



## Technical Data Sheet

# BENTOFIX “CNS Series” – Geosynthetic Clay Liner

The woven fabric in the bottom layer of the “CNS Series” GCL is coated with a low permeability polypropylene membrane to lower the hydraulic conductivity.

Bentonite Properties	Test Method	Frequency	Bentonite	
			Metric Units	English Units
Swell Index ( <i>min.</i> )	ASTM D5890	1 / 50,000 kg ( 100,000 lbs )	24 ml / 2 g	24 ml / 2 g
Moisture Content ( <i>max.</i> )	ASTM D4643	1 / 50,000 kg ( 100,000 lbs )	12%	12%
Fluid Loss ( <i>max.</i> )	ASTM D5891	1 / 50,000 kg ( 100,000 lbs )	18 ml	18 ml

Geotextile Properties	Test Method	Frequency	Geotextiles	
			Metric Units	English Units
Weight ( <i>MARV</i> ) <i>Non-Woven Cap</i> <i>Woven Bottom</i>	ASTM D5261	1 / 20,000 m <sup>2</sup> ( 200,000 ft <sup>2</sup> )	200 g / m <sup>2</sup> 105 g / m <sup>2</sup>	6.0 oz / yd <sup>2</sup> 3.1 oz / yd <sup>2</sup>

GCL Properties	Test Method	Frequency	CNS Series	
			Metric Units	English Units
Dimensions <i>Width x Length</i> <i>Area per Roll</i>	Nominal	Every Roll	4.7 x 45.72 m 216 m <sup>2</sup>	15.5 x 150.0 ft 2325 ft <sup>2</sup>
Bentonite Mass ( <i>per Unit Area, MARV</i> ) <sup>1</sup>	ASTM D5993	1 / 4,000 m <sup>2</sup> ( 40,000 ft <sup>2</sup> )	3.66 kg / m <sup>2</sup> Unless specified <sup>6</sup>	0.75 lb / ft <sup>2</sup> Unless specified <sup>6</sup>
Permeability ( <i>max.</i> ) <sup>2</sup>	ASTM D5084 ASTM E96	1 / 10,000 m <sup>2</sup> ( 100,000 ft <sup>2</sup> )	5 x 10 <sup>-10</sup> cm / sec 5 x 10 <sup>-13</sup> cm / sec	5 x 10 <sup>-10</sup> cm / sec 5 x 10 <sup>-13</sup> cm / sec
Index Flux ( <i>max.</i> ) <sup>2</sup>	ASTM D5887	Weekly	1 x 10 <sup>-9</sup> m <sup>3</sup> / m <sup>2</sup> / sec	1 x 10 <sup>-9</sup> m <sup>3</sup> / m <sup>2</sup> / sec
Peel Strength ( <i>min.</i> ) <sup>3</sup>	ASTM D4632	1 / 4,000 m <sup>2</sup> ( 40,000 ft <sup>2</sup> )	93 N	21 lbf
Tensile Strength ( <i>MARV</i> ) <sup>4</sup>	ASTM D4632	1 / 4,000 m <sup>2</sup> ( 40,000 ft <sup>2</sup> )	5 kN / m	30 lbs / in
Internal Shear Strength <sup>5</sup>	ASTM D6243	Periodic	24 kPa	500 lbs / ft <sup>2</sup>

1. Oven-dried measurement. Equates to 0.84 lbs when indexed to a 12% moisture content.
2. De-Aired Tap Water @ 5 psi maximum effective confining stress and 2 psi head.
3. Modified to use a 4-inch wide grip. The maximum peak of five specimens averaged.
4. Tested in machine direction.
5. Typical peak value for specimen hydrated for 24 hr. and sheared under a 200 psf normal stress.
6. All Bentofix CNS Series will contain 0.75 lb/sq.ft. (3.66 kg/sq.m.) MARV unless specified by the client to be higher or lower in bentonite content.

Updated: 4/17/2014