



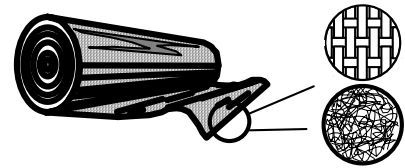
## *Geosynthetics Classification*

Prepared by R.J. Bathurst

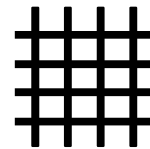
### **Geosynthetics Classification**

Geosynthetics can be broadly classified into categories based on method of manufacture. The current denominations and brief descriptions of geosynthetics are presented below.

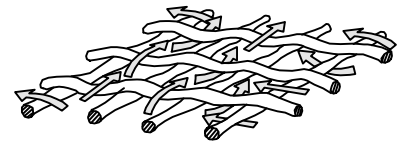
**Geotextiles** are continuous sheets of woven, nonwoven, knitted or stitch-bonded fibres or yarns. The sheets are flexible and permeable and generally have the appearance of a fabric. Geotextiles are used for separation, filtration, drainage, reinforcement and erosion control applications.



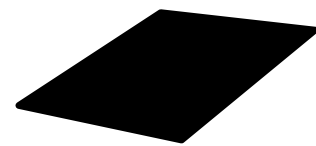
**Geogrids** are geosynthetic materials that have an open grid-like appearance. The principal application for geogrids is the reinforcement of soil.



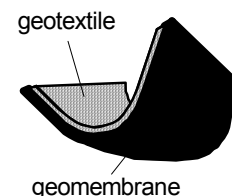
**Geonets** are open grid-like materials formed by two sets of coarse, parallel, extruded polymeric strands intersecting at a constant acute angle. The network forms a sheet with in-plane porosity that is used to carry relatively large fluid or gas flows.



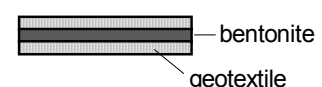
**Geomembranes** are continuous flexible sheets manufactured from one or more synthetic materials. They are relatively impermeable and are used as liners for fluid or gas containment and as vapour barriers.



**Geocomposites** are geosynthetics made from a combination of two or more geosynthetic types. Examples include: geotextile-geonet; geotextile-geogrid; geonet-geomembrane; or a geosynthetic clay liner (GCL). Prefabricated geocomposite drains or prefabricated vertical drains (PVDs) are formed by a plastic drainage core surrounded by a geotextile filter.

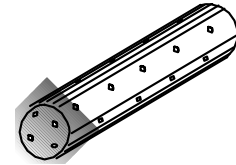


**Geosynthetic clay liners (GCLs)** are geocomposites that are prefabricated with a bentonite clay layer typically incorporated between a top and bottom geotextile layer or

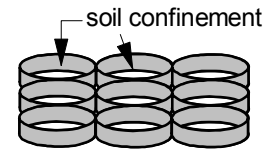


bonded to a geomembrane or single layer of geotextile. Geotextile-encased GCLs are often stitched or needle-punched through the bentonite core to increase internal shear resistance. When hydrated they are effective as a barrier for liquid or gas and are commonly used in landfill liner applications often in conjunction with a geomembrane.

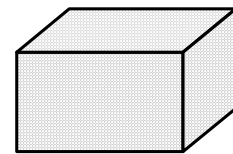
**Geopipes** are perforated or solid-wall polymeric pipes used for drainage of liquids or gas (including leachate or gas collection in landfill applications). In some cases the perforated pipe is wrapped with a geotextile filter.



**Geocells** are relatively thick, three-dimensional networks constructed from strips of polymeric sheet. The strips are joined together to form interconnected cells that are infilled with soil and sometimes concrete. In some cases 0.5 m to 1 m wide strips of polyolefin geogrids have been linked together with vertical polymeric rods used to form deep geocell layers called geomattresses.



**Geofoam** blocks or slabs are created by expansion of polystyrene foam to form a low-density network of closed, gas-filled cells. Geofoam is used for thermal insulation, as a lightweight fill or as a compressible vertical layer to reduce earth pressures against rigid walls.



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## About the IGS

The **International Geosynthetic Society (IGS)** is a non-profit organization dedicated to the scientific and engineering development of geotextiles, geomembranes, related products and associated technologies. The IGS promotes the dissemination of technical information on geosynthetics through a newsletter (IGS News) and through its two official journals (Geosynthetics International - [www.geosynthetics-international.com](http://www.geosynthetics-international.com) and Geotextiles and Geomembranes - [www.elsevier.com/locate/geotextmem](http://www.elsevier.com/locate/geotextmem)). Additional information on the IGS and its activities can be obtained at [www.geosyntheticssociety.org](http://www.geosyntheticssociety.org) or contacting the IGS Secretariat at [IGSsec@aol.com](mailto:IGSsec@aol.com)

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