**TECHNICAL DATA SHEET**

# GSE HD 60mil/1.50mm A Black Smooth 1101438

The GSE® HD Standard Geomembrane series are produced from high-quality, high-density polyethylene (HDPE) formulations produced to meet or exceed the industry standard GRI GM 13 for HDPE geomembrane barriers.

| PROPERTY(1) | TEST METHOD | FREQUENCY | UNIT Imperial | Value |
|---|---|---|---|---|
| Thickness (min. avg.) | ASTM D5199 | Every roll | mils | 60.0 |
| Thickness (min.) | ASTM D5199 | Every roll | mils | 54 |
| Resin Density | ASTM D1505 | One per batch | g/cc | > 0.932 |
| Melt Index - 190°C/2.16 kg (max.) | ASTM D1238 | One per batch | g/10 min | 1.0 |
| Density | ASTM D792 | Every 10 rolls | $g/cm^3$ | ≥ 0.940 |
| Carbon Black Content | ASTM D4218 | Every 2 rolls | % | 2.0 - 3.0 |
| Carbon Black Dispersion | ASTM D5596 | Every 10 rolls | Category | Cat. 1 & Cat. 2 |
| OIT - Standard (min. avg.) | ASTM D8117 | One per batch | min | 100 |
| Tensile Properties (min. avg) (2) | ASTM D6693 | Every 2 rolls | | |
| Strength at Yield | | | lbs/in | 132 |
| Elongation at Yield | | | % | 13 |
| Strength at Break | | | ppi | 243 |
| Elongation at Break | | | % | 700 |
| Tear Resistance (min. avg.) | ASTM D1004 | Every 5 rolls | lbf | 42 |
| Puncture Resistance (min. avg.) | ASTM D4833 | Every 5 rolls | lbf | 120 |
| Dimensional Stability | ASTM D1204 | Certified | % | ± 2 |
| Stress Crack Resistance (SP-NCTL) | ASTM D5397 | One per batch | hr | 500 |
| Oven Aging - % retained after 90 days | ASTM D5721 | Per formulation | | |
| HP-OIT (min. avg.) | ASTM D5885 | | % | 80 |
| UV Resistance - % retained after 1,600 hr | ASTM D7238 | Per formulation | | |
| HP-OIT (min. avg.) | ASTM D5885 | | % | 50 |
| Low Temperature Brittleness | ASTM D746 | Certified | °F | - 106 |

## SUPPLY SPECIFICATIONS(Roll dimensions may vary ±1%)

| | | | |
|---|---|---|---|
| Roll Dimension - Width | - | ft | 22.5 |
| Roll Dimension - Length | - | ft | 560 |
| Area (Surface/Roll) | - | $ft^2$ | 12600 |

1. Testing frequency based on standard roll dimensions and one batch is approximately 180,000 lbs (or one railcar).
2. Machine Direction (MD) and Cross Machine Direction (XMD or TD) average values should be on the basis of 5 specimens each direction.

* All values are nominal test results, except when specified as minimum or maximum.
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