



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

Electrically Conductive Geomembranes

A REVOLUTION IN LEAK DETECTION

No matter how carefully manufactured and quality controlled lining systems are, accidental post-installation damage is possible. Such damage can result in leaks, thus compromising liner performance. GSE offers a patented, revolutionary, electrically Conductive geomembrane, GSE Conductive, which can be thoroughly, confidently and economically tested for leaks after installation.



A SPARK-TESTABLE GEOMEMBRANE

GSE Conductive incorporates an electrically Conductive layer containing high-purity carbon black, which enables the installed geomembrane to be tested per ASTM D 7240. Spark testing, which was first developed to inspect coatings on steel pipes, is now possible over the entire installed liner surface. GSE Conductive is manufactured using the highest quality HDPE resins and can include texture on the NonConductive side.

To begin spark testing, the Conductive layer is charged through electrical induction using a Conductive contact pad attached to a battery. An operator then sweeps a brass brush or Conductive wand just above the liner's NonConductive top surface. Any penetration in the liner will automatically transmit a visible spark from the charged undersurface as the wand passes over and set off an audible alarm.



For best results, it is recommended that excess moisture be removed to avoid interference with spark testing.

SAFE, FAST, AND COMPREHENSIVE TESTING

The spark testing voltage used to test GSE Conductive is high, to enhance test reliability. However, current flow is minimal, so it is very safe. The testing procedure is quick and easy. GSE Conductive makes it possible to perform a thorough and accurate post-installation test of the entire lined area. Test areas include primary and secondary liners and complex configurations such as critical liquid collection sumps and around penetrations. Patches and repairs can also be immediately and easily retested by on-site operators. No expensive training is required. Convenient spark testing can be repeated year after year on clean, dry, exposed liners to check for damage and verify continuous, leak-free performance.



GSE CONDUCTIVE VS. OTHER POST-INSTALLATION LEAK TESTING METHODS

Unlike traditional electric leak surveys, GSE Conductive spark testing does not require water flooding with its added expense and time-consuming delays. Additionally, GSE Conductive allows for the side slopes to be spark tested. Wrinkles and bridging likewise present no problems. GSE Conductive is 100% reliable.

Smoke and gas leak detection systems are more costly, cumbersome and unreliable. Further, both flooding and gas/smoke leak detection methods are heavily dependent upon the skill and diligence of survey personnel so results can vary. GSE Conductive makes damage detection simple and dependable.

PROVEN PERFORMANCE

The excellent performance of GSE Conductive geomembrane was demonstrated at a large mining

operation, which required lined containment of runoff to prevent groundwater pollution. A reservoir was constructed with a double synthetic liner and leak detection drainage layer. A 60 mil (1.5 mm) secondary liner of GSE Conductive, GSE HyperNet drainage net and an 80 mil (2.0 mm) primary liner of white-surfaced GSE Conductive comprised the system. The project totaled 1.7 million square feet (160,000 square meters) of geomembrane.

Not only was the primary liner spark-tested for leaks, but the patented, coextruded light reflective surface added further benefits. The white surface reflects sunlight, lowering and stabilizing liner temperature which results in less wrinkling and bridging. Additionally, because of its white surface and black base, visual detection of scoring and other impact damage was improved. The combination of a white surface on black liner with spark-testability resulted in maximum installation quality control, using a material with built-in comprehensive capability for damage detection.



Winter run-off pond at a mine using GSE Conductive White geomembrane.

For the spark testing operation, GSE employed an all-terrain vehicle (ATV) which pulled a spark testing unit mounted on a trailer. The unit, which exerts less pressure on the liner than normal foot traffic, was operated by a single GSE technician. It includes a power supply which charges a sliding neoprene contact pad and a 6 foot (1.8 meter) wide brass brush. It also contains voltage and sensitivity controls used to minimize any interference or noise created by moisture or humidity. As the ATV moved forward at 2 to 3 miles per hour (3 to 5 kilometers per hour) covering 1 to 2 acres per day (4,000 to 12,000 square meters), the brush swept over the liner surface to detect penetrating damage. When leaks were found, an extrusion bead or a patch was placed over the hole, depending on the size of the hole.

Mine personnel purposely made small holes in the liner without the knowledge of GSE personnel, and a third party inspector recorded the locations. As expected, GSE's innovative system detected every hole by displaying a spark and emitting an audible signal.

The end result was that with the GSE Conductive liner system, all leaks were detected and repaired in a very cost-effective, reliable and safe manner. The facility design helped allay local community fears and can be retested as needed to provide complete containment assurance.



Six-wheeled vehicle for rapid, comprehensive coverage of large areas.

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.