



TECHNICAL TEXTILES – PART VII

REF: TT/ DEC 2021/ WK 4

Geotextile (Continued)

Geomembrane

Geomembranes are form of geosynthetics and are applied mainly for linings and covers of liquid or solid-storage facilities. These are thin, flexible materials that are manufactured in a controlled environment. These can be permeable or impermeable. Impermeable geomembranes are often used as a water barrier in hydropower structures, while permeable geomembranes are applied for the seepage water to pass by without taking away the soil. These are basically a resistant material, in the shape of manufactured sheet.

Geomembranes are used in dams and hydropower structures. Geomembranes have also been used in rehabilitation and new construction. Geomembranes are used wherever loss of material are not allowed, like clean water, wastewater, vapor, soil, hazardous materials, or any other substance that does not need to escape its designated space.

Geomembranes are being used in environmental, hydraulic, transportation, and oil and gas applications as well as the waste industry. The most common types of geomembranes are the continuous polymeric sheets. When larger geomembranes are needed, they are thermally or chemically melted together at the seams for strength and durability.



Fig 1.1 Geomembrane

Ref: explosion.com

Geogrid

A geogrid is defined as a geosynthetic material consisting of connected parallel sets of tensile ribs with apertures of sufficient size to allow strike-through of the surrounding soil, stone, or other geotechnical material. Geogrids provide reinforcement, stabilization, and even filtration when used with properly sized aggregate fills.



These geosynthetic materials are used to reinforce soils and similar materials. It is a flexible mesh that is used to create a reinforced coherent mass behind the retaining wall by stabilizing the soil. Geogrids are made of polymer materials, such as polyester, polyvinyl alcohol, polyethylene or polypropylene. It can be used in the soil reinforcement or used in the reinforcement of retaining walls. Geogrids work by interlocking with the granular or soil material placed over them. The open apertures of the geogrid allow for the confinement of material within, increasing the shear strength of overlying granular fill.

The high demands of Geogrids in construction are because they are good in tension and have a higher ability to distribute load across a large area. Main applications of Geogrids:

- Building firm working surfaces over soft ground conditions
- Enhancing pavement's service life
- Reducing the structural cross-section of both paved and unpaved roadways.



Fig 1.2 Geogrid

Ref: srwproducts.com

Geocomposite

Geocomposite is a combination of two or more geosynthetic materials to perform multiple numbers of geosynthetic functions for specific civil engineering applications. A geocomposite comprises with a mixture of geotextile and geogrid, geogrid and geomembrane or any of these three materials with another material such as deformed plastic sheets, steel cables etc. The basic functions of geocomposites are: separation, reinforcement, filtration, drainage, and containment.

References:

1. <https://atira.in/>
2. <http://technotex.gov.in/>
3. <https://www.fibre2fashion.com/>
4. <http://www.ittaindia.org/>

.....To be continued.....

| UNSCRAMBLE THE JUMBLE WORDS |
|-----------------------------|
| RADCILUYH |
| RATEGNINI |
| UCTCONNOISTR |
| TUXIMRE |

Last week`s Answers: 1) TIGHTNESS 2) BLANKETS 3) TOUGHNESS 4) MANMADE

Wishing you a great week ahead!

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