

# GSE CoalDrain PermaNet 300 mil Geocomposite (Double-Sided)

GSE CoalDrain geocomposite consists of a 300 mil thick GSE PermaNet geonet heat-laminated with a non-woven geotextile on the bottom side and an innovative composite fabric on the top side. The top geotextile serves as filter against fine materials like coal ash and FGD gypsum while the core serves the drainage function. The PermaNet geonet has two sets of diagonally crossing panel strands in a round, cross-sectional shape for superior compressive resistance. The innovative geocomposite has been tested extensively in the laboratory and the field and has been proven to meet the performance requirements of an effective filter against coal combustion residuals. This product is ideal for very high compressive stress applications.



**AT THE CORE:**  
A high flow geocomposite that effectively filters coal combustion residuals.

## Product Specifications

| Tested Property  | Test Method                                    | Frequency                 | Minimum Average Roll Value <sup>(1)</sup> |
|--|--|---------------------------|---|
| <b>Geocomposite</b>  |  |                           |   |
| Transmissivity <sup>(2)</sup> , gal/min/ft (m <sup>2</sup> /sec) | ASTM D 4716                                    | 1/540,000 ft <sup>2</sup> | 4.35 (9 X 10 <sup>-4</sup> )              |
| Ply Adhesion, lb/in  | ASTM D 7005                                    | 1/50,000 ft <sup>2</sup>  | 0.5                                       |
| <b>Geonet Core<sup>(1,3)</sup> - GSE PermaNet 300</b>            |  |                           |   |
| Geonet Core Thickness, mil                                       | ASTM D 5199                                    | 1/50,000 ft <sup>2</sup>  | 300                                       |
| Density, g/cm <sup>3</sup>                                       | ASTM D 1505                                    | 1/50,000 ft <sup>2</sup>  | 0.94                                      |
| Tensile Strength (MD), lb/in                                     | ASTM D 7179                                    | 1/50,000 ft <sup>2</sup>  | 100                                       |
| Carbon Black Content, %  | ASTM D 4218                                    | 1/50,000 ft <sup>2</sup>  | 2.0                                       |
| Compressive Strength, psf  | ASTM D 6364                                    | 1/540,000 ft <sup>2</sup> | 50,000                                    |
| <b>Top Composite Geotextile<sup>(1,3)</sup></b>                  |  |                           |   |
| Structure  | Hybrid monolithic woven-nonwoven needlepunched |                           |   |
| Mass per Unit Area, oz/yd <sup>2</sup>                           | ASTM D 5261                                    | 1/90,000 ft <sup>2</sup>  | 14  |
| Grab Tensile Strength, lb  | ASTM D 4632                                    | 1/90,000 ft <sup>2</sup>  | 200                                       |
| CBR Puncture Strength, lb  | ASTM D 6241                                    | 1/90,000 ft <sup>2</sup>  | 775                                       |
| Trapezoidal Tear Strength, lb                                    | ASTM D 4533                                    | 1/90,000 ft <sup>2</sup>  | 85  |
| AOS, US Sieve (mm)   | ASTM D 4751                                    | 1/540,000 ft <sup>2</sup> | 170 (0.09)                                |
| Permittivity, (sec <sup>-1</sup> )                               | ASTM D 4491                                    | 1/500,000 ft <sup>2</sup> | 0.3                                       |
| Water Flow Rate, gpm/ft <sup>2</sup>                             | ASTM D 4491                                    | 1/500,000 ft <sup>2</sup> | 20  |
| UV Resistance, % retained  | ASTM D 4355 (after 500 hours)                  | per formulation           | 70  |
| Field Basin Tests  |  | per formulation           | see note <sup>(5)</sup>                   |

[Product specifications continued on back]



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### Product Specifications [continued]

| Tested Property                              | Test Method                      | Frequency                 | Minimum Average Roll Value <sup>(1)</sup> |
|--|----------------------------------|---------------------------|---|
| <b>Bottom Geotextile</b>                     |                                  |                           |   |
| Mass per Unit Area, oz/yd <sup>2</sup>       | ASTM D 5261                      | 1/90,000 ft <sup>2</sup>  | 6   |
| Grab Tensile Strength, lb                    | ASTM D 4632                      | 1/90,000 ft <sup>2</sup>  | 160                                       |
| Grab Elongation                              | ASTM D 4632                      | 1/90,000 ft <sup>2</sup>  | 50%                                       |
| CBR Puncture Strength, lb                    | ASTM D 6241                      | 1/540,000 ft <sup>2</sup> | 435                                       |
| Trapezoidal Tear Strength, lb                | ASTM D 4533                      | 1/90,000 ft <sup>2</sup>  | 65  |
| AOS, US Sieve (mm)                           | ASTM D 4751                      | 1/540,000 ft <sup>2</sup> | 70 (0.212)                                |
| Permittivity, (sec <sup>-1</sup> )           | ASTM D 4491                      | 1/540,000 ft <sup>2</sup> | 1.5                                       |
| Water Flow Rate, gpm/ft <sup>2</sup>         | ASTM D 4491                      | 1/540,000 ft <sup>2</sup> | 110                                       |
| UV Resistance, % retained                    | ASTM D 4355<br>(after 500 hours) | per formulation           | 70  |
| <b>TYPICAL ROLL DIMENSIONS<sup>(4)</sup></b> |                                  |                           |   |
| Roll Width, ft                               |                                  |                           | 15  |
| Roll Length, ft                              |                                  |                           | 130                                       |
| Roll Area, ft <sup>2</sup>                   |                                  |                           | 1,950                                     |

NOTES:

- <sup>(1)</sup>All geotextile are minimum average roll values except AOS which is maximum average roll value and UV resistance is typical value. Geonet core thickness is nominal value.
- <sup>(2)</sup>Gradient of 0.1, normal load of 30,000 psf, water at 70° F between steel plates for 15 minutes. Contact GSE for performance transmissivity value for use in design.
- <sup>(3)</sup>Component properties prior to lamination.
- <sup>(4)</sup>Roll widths and lengths have a tolerance of ±1%.
- <sup>(5)</sup>Filter compatibility with a minimum of three types of CCP materials (fly ash, stabilized FGD, and FGD gypsum) under simulated field conditions.

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.