

**BentoLiner® NWL Geosynthetic Clay Liner**

Metric

BentoLiner® “NWL” is a needlepunched reinforced composite geosynthetic clay liner (GCL) comprised of a uniform layer of granular sodium bentonite encapsulated between a nonwoven and a scrim-nonwoven geotextile for dimensional stability. The product 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	1/20,000 m <sup>2</sup>	200 g/m <sup>2</sup> MARV <sup>(1)</sup>
Carrier Woven, Mass/Unit Area	ASTM D 5261	1/20,000 m <sup>2</sup>	200 g/m <sup>2</sup> MARV
<b>BENTONITE PROPERTY</b>			
Swell Index	ASTM D 5890	1/50,000 kg	24 ml/2 g min
Moisture Content	ASTM D 4643	1/50,000 kg	12% max
Fluid Loss	ASTM D 5891	1/50,000 kg	18 ml max
<b>FINISHED GCL PROPERTY</b>			
Bentonite, Mass/Unit Area <sup>(2)</sup>	ASTM D 5993	1/4,000 m <sup>2</sup>	3.66 kg/m <sup>2</sup> MARV
Tensile Properties Tensile Strength <sup>(3)</sup>	ASTM D 6768	1/4,000 m <sup>2</sup>	7.8kN/m MARV
Peel Strength <sup>(3)</sup>	ASTM D 6496 ASTM D 4632 <sup>(4)</sup>	1/4,000 m <sup>2</sup>	610 N/m MARV 93 N 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	24 kPa Typical
<b>TYPICAL ROLL DIMENSIONS</b>			
Width x Length <sup>(7)</sup>	Typical	Every roll	4.7 m x 45.7 m
Area per Roll	Typical	Every roll	216 m <sup>2</sup>
Packaged Weight	Typical	Every roll	1,179 kg

**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 100 mm wide grip. The maximum peak of five specimens averaged in machine direction.
- <sup>(5)</sup> Deaired, deionized water @ 34.5 kPa maximum effective confining stress and 13.8 kPa head pressure.
- <sup>(6)</sup> Typical peak value for specimen hydrated for 24 hours and sheared under a 9.6 kPa normal stress.
- <sup>(7)</sup> Roll widths and lengths have a tolerance of ±1%.

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**SOLMAX GEOSYNTHETICS LLC**  
19103 GUNDLE ROAD, HOUSTON, TX 77073, USA

**SOLMAX.COM**