

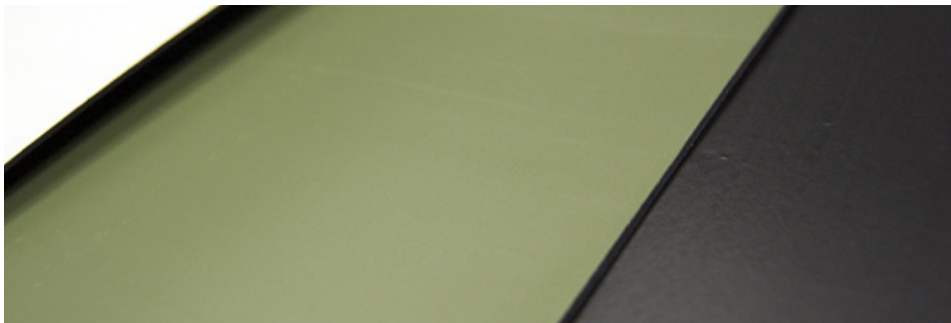
## High Density Polyethylene Geomembranes

GSE HD geomembranes are produced from high quality high density polyethylene and are designed to meet or exceed the specifications published by GRI for HDPE (GRI GM 13)<sup>1</sup>.

GSE HD products are available in a variety of colors such as green for more aesthetic landfill caps<sup>2</sup> and white for a solar reflective upper surface<sup>3</sup>. The upper surface, lower surface, or both surfaces can be textured for use in applications where increased frictional resistance is required. The bottom surface can be comprised of a patented conductive layer to enable liner integrity surveys to be performed following installation of the liner<sup>4</sup>.

### PREMIUM RAW MATERIALS

GSE HD products are manufactured using high quality polyethylene resins. Carbon black, antioxidants, and UV stabilizers are added to the polymer to ensure long term performance in both covered and exposed applications.

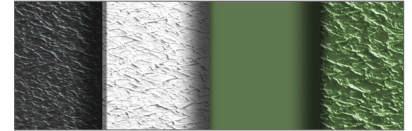


[GSE High Density Polyethylene Geomembranes]

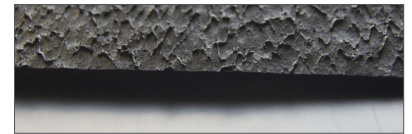
### CHEMICAL RESISTANCE

HDPE is the most universal polymer used for geomembranes because of its proven chemical resistance, durability, and low permeability. HDPE is resistant to a wide variety of chemicals including aromatic and halogenated hydrocarbons. The chemical resistance of HDPE is especially helpful in applications that require harsh chemicals such as mining heap leach facilities, hazardous waste landfills, and in most containment facilities within chemical plants.

Because of these factors and the broad and successful history of HDPE geomembranes, regulators are very familiar with these products and their usage.



GSE HD Geomembranes



GSE White & Black Geomembranes

### HIGH DENSITY POLYETHYLENE GEOMEMBRANES

An industry trusted geomembrane with excellent chemical resistance, low permeability, and terrific durability in both covered and exposed applications.

#### GSE HD FEATURES:

- History of Proven Performance
- Industry Familiarity
- Superb UV Resistance
- Exceptional Chemical Resistance
- Excellent Stress Crack Resistance
- Lowest Permeability Among Polymers
- Meets GRI GM 13 Specifications for HDPE

#### COMMON APPLICATIONS:

- Solid and Liquid Waste Containment
- Secondary Containment
- Mining
- Hazardous Waste Containment
- Pond Lining

## PERMEABILITY

The permeability of HDPE is known to be the lowest among all polymers used in geomembrane applications. The combination of GSE HD's excellent chemical resistance and environmental stress crack resistance maximize the integrity of any containment application.

## BENEFITS OF A ROUGHENED SURFACE

A textured geomembrane provides increased frictional resistance that improves the stability of slopes. The ability to use a steeper slope provides cost savings by increasing the capacity of the project. GSE products can be manufactured with a black, green<sup>2</sup>, or white<sup>3</sup> textured surface on one or both sides of the geomembrane.

## IN-LINE TEXTURING

GSE HD textured is manufactured using coextrusion technology – the same technology used by GSE for over thirty years to produce GSE UltraFlex, GSE Conductive and GSE White geomembranes. GSE HD textured meets the increasing need for textured HDPE geomembranes because it is an in-line texturing process. Availability to GSE customers is increased and lead times are minimized.

## PROVEN RELIABILITY

GSE HD geomembranes have a long history of reliability and proven performance. Billions of square feet of GSE HD geomembranes have been sold and installed. They have been used in wide ranging containment applications including potable water, decorative ponds, animal waste containment, landfills, canal linings and secondary containment. In addition to their exceptional performance, GSE HD geomembranes have excellent weldability under a variety

of conditions; extrusion and fusion welding can be performed with ease and confidence.

## QUALITY ASSURANCE

All GSE geomembrane production involves three levels of quality assurance. First, raw material suppliers must comply with GSE specifications on incoming resin. Before the resin is unloaded from the railcar, GSE verifies the raw material test results that are submitted by our suppliers by performing selected conformance tests. The second level of QA occurs during production. As each roll is produced, it is electronically monitored for pinholes. Finally every roll of GSE product undergoes a rigorous Quality Assurance program after production to ensure the mechanical properties are intact and meet or exceed GSE quality standards. All GSE laboratories are certified to meet GAI-LAP standards.

## ENGINEERING SUPPORT

The GSE engineering support staff is available to help solve any issues you have with your project. It is comprised of a multidisciplinary group of professionals with knowledge across a wide range of products and their applications. This includes geomembranes, geosynthetic clay liners, geonets, geocomposites, and woven and nonwoven geotextiles.

## CUSTOM FABRICATION

The GSE Custom Fabrication Group builds products to your exact specifications to fulfill any of your project requirements. 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, and containment booms.

## INSTALLER NETWORK

The GSE Installer Network leads the industry with the most experienced, the largest, and the most 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.



[Landfill Application, Hawaii]

## HIGH PERFORMANCE GEOMEMBRANES

For more demanding projects GSE offers High Performance geomembrane products<sup>5</sup>. Contact your GSE representative for more information.

<sup>1</sup>GRI GM 13 Specifications can be found on the web: <http://www.geosynthetic-institute.org/grispecs/gm13.pdf>

<sup>2</sup>Refer to the application sheet for GSE Green Surfaced Geomembranes for more information.

<sup>3</sup>Refer to the application sheet for GSE White Surfaced Geomembranes for more information.

<sup>4</sup>Refer to the application sheet for Electrically Conductive Geomembranes for more information.

<sup>5</sup>Refer to the application sheets for High Performance GSE Geomembranes for more information.

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](http://GSEworld.com), call 800.435.2008 or contact your local sales office.

