

FIX – 501CNS Series

BENTOFIX[®]

“CNS Series” Geosynthetic Clay Liner

• Technical Bulletin •

Bentofix “CNS Series” is a needlepunch reinforced GCL comprised of a uniform layer of granular sodium bentonite encapsulated between a slit-film woven and a virgin staple fiber nonwoven geotextile. The bottom woven fabric is coated with a low permeability polypropylene membrane to lower the hydraulic conductivity.

GEOTEXTILE PROPERTIES	TEST METHOD	MINIMUM TEST FREQUENCY	VALUE - ENGLISH -	VALUE - SI -
Cap Nonwoven Mass/Unit Area	ASTM D 5261	1/200,000 sq. ft (1/20,000 sq. m)	6.0 oz./yd ² MARV	200 g / m ² MARV
Woven Scrim Mass/Unit Area	ASTM D 5261	1/200,000 sq. ft (1/20,000 sq. m)	3.1 oz./yd ² MARV	105 g / m ² MARV

BENTONITE PROPERTIES	TEST METHOD	MINIMUM TEST FREQUENCY	VALUE - ENGLISH -	VALUE - SI -
Swell Index	ASTM D 5890	1/100,000 lbs. (50,000 kg)	24 ml / 2g min.	24 ml / 2g min.
Moisture Content	ASTM D 4643	1/100,000 lbs. (50,000 kg)	12 % max.	12 % max.
Fluid Loss	ASTM D 5891	1/100,000 lbs. (50,000 kg)	18 ml max.	18 ml max.

FINISHED GCL PROPERTIES	TEST METHOD	MINIMUM TEST FREQUENCY	VALUE - ENGLISH -	VALUE - SI -
Bentonite Mass Per Unit Area ¹	ASTM D 5993	1/40,000 sq. ft (1/4,000 sq. m)	0.75 lb. / sq. ft MARV Unless specified ⁶	3.66 kg / m ² MARV Unless specified ⁶
Grab Strength ²	ASTM D 4632	1/40,000 sq. ft (1/4,000 sq. m)	95 lbs MARV	422 N MARV
Peel Strength ³	ASTM D 4632	1/40,000 sq. ft (1/4,000 sq. m)	15 lbs. min.	66 N
Permeability ⁴	ASTM D 5084 Via ASTM E96	1/100,000 sq. ft (1/10,000 sq. m)	5 x 10 ⁻⁹ cm/sec max 5 x 10 ⁻¹³ cm/sec max	5 x 10 ⁻⁹ cm/sec max 5 x 10 ⁻¹³ cm/sec max
Index Flux ⁴	ASTM D 5887	1/Week	1 x 10 ⁻⁸ m ³ /m ² /sec max	1 x 10 ⁻⁸ m ³ /m ² /sec max
Internal Shear Strength ⁵	ASTM D 6243	Periodic	500 psf Typical	24 kPa Typical

DIMENSIONS	TEST METHOD	MINIMUM TEST FREQUENCY	VALUE - ENGLISH -	VALUE - SI -
Width x Length	nominal	Every Roll	15.5 x 150 ft	4.7 x 45.72 m
Area per Roll	nominal	Every Roll	2325 ft ²	216 m ²
Packaged Weight	typical	Every Roll	2600 lbs	1179 kg

- Oven-dried measurement. Equates to 0.84 lbs when indexed to a 12% moisture content.
- Measured at maximum peak, in weakest principal direction.
- Modified to use a 4 inch wide grip. The maximum peak of five specimens averaged.
- De-Aired Tap Water @ 5 psi maximum effective confining stress and 2 psi head.
- Typical peak value for specimen hydrated for 24 hr. and sheared under a 200 psf normal stress.
- 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.