



# FEST GEOSYNTHETIC

Rely on Quality and Expertise

[www.festpolymer.com](http://www.festpolymer.com)

## FEST GEOSYNTHETIC

Fest with more than 25 years of experience in Geosynthetic, is now the Iranian leading manufacturer and supplier of Geo products in middle east, offers reliable services and cost effective solutions to a wide range of civil and environmental engineering projects.

Fest Geosynthetic products known as **Geo-Fest** consist of **Geomembrane, Geotextile, Geocomposite., Geogrid, Geocell, and GCL**. With support of our highly experienced geosynthetic specialists and an international wide distribution network, Geo-Fest products are solutions for water containment and land protection in multitude of applications, mainly foundation construction projects such as roadways, railways, irrigation, mining, electric power and environment greening.

## Rely on Quality and Expertise



### A LIFETIME SOLUTION

Due to having up-to-date German technology, excellent quality raw-materials, market-oriented research and development team, advanced laboratories, expert project executives, and accumulated experience of more than million meters geosynthetic projects, Fest is a symbol of **quality, reliability and expertise** for all its clients and is always remembered as a lifetime solution.



### GLOBAL COORDINATION

As a leading Geosynthetic company in middle east with background of 25 years experience in geosynthetic products, we have export expertise for around the globe. Our local experts are networked throughout our organization to provide you with optimal solutions wherever your project is being constructed. When you select Fest Geosynthetic, you are ensuring quality service and support from specification and logistic to installation and beyond.



### TECHNICAL SUPPORT & INSTALLATION

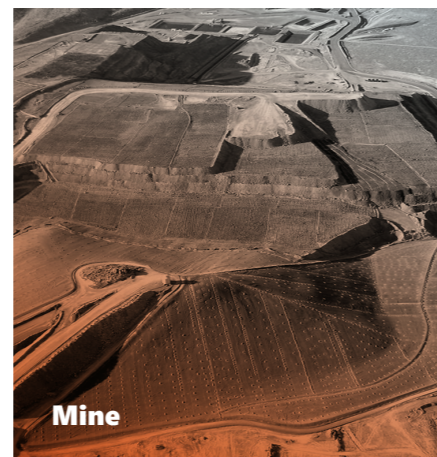
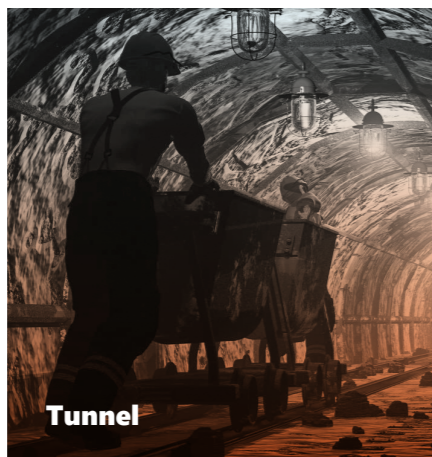
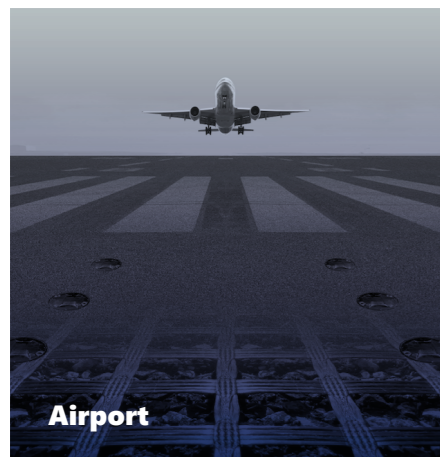
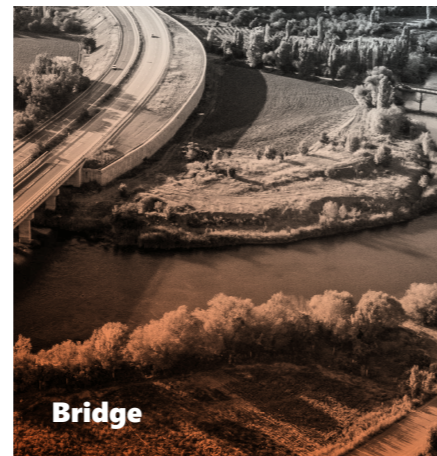
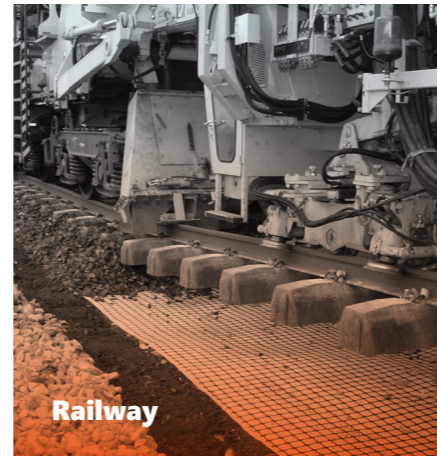
At Fest, we recognize the importance of providing high-quality technical support and advice to all our clients. Fest installation Team with passing the continuous professional training and more than million meters of executive project, supports the clients at the project location.

Whether you're a novice or a more experienced person, you sure have a question for us – and we'd love to help.



# FEST APPLICATIONS

Fest Geosynthetic products offer versatile and reliable solutions for a wide range of applications in the civil engineering and construction industries.



## GEO-FEST SOLUTIONS

In the following pages, you will find more details on the solutions Fest provides for specific industries – including yours.

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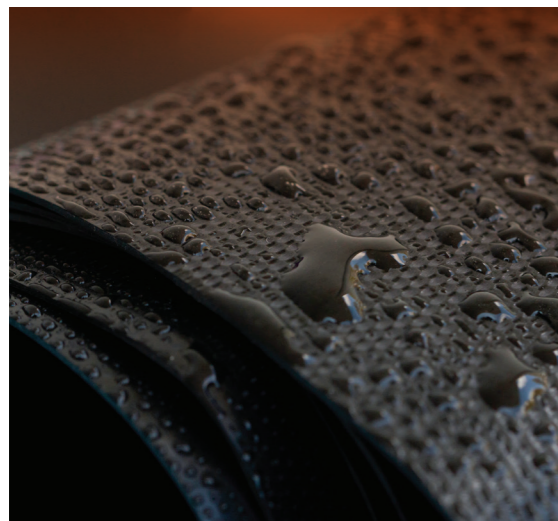
Geomembranes are kind of impermeable lining materials composed of high molecular polymer used as fluid or containment barriers. Geomembranes can have smooth or textured surfaces. Textured Surfaces provide enhanced friction characteristics which can be important in certain applications.

Fest current production capacity is more than 10,000 tons, manufactured according to ASTM, BS and DIN standards meeting GRI and EN specifications, with rolls in 1.5 to 7.5 meter width. The range of thickness can vary from 0.5 to 3 mm in both smooth and textured form.



### Fest Solutions

- › High Density Polyethylene Geomembrane (HDPE)
- › Geomembrane with other types of Polyethylene (VLDPE and LLDPE)
- › Polypropylene Geomembranes with or without reinforcement (PPR and UPP)
- › Coloured Geomembranes (C)
- › Textured Geomembranes (TX and TXT)



### Features

- › Excellent environmental stress resistant
- › High cracking performance and chemical erosion resistance
- › Confirmation of film quality through laboratory test

### Advantages

- › Wide application temperature
- › Safe UV-stabilisation and resistance against permanent sun radiation
- › Excellent resistance against chemicals
- › Reliable joining with hot wedge and extrusion welding
- › Root penetration resistance, swell and rott resistant
- › Long service life

### Applications

Generally applied in the projects of landfill, waste site, bank, dam, pool, filth treatment site, tailings depot, subway and tunnel. In the following Fest-membrane applications come:

- › Landfills for Domestic and Industrial Waste
- › Landfill Capping
- › Tank, Reservoirs, Canals
- › Mining-Leach Pads
- › Wastewater Treatment Tanks
- › Tanks and Ponds for Industry
- › Tunnels
- › Floating Covers
- › Treatment against Corrosion
- › Temporary Landfill Capping
- › Root Barriers



Geotextiles are woven or nonwoven, needle-punched and thermally bonded materials manufactured from polypropylene and polyester used in infrastructure projects.

Fest-textiles are made of staple fibers, polyester filament and processed by cross-laying equipment. Our geotextiles range from 80 gsm to 2000 gsm in various structures and polymer compositions designed to meet a wide range of applications. Our woven geotextiles exhibit high tensile strength, high modulus and low elongation. Needle punched non-woven geotextiles typically have high permeability as a result of their high porosity, conformability and elongation characteristics.

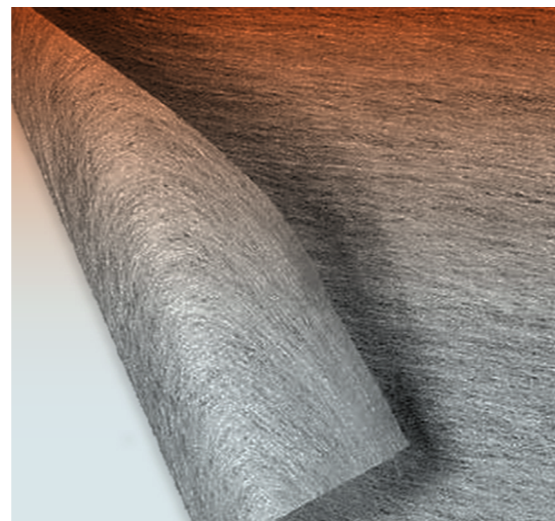


### Fest Solutions

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### Features

- › High tensile strength, high modulus and low elongation
- › Strong puncture resistance, anti-microorganism, aging resistance
- › High temperature resistance, superior water permeability, filtration and soil retention



### Advantages

- › More effective aggregates for drainage applications
- › Excellent filtration properties
- › Long-term hydraulic performance

### Applications

Our geotextiles have numerous applications, but there are five major functions: separation, reinforcement, filtration, drainage, and protection. We generally apply our geotextiles to civil uses such as lagoons, landfills, roads or railways that in the following the details come. For certain applications, we also install geotextiles as a protection layer for HDPE and other liners to avoid damage from sharp objects found in subgrade.

- › Drainage Systems
- › Roadway Separation
- › Railroad Stabilization
- › Asphalt overlays
- › Geomembrane Protection
- › Landfill Leachate Collection
- › Hard Armor Underlayment
- › Railways, Tunnels



Geocomposites are impermeable materials composed of geotextile and geomembrane, mainly used in water drainage and rib reinforcement for seepage prevention.

Fest-composites are divided into two types, Two Layer Geocomposite and Three Layer Geocomposite.

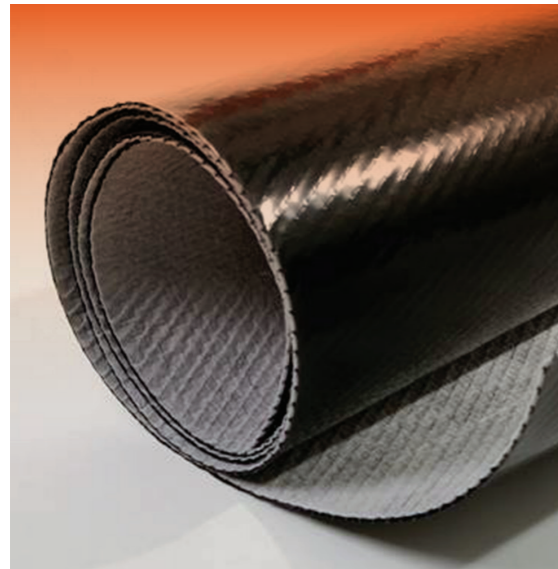
### Fest Solutions

#### Two Layer Geocomposite

One cloth plus one membrane (Geotextile for protective use is applied on one side of anti-seepage membrane). The geotextile is made of Polypropylene or Polyester.

#### Three Layer Geocomposite

Two clothes plus one membrane (Geotextile for protective use is applied on both sides of anti-seepage membrane). The geotextile is made of Polypropylene or Polyester.



#### Features

- > Excellent physical and mechanical properties
- > High tensile resistance, high tear resistance, high puncture resistance

#### Advantages

- > Chemical and biological degradation resistant
- > Excellent filterability
- > long-term durability

#### Applications

It is mainly used in anti-seepage engineering field such as road, railway, irrigation work, subway, tunnel, landfill, and etc. Some application details come in the following:

- > Water conservation
- > Roadways
- > Construction Cofferdam
- > Subways Impermeable lining
- > Railway Subgrade
- > Irrigation Ditch



Geogrids are polymeric products manufactured from polypropylene (PP), high density polyethylene (HDPE) or polyester (PET) through the process of extruding, punching, heating, longitudinal and transverse stretching, formed by joining intersecting ribs. They have large open spaces also known as "apertures". Depend on the soil specification, the size of apertures would be different to make suitable interaction with soil.

Fest offers both uniaxial and biaxial geogrids manufactured from polypropylene and PVC coated polyester yarns. Our uniaxial geogrids are available in a range of tensile strengths and are suitable for applications which require strength in one direction. The biaxial geogrids are designed for applications where strength is required in two directions.

### Fest Solutions

- > PP/HDPE Uniaxial Geogrid
- > PP Biaxial Geogrid
- > Fiberglass Geogrid
- > Basalt Fiber Geogrid
- > Polyester Geogrid
- > Multiaxial Geogrid
- > High-Strength Polyester Geogrid



### Features

- > High tensile strength in warp and weft directions
- > High tensile modulus
- > Low elongation

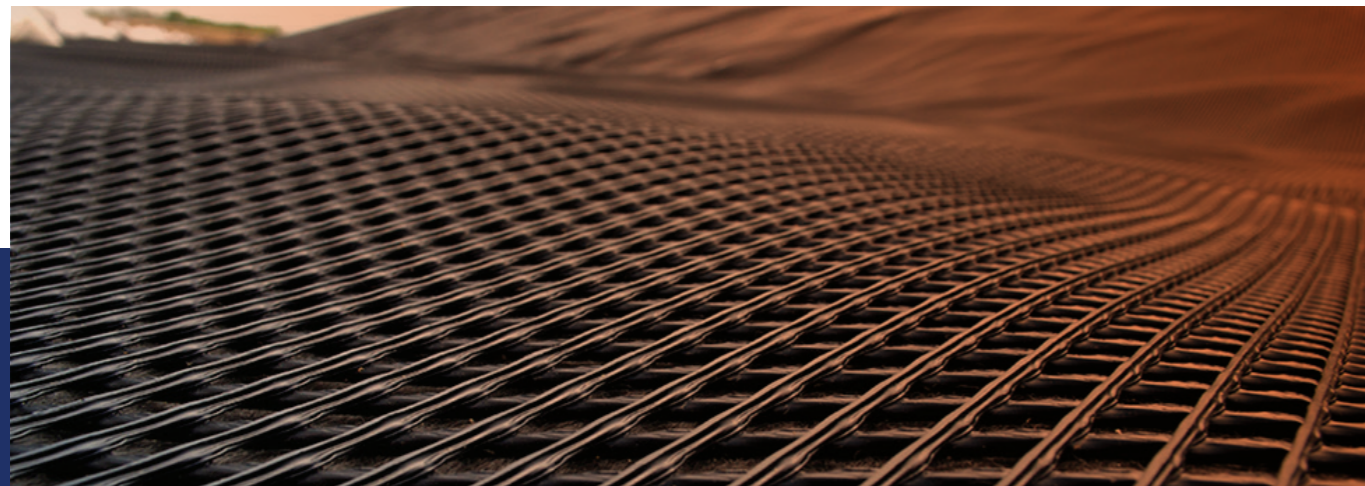
### Advantages

- > More economical compared to other types of retaining walls
- > Effective bearing capacity in soft soil foundation
- > Fast and easy implementation
- > Possibility of land reclamation in any topographic condition
- > Excellent performance and long service life

### Applications

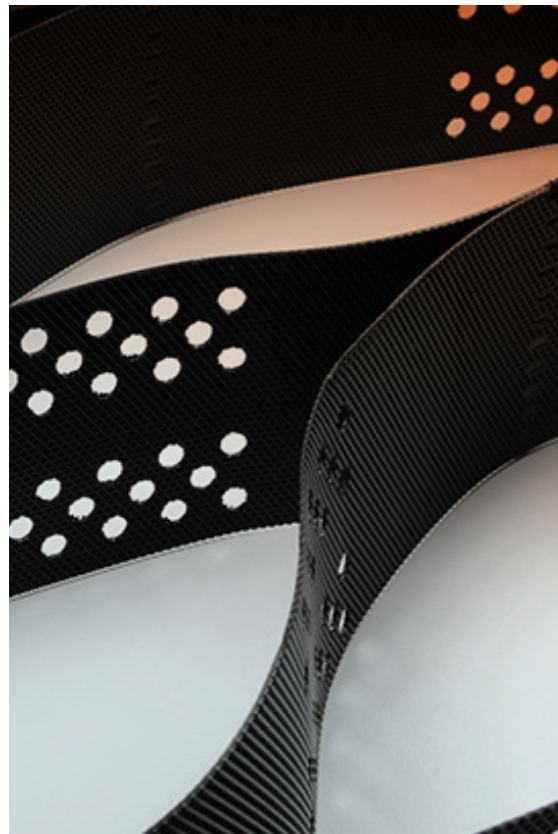
PP biaxial geogrid is mainly applied in strengthening soft ground of railway, highway, slope protecting projects, airfields, and foundation reinforcement of large area permanent bearing engineering fields. It can increase stability and loading capacity of fundus, prolong the project life. Our uniaxial geogrids are commonly used for reinforcing soil walls, steep slopes and basal reinforcement of embankments. Our biaxial geogrids are suitable for reinforcement of roads base and sub-base, ground stabilization and railway bed stabilization. Some other applications come in the following:

- > Construction of reinforced soil retaining walls up to 90 degree with various faces
- > Erosion control and increasing surface stability of slopes using 3D geogrid
- > Increasing the bearing capacity of soft ground and reducing differential soil settlement in road, railway, storage tank projects, etc.
- > Distributing the load uniformly across the piles
- > Protecting sinkholes



Geocells are lightweight, expandable cellular confinements made of high-density polyethylene strips that are expanded on-site to form a honeycomb-like structure. When infilled with compacted soil, geocell creates a new composite entity that possesses enhanced mechanical and geotechnical properties.

Fest-cell provides the ability to grow plants on grounds and sloping lands that are not suitable for growing plants. Thus it provides erosion control and increases the slope stability.



**Fest Solutions**

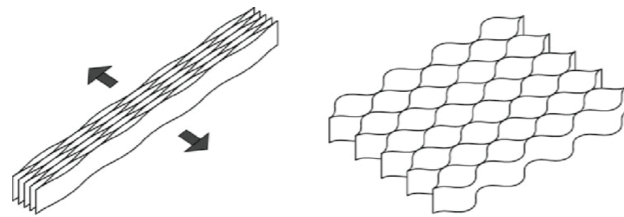
- > HDPE Geocell

**Features**

- > Excellent physical and mechanical properties
- > Flexible to fold during transportation

**Advantages**

- > Protecting and stabilizing steep slope surfaces
- > Use of different types of filling materials
- > Strengthen loading capacity of weak ground
- > Installing protective linings for channels and hydraulic structures



**Applications**

Geocells are often deployed to help improve the performance of standard construction materials and erosion-control treatments. Typical applications come in the following:

- > Soil stabilization
- > Greenable retaining wall
- > Greenable slope and erosion control
- > Concrete-aggregate filled channel constructions





# Geosynthetic Clay Liner (GCL) Fest-GCL

Geosynthetic Clay Liners (GCL) are needle-punched, reinforced composites that combine two durable geotextile outer layers and a uniform core of high-swelling powder sodium bentonite clay. This forms a uniform, multi-directional, shear-resistant hydraulic barrier with self-sealing and re-healing characteristics.

Fest-GCLs are used as geosynthetic barrier with its high impermeability feature in vast fields of application needing waterproofing attributes.

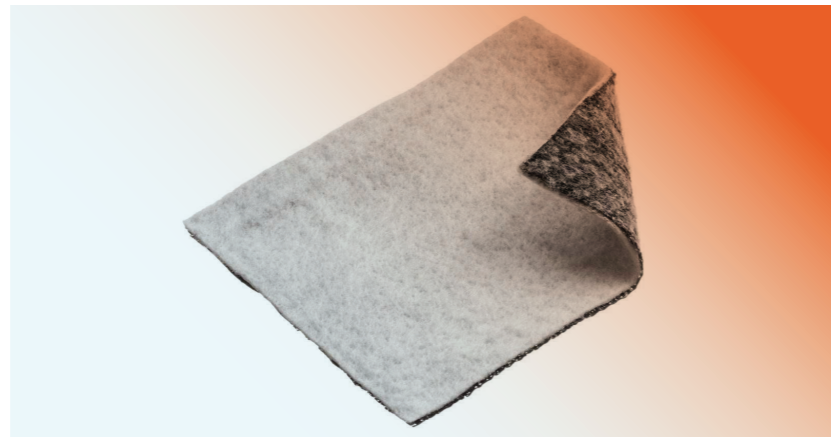


## Fest Solutions

- > Geosynthetic clay liner (GCL)

## Features

- > Uniformly distributed bentonite powder
- > Uniform needle-punching
- > Robust geotextiles encapsulate and contain the bentonite



## Advantages

- > Versatile sealing applications possible
- > Immediate sealing and long-term performance with high swellable sodium bentonite powder
- > Quick, easy and cost effective to install
- > Uniform needle-punching provides multi-directional shear strength
- > Internal shear strength and interface friction angles

## Applications

GCL provides excellent performance for both vertical and horizontal applications in parts of the buildings below the ground levels. Fest-GCL are typically used for water proofing basement and foundation structure, sealing and preventing leak of fluids and greenhouse gases in landfills, and as a cover layer of secondary reservoirs, canals and water storage tanks or areas. In the following Fest-GCL applications come:

- > Landfill caps, closures and base seal
- > Environmental protection under roads, railways, airports
- > Dams and dykes
- > Water containment and pond applications
- > Structural waterproofing
- > Secondary containment
- > Mining applications
- > Tunnels



Fest's technical support & installation is a vital part of our offering as a full-service provider to the industry. Our skilled and trained team of engineers are experts on geosynthetics and their applications. We support your project every step of the way. From the planning, through material supply up to the professional installation of your sealing system.



**Technical Support**

Our engineering services include, but are not limited to:

- > Technical Consultation
- > Design of lining systems
- > Layout plans
- > Stability analysis
- > Installation advice
- > Planning and execution of in-situ monitoring
- > Full QA/QC support

**Trained Welding Specialists**

With our team of regularly trained welding specialists, we are one of the most experienced liner installers in the industry. We have been successfully active in sealing applications since the 1990s and are constantly developing our expertise.



**Fest Installation Solutions**

Our installation solutions include for, but are not limited to:

- > Landfill solutions
- > Tunnel solutions
- > Hydraulic solutions
- > Civil solutions
- > Groundwater protection
- > Environmental protections
- > Concrete corrosion protection
- > And more



**Fest Quality & Customer Satisfaction**

We take pride in the quality of our solutions and products and constantly check, monitor and improve them. Fest holds itself to the highest quality standards that control everything from incoming raw materials to final factory production of geosynthetics. At Fest, all materials are tested to ensure they meet industry standards before entering the manufacturing phase.

This continuous manufacturing quality control guarantees product performance characteristics and enables complete documentation from the raw material to the final product. Additionally, every Fest lab is accredited for all routine QA/QC tests performed at each facility.

Customer satisfaction comes first at Fest. For instance, technical consultations, training courses, and on-site assistance are among the services offered by Fest to support customers. Additionally, Fest procedures help ensure that products comply with international norms, as monitored and evaluated on an ongoing basis according to standards set by independent testing agencies.





**Fest** is a leading global polymer company that has been at the forefront of Geosynthetic technology spanning two decades. Today with possessing the state of the art production technologies, Fest offers a complete range of geosynthetic products, technical support and installation services to the agricultural engineering, civil engineering, waste management, mining, and industrial sectors. **Fest geosynthetic** products named **Geo-Fest** consist of- geomembranes, geotextiles, geocomposites, geogrids, geocells, and GCLs for sustainable project solutions. We are focusing on fulfilling your expectations for quality and service as we have done for over twenty five years.

Headquartered in Isfahan, the Iran, we are consistently ranked as one of the leaders in the area of sustainability.

With seeking the market in more than 50 countries, we are committed to delivering leading products and solutions to meet the growing demands of our fast changing world.

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