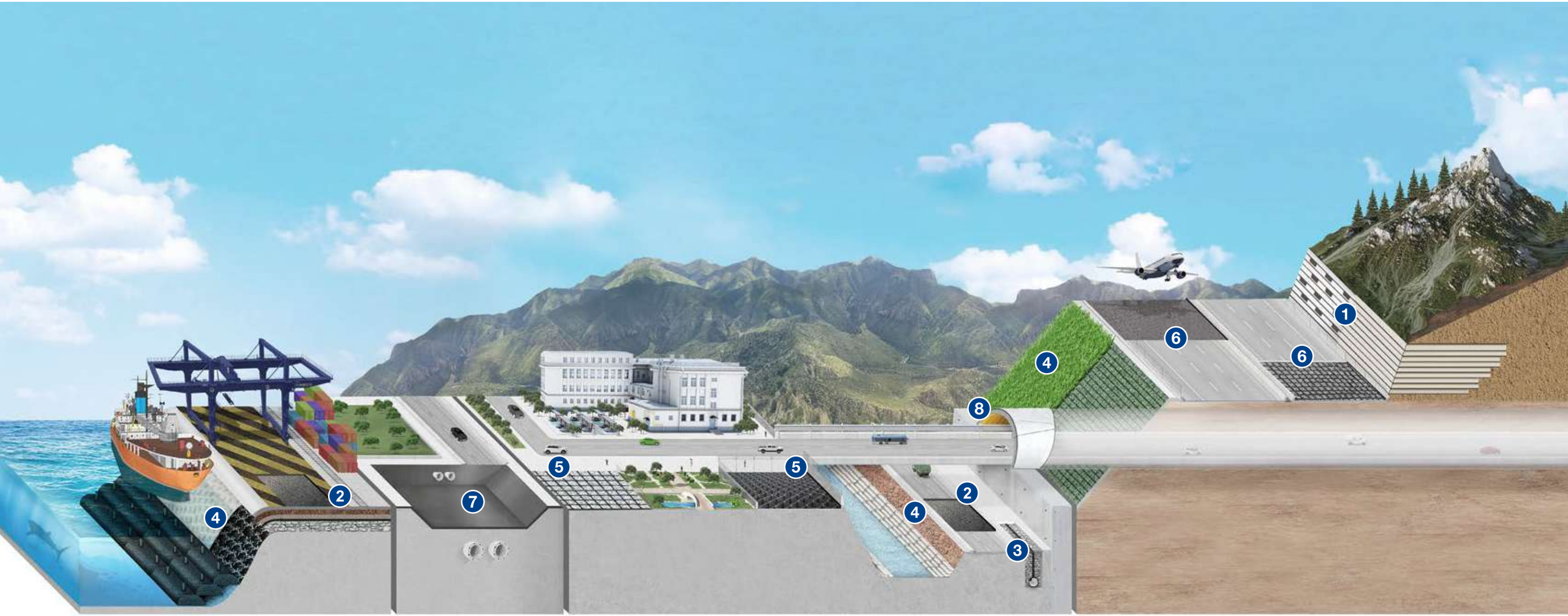
Geosynthetics

Applications in the infrastructure



1. Soil reinforced wall

Woven Geotextiles
High Strenght Geotextiles
Biaxial Geogrids

2. Separation and stabilization

Woven Geotextiles
Non-Woven Geotextiles

3. Sub-Drainage Systems

Non-Woven Geotextiles
Drainage Geocomposites

4. Erosion control

Geobags, Geobox
Geotextile Tubes, Geomattresses
Bolsacreto, Flexible Formwork,
Erosion Control Mats

5. Road reinforcement

Woven Geotextiles
Biaxial Geogrids
Geocells

6. Paving and / or repaving

Non-Woven Geotextile REPAV
Fiberglass Geogrids

7. Geomembrane waterproofing systems

HDPE– LLDPE

8. Tunnel waterproofing

PVC membrane

Separation and **Stabilization**

The Geotextiles acts as a barrier to prevent contamination of granular materials with the subgrade soft soils as well as generate a better distribution of loads leading to a reduction in the thickness of the granular layer for the construction of work platforms.

Fields of application:

- Subgrade separation
- Work platforms
- Soft soil stabilization

Where:

- Roads
- Airports
- Railways
- Ports
- Pedestrian paths
- Warehouses
- Facilities
- Cycle paths
- Parking lots
- Sports fields

Geosynthetics:

- Woven Geotextiles
- Non-Woven Geotextiles
- Woven Geotextiles HF

Road and Platform **reinforcement**

Geosynthetics reinforce the layers of the pavement structure, improving the mechanical properties of the materials, which means better performance, longer service life and reduced thickness of granular layers.

Fields of application:

- Reinforcement of pavement structures
- Repaving and road maintenance

Where:

- Roads
- Airports
- Ports
- Warehouses
- Facilities
- Railways
- Cycle paths
- Parking lots

Geosynthetics:

- Woven Geotextiles
- Biaxial Geogrids
- Geocells
- Fiberglass Geogrid
- Waterproofing

Sub-superficial
Drainage

Systems designed to capture, conduct and evacuate the infiltration water that can affect the service life of structures and generate premature damage.

Fields of application:

- Roads and platforms
- Basements
- Sports fields
- Retaining walls
- Tunnels
- Foundations
- Green Roofs

Where:

- Roads
- Airports
- Railways
- Sports fields
- Housing projects
- Industrial zones
- Underground works
- Mining

Geosynthetics:

- Geo-Drainage (Planar, Road, HF)
- Non-woven Geotextiles
- TecDren

Retaining
Walls

The combination between layers of compacted granular or site materials and reinforcing Geosynthetics allows the conformation of walls, slopes and steep retaining structures at a very low cost.

Fields of application:

- Soil reinforced walls
- Reinforced Embankments
- Embankments over soft soils

Where:

- Roads widening
- Flat areas for housing projects development
- Parks
- Oil platforms
- Slope stability
- Bridge approaches
- Dikes and Dams
- Expansion of landfill cells
- Construction of embankments

Geosynthetics:

- Woven Geotextiles
- HR Geotextile
- Woven Geotextiles HF
- Uniaxial Geogrids

Waterproofing
systems

Solutions designed to prevent fluid infiltration, avoiding hydraulic losses or contamination in the natural soil.

Fields of application:

- Water treatment ponds
- Tunnels
- Water reservoirs
- Oxidation lagoons
- Landfills
- Dams
- Canals revetment

Where:

- Oil fields
- Agro-industry
- Mining
- Landfills
- Treatment plants
- Slope ditches

Geosynthetics:

- Geomembrane HDPE and LLPDE
- PVC membrane

Erosion control in
slopes and canals

Protection to avoid soil losses because of external agents such as water or wind, facilitating revegetation processes and "giving back" the skin to the planet.

Fields of application:

- Protection and revegetation of slopes
- Debris control
- Channel Revetement

Where:

- Roads
- Railways
- Airports
- Housing projects
- Mining extraction
- Facilities and platforms
- Industrial developments
- Irrigation districts

Geosynthetics:

- TRM500 mat
- TRM550 mat
- TRM1000 mat
- Agromanto
- Ecomatrix
- Geocells
- Geomattresses
- Slope Mesh

Riverbank and coastal protection

Specialized systems developed with the combination of geosynthetics and quarry or site materials to conform hydraulic structures for erosion control in the presence of water bodies or streams.

Fields of application:

- Hydraulic structures
- Dikes
- Piers
- Artificial islands
- Breakwaters

Where:

- Ports
- Coastal areas
- River bank areas
- Transport infrastructure
- Oil locations
- Tourist and housing developments

Geosynthetics:

- Geobags
- Geobox
- Geotextile tube
- Flexible Formwork
- Bolsacreto
- Geoland System

Function of
Geosynthetics

Applications

	Geotextiles					Underdrain Systems	
	Woven	Non-woven	High Resistance	Woven HF	Repav	Geo-Drain (Planar / Road / HF)	TecDren
Separation and Stabilization Foundation of embankments and soils. - Filtration and separation in hydraulic structures. - Separation in areas such as: Sports fields, parking lots, curbs, etc. - Development of embankments, platforms and roads.	✓	✓		✓			
Sub-superficial Drainage - Traditional filters on roads, parking lots, buildings and sports fields. - Drainage systems under embankments and roads. - Drainage systems for retaining walls.						✓	✓
Road reinforcement - Reinforcement of granular materials. - Reinforcement of embankments on roads and runways. - Reinforcement of pavement structures, railway structures. - Construction of roads and platforms. - Reduction of deformation in the asphalt layers. - Absorption of rigidity changes and differential settlements.	✓						
Retaining walls - Roads widening. - Expansion of flat areas. - Steep slopes and embankments. - Reconstruction of landslides. - Bridges Approaches.	✓		✓	✓			
Erosion control - Channel revetment. - Construction of structures such as dykes, breakwaters, etc. - Protection of areas adjacent to bodies of water. - Soil protection.							
Paving and repaving - Repaving of roads, airport runways, parking lots, etc. - Construction of new asphalt structures.		✓			✓		
Waterproofing Systems - Waterproofing of reservoirs, canals, flexible ditches and slope ditches. - Sludge and oxidation pools. - Fluid storage structures. - Landfills, mining waste, tunnels, galleries, caverns.							

			Mats						Geogrid			
Geobags and Geobox	Geotextile Tubes	Geomattress	Temporary	Permanent	Concrete Bag	Flexocreto	Meshes	Geocell	Fiberglass	Coextruded	Geomembrane	PVC membrane
										✓		
								✓		✓		
								✓		✓		
✓	✓	✓	✓	✓	✓	✓	✓					
									✓			
											✓	✓

Turnkey Projects

Specialized Unit in construction and or installation with Geosyntethics, based on our knowledge, experience and strong presence in the market. Our turnkey projects offer includes:

- Design consultancy
- Delivery of the project
- Construction and/or installation

As long as you involve the use of Geosynthetics in applications such as:

Recovery, construction, or expansion:

- River and coastal margins
- Ports, dikes and riverwalks
- Hydraulic structures (intakes, outcrops, dams and channels)
- Road barriers
- Artificial Islands
- Platforms for building foundations, garden areas, swimming pools, parking facilities, among others.

Erosion Control and Protection:

- Slopes protection
- Environmental protection
- Canals revetment
- Debris falling

Underdrainage and waterproofing systems:

- Tunnels
- Environmental Sector
- Mining Sector
- Landfills

Storage systems

- Water storage
- Sludge dewatering
- Biodigesters

Engineering
Department

Our **engineering department specialized in geotechnics, pavements and road infrastructure** has a vast experience supporting the most important projects in Latin America, **innovating and developing succesful solutions with geosynthetics.**

We provide technical advice in the design, construction processes and installation of our solutions to consultants, builders, planners, universities, government entities, in sectors such as:

- Transport infrastructure.
- Oil, energy and gas.
- Mining.
- Environmental.
- Civil construction of all kinds.

Our design tools are at your fingertips

Infrastructure Design with Geosynthetics
Tenth edition

Engineering design book with geosynthetics including **calculation methodologies and examples** for all the applications.

Design software
Geosoft 4.0

Developed by the Engineering Department of Wavin, is a free and **advanced software** for designing solutions with Geosynthetics.

Get training to innovate with
Geotraining and Workshops on design

Classroom and virtual training program, delivered by our engineers, designed for the various profiles of users interested in expanding their knowledge of constructive solutions with Geosynthetics in Civil Engineering.

wavin | academy

We provide **technical support** on **design,** construction processes and installation of **our solutions**

Contact us!

1 Through our **web portals**

2 On our social media **Amanco Wavin Geosintéticos**

3 Through our **Expert Engineers**

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