

# High Performance GSE Green Smooth Geomembrane

## METRIC

High Performance GSE Green Smooth is a co-extruded high density polyethylene (HDPE) geomembrane specifically designed to be used in the most stringent applications. This product has a UV stabilized, green upper surface that improves the aesthetics of closure applications for the community. It is primarily used in exposed applications, which can eliminate the need for cover soil and vegetative layers. This product contains only the finest raw materials to enable exceptional elasticity, environmental stress crack resistance, and excellent multi-axial break resistance. Included in this product is a custom additive package that has been engineered to enable extended geomembrane lifetime and improved resilience in elevated temperatures, hazardous waste containment, or a harsh chemical environment. In addition to a superior UV stabilization package, a well-dispersed premium grade of carbon black is utilized in the black layers to deliver superb UV resistance in exposed applications.



**AT THE CORE:**  
Ideal for use in exposed applications where aesthetics are an issue, this geomembrane can eliminate the need for cover soil and vegetative layers.

### Product Specifications

These product specifications exceed GRI GM13

| Tested Property                                                                                                                               | Test Method                                                                 | Frequency       | Minimum Average Value |                       |                       |                       |                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                                                                                                                               |                                                                             |                 | 0.75 mm               | 1.00 mm               | 1.50 mm               | 2.00 mm               | 2.50 mm               |
| Thickness, mm<br>Lowest individual reading                                                                                                    | ASTM D 5199                                                                 | every roll      | 0.75<br>0.68          | 1.00<br>0.90          | 1.50<br>1.35          | 2.00<br>1.80          | 2.50<br>2.25          |
| Density, g/cm <sup>3</sup>                                                                                                                    | ASTM D 1505                                                                 | 90,000 kg       | 0.94                  | 0.94                  | 0.94                  | 0.94                  | 0.94                  |
| Tensile Properties (each direction)<br>Strength at Break, N/mm<br>Strength at Yield, N/mm<br>Elongation at Break, %<br>Elongation at Yield, % | ASTM D 6693, Type IV<br>Dumbbell, 50 mm/min<br><br>G.L. 50 mm<br>G.L. 33 mm | 9,000 kg        | 21<br>11<br>800<br>13 | 27<br>15<br>800<br>13 | 42<br>23<br>800<br>13 | 57<br>31<br>800<br>13 | 71<br>37<br>800<br>13 |
| Tear Resistance, N                                                                                                                            | ASTM D 1004                                                                 | 20,000 kg       | 93                    | 125                   | 187                   | 257                   | 324                   |
| Puncture Resistance, N                                                                                                                        | ASTM D 4833                                                                 | 20,000 kg       | 289                   | 378                   | 556                   | 711                   | 867                   |
| Multi-axial Break Resistance, %                                                                                                               | ASTM D 5617                                                                 | per formulation | 30                    | 30                    | 30                    | 30                    | 30                    |
| Carbon Black Content <sup>(1)</sup> , % (Range)                                                                                               | ASTM D 1603*/4218                                                           | 9,000 kg        | 2.0 - 3.0             | 2.0 - 3.0             | 2.0 - 3.0             | 2.0 - 3.0             | 2.0 - 3.0             |
| Carbon Black Dispersion                                                                                                                       | ASTM D 5596                                                                 | 20,000 kg       | Note <sup>(2)</sup>   | Note <sup>(2)</sup>   | Note <sup>(2)</sup>   | Note <sup>(2)</sup>   | Note <sup>(2)</sup>   |
| Notched Constant Tensile Load, hr                                                                                                             | ASTM D 5397, Appendix                                                       | 90,000 kg       | 1,000                 | 1,000                 | 1,000                 | 1,000                 | 1,000                 |
| Oxidative Induction Time, mins                                                                                                                | ASTM D 3895,<br>200°C; O <sub>2</sub> , 1 atm                               | 90,000 kg       | >160                  | >160                  | >160                  | >160                  | >160                  |
| High Pressure Oxidative Induction Time, mins                                                                                                  | ASTM D 5885,<br>150°C; O <sub>2</sub> , 3.4 MPa                             | per formulation | >800                  | >800                  | >800                  | >800                  | >800                  |
| Oven aging at 85°C<br>High Pressure OIT (min. avg.) - % retained<br>after 90 days                                                             | ASTM D 5721<br>ASTM D 5885                                                  | per formulation | 80                    | 80                    | 80                    | 80                    | 80                    |
| UV Resistance<br>High Pressure OIT (min. avg.) - % retained<br>after 1,600 hours                                                              | GM 11<br>ASTM D 5885                                                        | per formulation | 80                    | 80                    | 80                    | 80                    | 80                    |
| <b>TYPICAL ROLL DIMENSIONS</b>                                                                                                                |                                                                             |                 |                       |                       |                       |                       |                       |
| Roll Length <sup>(3)</sup> , m                                                                                                                |                                                                             |                 | 341                   | 265                   | 171                   | 131                   | 104                   |
| Roll Width <sup>(3)</sup> , m                                                                                                                 |                                                                             |                 | 6.86                  | 6.86                  | 6.86                  | 6.86                  | 6.86                  |
| Roll Area, m <sup>2</sup>                                                                                                                     |                                                                             |                 | 2,339                 | 1,818                 | 1,173                 | 899                   | 713                   |

[Product specifications continued on back]

**Product Specifications [continued]**

NOTES:

- <sup>(1)</sup>High Performance GSE Green Smooth may have an overall ash content of 3.0% due to the green layer. These values apply to the black layer only.
- <sup>(2)</sup>Dispersion applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
- <sup>(3)</sup>Roll lengths and widths have a tolerance of ±1%.
- High Performance GSE Green Smooth is available in rolls weighing approximately 1,800 kg.
- All GSE geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of <-77° C when tested according to AST

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.