

Landfills

GEOMEMBRANE QUALITY, CONSISTENCY SERVICE

Geomembrane quality begins with base resin selection. GSE's resins are blended with premium carbon black, antioxidant additives and UV stabilizers to ensure long life even in exposed conditions.

GSE's manufacturing facilities include state-of-the-art production lines. GSE utilizes two unique geomembrane extrusion systems. With flat cast and round die extrusion capabilities, GSE can meet stringent tolerance requirements as well as produce patented, coextruded products.



[Landfill Application, Hawaii]

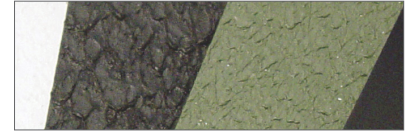
GSE geomembrane materials must pass a battery of quality control checks before being shipped and installed. From the base resin checks to 100% spark-tested product to laboratory quality assurance testing, all GSE geomembranes are thoroughly inspected. Installations require extensive planning to ensure on-time delivery and coordination with the earthmoving contractors.

LANDFILL CELL LINERS

Today's state-of-the-art landfill utilizes a range of geosynthetic products to maximize design efficiency, integrity and performance while minimizing overall cost. For environmental protection, the essential landfill component is the primary geomembrane liner.

The primary liner contains dangerous leachates and protects valuable groundwater resources. However, for a landfill liner system to function optimally, it needs to incorporate more than a smooth surfaced geomembrane.

Steep side slopes have become standard in landfills as a means to increase capacity and revenue. Steep slopes present problems for smooth liners because cover soil may not stay in place and, with overburden, the liner itself can slip down the slope and increase stress on seams and the sheet itself. To solve this problem, GSE offers co-extruded textured geomembranes.



GSE Textured Geomembranes



GSE Geonets

LEACHATE CONTAINMENT

A combination of geocomposites and geonets manufactured for use in soil separation, filtration, protection and drainage applications.



[Landfill Application, Germany]

The geomembrane liner provides containment for landfill leachates. For leachate collection, geocomposite nets provide high in-plane flow. The geocomposite is composed of GSE HyperNet HDPE geonet with geotextile bonded to one or both sides to keep cover soil from clogging the geonet.

GSE FabriNet geocomposite is placed directly on top of the primary liner. The geotextile clings to textured geomembrane to lock the composites in place, especially on slopes.

Many regulations require a leak detection system to ensure the integrity of the primary liner on a continuous basis. This system consists of a secondary HDPE geomembrane below the primary liner which is overlaid with either a geonet or a geocomposite net. If the leak detection system is placed directly below the primary liner, a geonet is used. If an intermediate soil layer or clay layer is used, then a geocomposite net is utilized. Landfill cell liners are massive and critical projects. The geosynthetic liner system represents a small fraction of the overall cost but virtually 100% of the protection. Don't settle for mediocre quality. GSE provides



[Provides Excellent Longevity]

everything you need for the highest quality installation and the largest selection.

LANDFILL COVERS

A major long-term concern when employing a landfill cover is differential

settlement caused by decaying and shifting waste. The geomembrane cover must facilitate deformation caused by differential settlement without failure of the containment. To meet this requirement, GSE UltraFlex is made from a unique, linear low density polyethylene resin (LLDPE). Its utility and durability has been proven in over 50 million square feet (5 million square meters) of landfill cover applications.

LEACHATE PONDS

Leachate is collected from landfill cells and typically stored in lined ponds for treatment or evaporation. The liners in these ponds are generally exposed to the elements. HDPE lining systems exhibit the highest degree of durability under extreme environmental conditions including sunlight, freezing temperatures and abrasion.

HIGH-END ENGINEERING

To achieve true state-of-the-art landfill design, incorporate GSE's co-extruded geomembrane capabilities. GSE White is a co-extruded HDPE geomembrane, which provides significant benefits for the landfill owner, engineer and contractor.

The white surface has two primary functions. First, it reflects sunlight which minimizes radiant heat absorption and heat buildup to effectively minimize liner temperature. This results in less expansion of the liner. With less expansion, wrinkles are minimized. Another benefit of lower liner temperature is decreased moisture evaporation from underlying clay layers.

The second benefit of a white surface is improved visual inspection. If the thin white surface is damaged, the black portion of the sheet shows clearly. Post-installation damage is much more likely to be observed

and repaired. See the GSE White application sheet for more information.

If a post-installation leak test is required, consider the benefits of GSE's spark-testable GSE Leak Location. A large landfill installation can be tested for pinholes or other construction-related damage to 100% satisfaction without the added expense of flooding or the uncertainties of other leak testing methods. Specialized areas such as sumps and pipe penetrations require special products and installation techniques. To ensure complete containment protection, use GSE Leak Location since it can be electrically spark-tested at any time to find even the smallest punctures resulting from pipe laying or other incidental damage.

ENGINEERING SUPPORT

The GSE Engineering Support Staff is comprised of multidisciplinary product professionals to support you across a range of project requirements. This includes knowledge in geomembrane, geosynthetic clay liners, geonet, geocomposite, nonwoven geotextile and concrete protection products and application solutions. Rely on our technical staff to help you solve your project issues.

CUSTOM FABRICATION

The GSE Custom Fabrication Group builds products to your exact specifications. We have extensive experience in prefabricated polyethylene products and components. A few examples of our custom fabricated products are Aqua Tanks, Quick Containment, concrete protection liners, boots, sumps, pads, pipes, daily covers, temporary containment, containment boom and other products to fulfill your fabrication needs.

GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We've built a reputation of reliability through our dedication to providing consistency of product, price and protection to our global customers.

Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.

[DURABILITY RUNS DEEP] For more information on this product and others, please visit us at GSEworld.com, call 800.435.2008 or contact your local sales office.

