BENTOFIX® CSRNWL

Geofilm Scrim-Reinforced GCL

Thermal Lock® Geosynthetic Clay Liners

Bentofix Thermal Lock® CSRNWL Series Geosynthetic Clay Liner (GCL) is a needlepunched, thermally reinforced composite comprised of a core of natural Wyoming sodium bentonite clay between two durable geotextile layers to form a low permeability hydraulic barrier. The top layer is a thick staple fiber nonwoven (NW) geotextile while the bottom layer is a scrim reinforced nonwoven (SRNW) geotextile with a polypropylene geofilm applied to it. The product is intended for steep slopes and high load applications where increased internal shear strength is required and/or where conditions are rough in nature, prevent shrinkage below geomembranes, and/or where hydraulic head conditions may apply and/or where the product requires excellent hydraulic conductivity properties. Overall, this product has a high peel strength while having a very low permeability in the range of a geomembrane.

Property	ASTM Test Method	Frequency	Value Imperial Units	Value Metric Units
Typical Geotextile Properties				
• Top / Cap Nonwoven	D 5261	200,000 sq ft	6.0 oz./yd^2 MARV	200 g / m^2 MARV(1)
• Scrim Reinforced Nonwoven Bottom Fabric	D 5261	(20,000 m^2)	6.0 oz./yd^2 MARV	200 g / m^2 MARV
• Mass per unit area of flexible geofilm liner[5]	D5993	200,000 sq ft	8.85 oz./yd^2 MARV	300 g/m^2 MARV
Bentonite Properties				
• Swell Index	D 5890	100,000 lbs.	24 ml/ 2 g min	24 ml/ 2 g min
• Moisture Content	D 4643	(50,000 kg)	12 % max	12 % max
• Fluid Loss	D 5891	100,000 lbs.	18 ml max	18 ml max
Finished GCL Properties				
• Bentonite Mass/Unit Area[2]	D 5993	40,000 ft^2 (4,000 m^2)	0.75 lbs/ft^2 MARV	3.66 kg/m^2 MARV
• Tensile Strength	D 6768	40,000 ft^2 (4,000 m^2)	50 lb/in MARV	8.8 kN/m MARV
• Peel Strength	D 6496	40,000 ft^2 (4,000 m^2)	4.5 lbs/in min	785 N/m min
• Permeability[3]	D 5887	Weekly	5 x 10^{-10} cm/s max	5 x 10^{-10} cm/s max 5 x 10^{-13}/cm/s E96
• Index Flux[3]	D 5887	Weekly	1 x 10^{-9} m^3/m^2/s max	1 x 10^{-9} m^3/m^2/s max
• Internal Shear Strength[4]	D 6243	Periodic	500 psf Typical	24 kPa Typical

(1) Minimim Average Roll Value.
(2) Oven-dried measurement. Equates to 0.84 lb/sqft (4.1 kg/sqm) when indexed to 12% moisture content.
(3) Deaired, deionized water @ 5 psi (34.5 kPa) maximum effective confining stress and 2 psi (13.8 kPa) head pressure.
(4) Typical peak value for specimen hydrated for 24 hours and sheared under a 200 psf (9.6 kPa) normal stress.
(5) Reflected in GCL Mass per Unit Area via D5993.Rolls will be labelled as CNW.
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