



The Pioneer Of Geosynthetics  
S I N C E 1 9 7 2

## White Surfaced Geomembranes

### A LIGHT-REFLECTIVE GEOMEMBRANE

There are several compelling reasons why your next lining project should incorporate the revolutionary GSE White surfaced geomembrane:

- Minimize wrinkles caused by expansion
- Minimize risk of damage to liner which can result from wrinkles
- Improve damage detection
- Reduce thermal expansion
- Minimize radiant heat buildup and reduce worker fatigue
- Improve visibility in low light applications

GSE White offers significant benefits for a wide range of civil and environmental applications.

### A PATENTED INNOVATION

GSE White is a co-extruded, high density (HDPE) or linear low density (LLDPE) polyethylene geomembrane which incorporates a UV-resistant light-reflective surface layer fully integrated with the primary black geomembrane layer. All the excellent physical properties of GSE's standard black geomembrane remain the same. The white surface reduces heat build-up, minimizes wrinkles, and improves visual damage inspection. The benefits of a white surfaced liner for the engineer, contractor and owner are significant. All GSE products incorporating a co-extruded light-reflective surface are protected by GSE's United States patents.

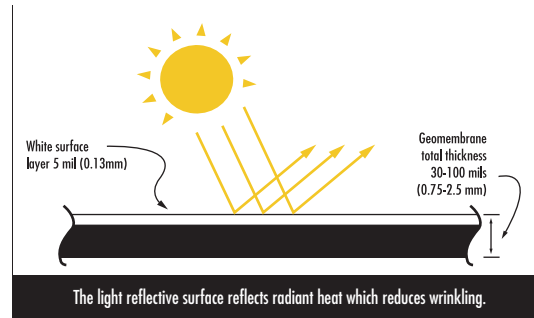


GSE White smooth & textured geomembranes.

### REFLECTIVE SURFACE REDUCES HEAT BUILDUP ON THE LINER TO MINIMIZE WRINKLING

Tests have shown that using GSE White versus standard black liner reduces heat buildup on the surface by as much as 50%. A black liner can reach temperatures of 160° F or more. Depending upon the temperature differences during the day, a HDPE geomembrane may exhibit thermal expansion of 1% or more. The installer must allow an extra length of liner during hot installations to account for subsequent

geomembrane contraction as the liner cools.



Liner that is installed without sufficient slack may experience bridging at the toe of the slopes, at tank corners, at sumps and along ditches. Experienced installers will allow for wrinkles in the liner to avoid over tensioning the liner when it cools.

Although the liner installer will ensure that the geomembrane liner system meets the engineer's specifications, subsequent earthmoving contractors may have only infrequent experience with geomembranes. A wrinkled liner surface can be distorted by bulldozers pushing soil cover. Industry experts attribute most liner leakage to post-installation damage which occurs after the geomembrane installer has completed the specified work.

GSE White can be installed with fewer, smaller wrinkles because the liner will exhibit less expansion and contraction. The true benefits accrue to the owner. GSE White results in a better installation, improved post-installation performance and fewer headaches.

Another benefit of lower liner temperature is decreased moisture evaporation from underlying soil layers. Studies have concluded that high liner



GSE White pond evaporation.

temperatures can cause moisture in the underlying soil layer to condense on the bottom side of the liner.

This evaporation can lead to desiccated clay layers, and to condensation buildup and migration under the liner with a potential for liquid build-up and saturation at the base of slopes.



GSE White provide excellent longevity.

### BETTER DAMAGE DETECTION IMPROVES PERFORMANCE

The light-reflective surface layer of GSE White. If any of damage should occur, the black primary layer of the geomembrane will be exposed, thus making visual inspection more reliable. The improved visual inspection capability is especially important for exposed applications such as tank liners and secondary containments which do not have the protective benefit of cover soil or concrete.



GSE White round die extrusion process.

### UV RESISTANCE

Carbon black is used in polyethylene geomembrane products to ensure long term resistance to ultraviolet light (UV) exposure. A more expensive formulation is used to provide UV resistance in white resin. Proprietary blend hindered amine light stabilizers (HALS) and thermal stabilizers were selected as powerful UV inhibitors for the GSE White surface geomembrane. Accelerated laboratory testing of white geomembrane indicates a possible service life in excess of 18-50 years depending on altitude, latitude and other environmental factors.

### CO-EXTRUSION TECHNOLOGY

GSE's co-extrusion process fully integrates the light-reflective surface of GSE White with the standard black primary section of the geomembrane. The white surface is part of the extrusion process and not a laminated layer; it is molecularly bonded and cannot be separated from the black portion.

GSE White boasts the same mechanical properties as standard black GSE geomembrane. In addition to creating a white surface, GSE's co-extrusion process is also used to create textured and electrically conductive surfaces and combinations of all three enhancements.

A Conductive bottom layer for spark-testable liner performance and state-of-the-art engineering design can be added. The GSE Conductive information sheet describes this patented Conductive geomembrane. GSE White is also available with one or both sides textured to create higher frictional characteristics for slope applications. Finally, GSE Conductive White is available with the non-Conductive side textured.

### 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.

### INSTALLER NETWORK

The GSE Installer Network leads the industry with the most experienced, large, and flexible crews available around the world to meet your installation requirements. Each installer is equipped with state-of-the-art welding and testing equipment to ensure a successful installation. Selecting a qualified installer with the right product knowledge is critical to your success. Let GSE connect you to the right installer to handle your installation project of any size from start to finish.