



GSE STANDARD PRODUCTS

Product Data Sheet

GSE GundSeal GCL (Smooth HDPE)

GSE GundSeal geosynthetic clay liner (GCL) consists of approximately 0.75 lb/ft² (3.66 kg/m²) of high quality sodium bentonite adhered to a high density polyethylene (HDPE) geomembrane using a non-toxic adhesive. The GundSeal GCL combines the high swelling and sealing characteristics of bentonite clay with the low permeability of HDPE geomembrane. A protective 0.75 oz/yd² (25 g/m²) spunbonded geotextile is adhered to the bentonite surface to protect the bentonite during product installation. The smooth HDPE geomembrane backing for the GSE GundSeal GCL is available in thicknesses up to 80 mil (2.0 mm).



GSE Advantage Products
GSE GundSeal • GSE Conductive • GSE White • GSE PermaNet • GSE BioDrain System

Product Specifications

FINISHED GCL PROPERTIES	TEST METHOD	FREQUENCY	MINIMUM AVERAGE VALUE			
Product Code			SEG 015A000	SEG 040A000	SEG 060A000	SEG 080A000
Bentonite Coating ⁽¹⁾ , lb/ft ² (kg/m ²)	ASTM D 5993	1/40,000 ft ² (1/4000 m ²)	≥ 0.75 (3.66)			
Effective Hydraulic Conductivity, m/s	ASTM D 5887/E 96	periodically	≤ 4 x 10 ⁻¹⁴			
Bentonite Moisture Content	ASTM D 2216	1/40,000 ft ² (1/4000 m ²)	25% Typical			
GEOMEMBRANE PROPERTIES ⁽²⁾						
Thickness, (minimum average) mil (mm)	ASTM D 5199	1/100,000 ft ² (1/10,000 m ²)	15 (0.40)	40 (1.00)	60 (1.50)	80 (2.00)
Lowest individual reading (-10%)			14 (0.34)	36 (0.91)	54 (1.35)	72 (1.80)
Density, g/cm ³	ASTM D 1505	1/200,000 ft ² (1/20,000 m ²)	0.94	0.94	0.94	0.94
Tensile Properties						
Tensile Break Strength ⁽³⁾ , lb/in (N/mm)	ASTM D 6693	1/200,000 ft ² (1/20,000 m ²)	23 (4)	152 (27)	228 (40)	304 (53)
GCL Tensile Strength ⁽⁴⁾ , lb/in (N/mm)	ASTM D 6768	1/200,000 ft ² (1/20,000 m ²)	20 (3)	84 (15)	130 (23)	173 (30)
Elongation at Break, %	ASTM D 6693	1/200,000 ft ² (1/20,000 m ²)	500	700	700	700
Puncture Resistance, lb (N)	ASTM D 4833	1/200,000 ft ² (1/20,000 m ²)	20 (89)	72 (320)	108 (480)	144 (640)
SODIUM BENTONITE PROPERTIES						
Hydraulic Flux: Bentonite, m ³ /m ² •sec	ASTM D 5887	periodically	≤ 1 x 10 ⁻⁸			
Hydraulic Conductivity, m/s	ASTM D 5084	periodically	≤ 5 x 10 ⁻¹¹			
Free Swell, ml/2 g	ASTM D 5890	1/60,000 lb (1/30,000 kg)	≥ 24			
Fluid Loss, ml	ASTM D 5891	1/60,000 lb (1/30,000 kg)	≤ 18			
TYPICAL ROLL DIMENSIONS						
Roll Width ⁽⁵⁾ , ft (m)			17.5 (5.3)	17.5 (5.3)	17.5 (5.3)	17.5 (5.3)
Roll Length ⁽⁵⁾ , ft (m)			200 (61)	180 (54)	180 (54)	150 (45)
Roll Area, ft ² (m ²)			3,500 (325)	3,150 (286)	3,150 (286)	2,625 (244)
Roll Weight, lb (kg)			4,500 (2,050)	4,200 (1,900)	4,500 (2,050)	4,300 (1,950)

NOTES:

- ⁽¹⁾0% moisture content.
- ⁽²⁾See specific GSE HD geomembrane product data sheet for additional information.
- ⁽³⁾Type IV Dumbell, 2 in/min (51 mm/min), 2 in (51 mm) gage length.
- ⁽⁴⁾4 in (101 mm) wide sample, 12 in/min (305 mm/min). Values are representative of the geomembrane tensile yield strength.
- ⁽⁵⁾Roll lengths and widths have a tolerance of ± 1%.

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