

# GSE BentoLiner NSL Geosynthetic Clay Liner

GSE BentoLiner “NSL” is a needle-punched reinforced composite geosynthetic clay liner (GCL) comprised of a uniform layer of granular sodium bentonite encapsulated between a woven and a nonwoven geotextile. The product is intended for moderate to steep slopes and moderate to high load applications where increased internal shear strength is required.



## AT THE CORE:

This composite clay liner is intended for moderate to steep slopes and moderate to high load applications where increased internal shear strength is required.

## Product Specifications

Tested Property	Test Method	Frequency	Value
<b>Geotextile Property</b>			
Cap Nonwoven, Mass/Unit Area	ASTM D 5261	1/200,000 ft <sup>2</sup>	6.0 oz/yd <sup>2</sup> MARV <sup>(1)</sup>
Carrier Woven, Mass/Unit Area	ASTM D 5261	1/200,000 ft <sup>2</sup>	3.1 oz/yd <sup>2</sup> MARV
<b>Bentonite Property</b>			
Swell Index	ASTM D 5890	1/100,000 lb	24 ml/2 g min
Moisture Content	ASTM D 4643	1/100,000 lb	12% max
Fluid Loss	ASTM D 5891	1/100,000 lb	18 ml max
<b>Finished GCL Property</b>			
Bentonite, Mass/Unit Area <sup>(2)</sup>	ASTM D 5993	1/40,000 ft <sup>2</sup>	0.75 lb/ft <sup>2</sup> MARV
Tensile Strength <sup>(3)</sup>	ASTM D 6768	1/40,000 ft <sup>2</sup>	30 lb/in MARV
Peel Strength	ASTM D 6496 ASTM D 4632 <sup>(4)</sup>	1/40,000 ft <sup>2</sup>	3.5 lb/in MARV 21 lb MARV
Hydraulic Conductivity <sup>(5)</sup>	ASTM D 5887	1/Week	5 x 10 <sup>-9</sup> cm/sec max
Index Flux <sup>(5)</sup>	ASTM D 5887	1/Week	1 x 10 <sup>-8</sup> m <sup>3</sup> /m <sup>2</sup> /sec max
Internal Shear Strength <sup>(6)</sup>	ASTM D 6243	Periodically	500 psf Typical
<b>TYPICAL ROLL DIMENSIONS</b>			
Width x Length <sup>(7)</sup>	Typical	Every Roll	15.5 ft x 150 ft
Area per Roll	Typical	Every Roll	2,325 ft <sup>2</sup>
Packaged Weight	Typical	Every Roll	2,600 lb

NOTES:

- <sup>(1)</sup>Minimum Average Roll Value.
- <sup>(2)</sup>At 0% moisture content.
- <sup>(3)</sup>Tested in machine direction.
- <sup>(4)</sup>Modified ASTM D 4632 to use a 4 in wide grip. The maximum peak of five specimens averaged in machine direction.
- <sup>(5)</sup>Deaired, deionized water @ 5 psi maximum effective confining stress and 2 psi head pressure.
- <sup>(6)</sup>Typical peak value for specimen hydrated for 24 hours and sheared under a 200 psf normal stress.
- <sup>(7)</sup>Roll widths and lengths have a tolerance of ±1%.

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.