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# GUNDSHIELD™

The Ultimate Oil Boom Products





## INTRODUCTION



GSE GundShield™

GSE Lining Technology, LLC is a leading manufacturer and installer of geosynthetic lining products and services worldwide. Headquartered in Houston, Texas, GSE has manufacturing facilities strategically located throughout the world. Our Houston based manufacturing facility is equipped with round die HDPE and LLDPE geomembrane extrusion lines. GSE's other facilities in the US include a geosynthetic clay liner facility in South Dakota, and a nonwoven geotextile, geocomposite, and geonet facility in South Carolina. In addition to GSE's manufacturing facilities in North America, GSE has a 12,000 square foot facility for the fabrication of specialty plastic products including oil booms, GSE Quick-Containment pads, and decontamination pads.

The GSE Custom Plastic Fabrication Group provides a new dimension in customer service. From start to finish you can expect your project to be completed on time, with solutions backed by the industry leader. Our goal is to make your life easier. We listen, ask questions, find answers and generate results. It is our strong record of results that keeps customers coming back to GSE time after time.



GSE QuickContainment

## ADVANTAGE



GSE GundShield™

Polyethylene has proved to be the most popular geomembrane lining material. This popularity is due to polyethylene's high UV and chemical resistance in addition to its flexibility. Through developments in resin technology, today's polyethylene geomembranes exhibit outstanding resistance to stress cracking and thermal aging.

GSE geomembranes are made of high quality, virgin polyethylene which demonstrates excellent chemical resistance.

GSE polyethylene geomembranes are resistant to a great number and combinations of chemicals. It is this property of high density polyethylene (HDPE) geomembranes that makes it the lining material of choice.

GSE's GundShield™ product is constructed with 40 mil high density polyethylene, with a dense foam float, galvanized steel weights, and aluminum connectors. Our GundShield™ is available in either white or black and in 100 foot lengths. GSE products are manufactured from high grade resin blended with antioxidants and carbon black for enhanced UV resistance.

Due to the chemical structure of polyethylene our GundShield™ product has many advantages over PVC. GSE also offers products such as QuickContainment and decontamination pads to assist with clean-up efforts.

## APPLICATIONS

### OIL SPILL

Oil spills have a catastrophic impact on the environment by adversely affecting both marine and land based eco-systems. The nature of the oceans, including currents, winds, waves, and tidal forces may quickly spread the oil spill to encompass large areas. In order to reduce the impact of oil spills prompt and comprehensive containment and clean-up are imperative.

### SOLUTION

GSE's GundShield™ and clean-up products are an effective way to contain and clean oil spills. Prompt attention to these ecological disasters is key to reducing the harmful impact on the environment and the Earth's delicate eco-systems. GSE is proud to produce materials and products that aid in the protection and restoration of the Earth's environments.

### CLEAN-UP

GSE QuickContainment pads are ideal as temporary storage containers for potentially environmentally damaging chemicals and liquids.

GSE offers a very high level of protection with its reusable, fabricated polyethylene containment pads. GSE QuickContainment pads are fabricated using GSE patented GSE Conductive HDPE liners. Clean liner pads can be repeatedly spark-tested to ensure long-term secure containment. In addition, these pads are easily transportable.

GSE QuickContainment pads offer the following benefits:

- \* Low Cost
- \* Reusable
- \* Spark-testable
- \* High chemical resistance including hydrocarbons
- \* Prefabricated to your dimensional requirements
- \* High UV resistance
- \* Easy to assemble and teardown

## PRODUCT PROPERTIES



GSE HDPE geomembranes are manufactured from high grade resins blended with antioxidants and carbon black for enhanced UV resistance. Because no plasticizers are used, GSE HDPE is not subject to the embrittlement that can occur when plasticizers leach out. Due to its chemical structure, polyethylene has the best chemical resistance among available geomembrane types. The table below lists different physical characteristics of both HDPE and PVC geomembranes.

| Property                             | GSE HDPE                     | PVC                         |
|--------------------------------------|------------------------------|-----------------------------|
| Maximum Temperature*                 | 150° F                       | 140° F                      |
| Alkali Resistance**                  | Excellent                    | Good                        |
| Chlorinated Hydrocarbon Resistance** | Very Good                    | Poor                        |
| Aromatic Hydrocarbon Resistance**    | Very Good                    | Poor                        |
| Aliphatic Hydrocarbon resistance**   | Excellent                    | Poor to moderate            |
| Ultimate Tensile Strength            | >4,000 psi                   | <2,300 psi                  |
| Ultimate Tensile Elongation          | >700%                        | <500%                       |
| Crosslinking Due to UV               | None                         | Yes and results in cracking |
| Low Temperature Brittleness          | <-90° C                      | -40° C                      |
| Permeability                         | < 1 x 10 <sup>-12</sup> cm/s | 1 x 10 <sup>-10</sup> cm/s  |

NOTES:  
 \* Maximum allowable temperature may be limited by chemical exposure. Contact GSE for more details.  
 \*\* Material resistance varies according to the particular exposure media. Contact GSE for more details.

## CUSTOMER CONTACT



Any further questions need to be answered? Please contact:

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