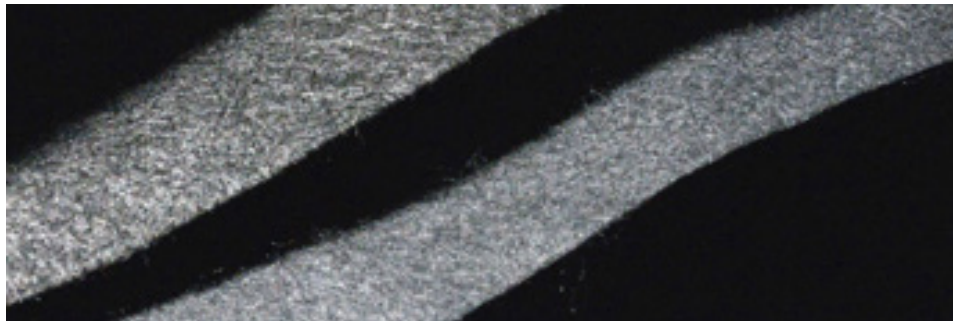


# Geotextiles

## GSE NONWOVEN NEEDLEPUNCHED GEOTEXTILES

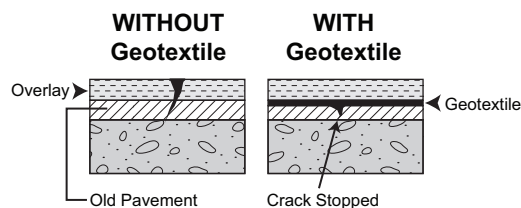
GSE nonwoven needlepunched geotextiles are manufactured at our state-of-the-art needlepunching plant in Kingstree, South Carolina. GSE manufactures 4 to 32 oz/yd<sup>2</sup> geotextiles designated as NW4, NW6, NW8, NW10, NW12, NW16, NW20, NW24, NW28, and NW32. The most common function and usage of these products is shown below. However, the actual selection of the product depends on the specific needs of a project. For example, while NW16 is commonly used for geomembrane protection, it can also be used in filtration and separation because of specific design needs.



[GSE Nonwoven Geotextile]

## ASPHALT OVERLAY

It is common for asphalt pavements to crack prematurely because of design flaws, material limitations or environmental reasons. A fresh layer of asphalt is the most common remedy for this problem. However, reflective cracking – the propagation of cracks from old cracked surface into the new surface – limits the performance of the fresh asphalt overlay. To prevent reflective cracking, a nonwoven needlepunched geotextile must be placed above the cracked surface before placing the new layer. The geotextile works as a sealant and stress absorbing layer. There are comprehensive design and construction methods available for this purpose. GSE NW4 is ideal for preventing reflective cracking. The drawing below shows the use of geotextiles to prevent reflective cracking.



[Crack Prevention with GSE Geotextiles]



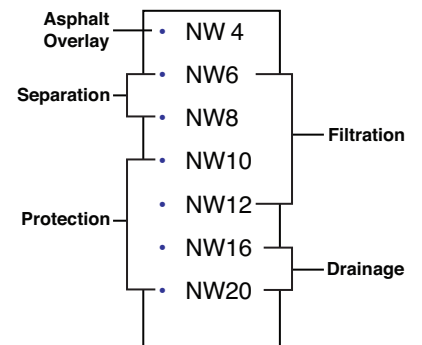
Used for Drainage



Nonwoven Geotextile

## NONWOVEN TEXTILES

A family of geotextiles manufactured and used for soil separation, filtration, protection and drainage applications.



[Most Common Usage]

### SEPARATION

Intermixing of two dissimilar materials always leads to the deterioration of their engineering performance. For example, contamination of aggregate by fine particles always leads to a decrease in the permeability of the aggregate. The separation function refers to the use of geotextiles to maintain physical separation between two adjacent materials.

GSE geotextiles are ideal for this purpose because of their strength, durability, flexibility and a highly porous structure.

### FILTRATION

When used as filters, GSE nonwoven needlepunched geotextiles allow the passage of liquid while preventing the loss of soil particles. GSE offers a range of products with opening size to meet filtration needs for different types of soils. For relatively coarse soils, lower mass products – NW4, NW6 and NW8 are recommended. For fine soil particles, it is better to use heavier mass geotextiles such as NW10, NW12 or NW16. Depending on the needs of a specific project, GSE has a geotextile available which will perform the intended design function, and demanding filtration needs.

### PROTECTION

Geomembrane liners are very sensitive to damage and puncture during construction as well as over the life of a project. Therefore, geomembranes must be protected both from top and bottom. GSE nonwoven needlepunched geotextiles are ideal for this purpose because of their cushioning ability.

Depending on soil size and overburden loads, one of the many geotextiles offered by GSE can be selected to ensure that geomembrane



[Geotextile Installation]

performance is not compromised.

### DRAINAGE

Liners are used typically to prevent infiltration of liquids into environmentally sensitive areas. In certain cases, trapped gases and vapors must be vented to prevent uplifting of the liner. GSE nonwoven needlepunched geotextiles are ideal for gas and vapor drainage from under the liners.

The high porosity of GSE geotextiles facilitates drainage while providing added benefit of cushion for the liners.

### THE GEOMEMBRANE PROTECTION DESIGN MANUAL



GSE offers a comprehensive design manual that provides a simple step by step design method to protecting geomembranes from punctures during construction and over the design life of a project. For a free copy, please contact GSE.

### 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.

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.

