

**GSE HD** is a smooth, high quality, high density polyethylene (HDPE) geomembrane produced from specially formulated, virgin polyethylene resin. This polyethylene resin is designed specifically for flexible geomembrane applications. It contains approximately 97.5% polyethylene, 2.5% carbon black and trace amounts of antioxidants and heat stabilizers; no other additives, fillers or extenders are used. **GSE HD** has outstanding chemical resistance, mechanical properties, environmental stress crack resistance, dimensional stability and thermal aging characteristics. **GSE HD** has excellent resistance to UV radiation and is suitable for exposed conditions. These product specifications meet or exceed GRI GM 13.

PRODUCT SPECIFICATIONS							
TASTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM VALUE				
<b>Product Code</b>			HDE 030A000	HDE 040A000	HDE 060A000	HDE 080A000	HDE 100A000
Thickness, mil (mm) or per project specs	ASTM D 5199	every roll	27 (0.69)	36 (0.91)	54 (1.4)	72 (1.8)	90 (2.3)
Density, g/cm <sup>3</sup>	ASTM D 1505	200,000 lb	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV	20,000 lb					
Strength at Break, lb/in-width (N/mm)	Dumbell, 2 imp		122 (21)	162 (28)	243 (43)	324 (57)	405 (71)
Strength at Yield, lb/in-width (N/mm)			63 (11)	84 (15)	130 (23)	173 (30)	216 (38)
Elongation at Break, %	G.L. 2.0 in (51 mm)		700	700	700	700	700
Elongation at Yield, %	G.L. 1.3 in (33 mm)		13	13	13	13	13
Tear Resistance, lb (N)	ASTM D 1004	45,000 lb	21 (93)	28 (125)	42 (187)	56 (249)	70 (311)
Puncture Resistance, lb (N)	ASTM D 4833	45,000 lb	59 (263)	79 (352)	199 (530)	158 (703)	198 (8819)
Carbon Black Content, %	ASTM D 1603	20,000 lb	2.0	2.0	2.0	2.0	2.0
Carbon Black Dispersion	ASTM D 5596	45,000 lb	+Note 1	+Note 1	+Note 1	+Note 1	+Note 1
Notched Constant Tensile Load, hrs	ASTM D 5397, Appendix	200,000 lb	400	400	400	400	400
TASTED PROPERTY	TEST METHOD	FREQUENCY	MINIMUM VALUE				
Oxidative Induction Time, minutes	ASTM D 3895, 200° C; O <sub>2</sub> , 1 atm	200,000 lb	>100	>100	>100	>100	>100
Roll length (approximate), ft (m)			1,120 (341)	870 (265)	560 (171)	430 (131)	340 (104)
Roll Width, ft (m)			22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)	22.5 (6.9)
Roll Area, ft <sup>2</sup> (m <sup>2</sup> )			25,200 (2,341)	19,575 (1,819)	12,600 (1,171)	9,675 (899)	7,650 (711)

## NOTES:

- \* NOTE 1: Dispersion only applies to near spit rico! agglomerates. 9 010 views shall be Category 1 or 2. No more than 1 vi w from Category 3.
- GSE HD is available in rolls weighing about 3,900 1611,769 kg)
- All GSE geomembranes have dimensional sw illy 062% when tested with ASTM 13 1204 and LIB of <77° C when tested w 1h ASTM D 746.