



CETCO's Lining Technologies Group is a leader in the field of geosynthetic clay liners and soil sealants. Our **Bentomat®** and **Claymax®** lines of geosynthetic clay liners (GCLs) are bentonite and geotextile composites engineered for use in a variety of lining applications, including:

- landfills
- lagoons
- ponds and reservoirs
- secondary containment/tank farms

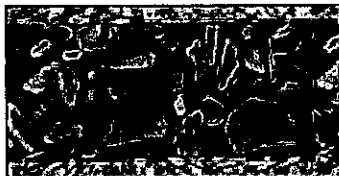
CETCO's GCLs offer several advantages over traditional compacted clay liners - improved hydraulic performance, easier installation and use of less air space within a landfill. Because of their unique self-healing sodium bentonite base, our liners resist cracking that typically occurs in compacted clay liners subjected to repeated freeze/thaw conditions. CETCO's patented manufacturing process utilizes a needle punched technique which encapsulates sodium bentonite between two layers of geotextile, inhibiting migration of the clay in its dry or hydrated state. CETCO's sodium bentonite is used in slurry wall applications.

We also offer chemically treated soil sealants that can withstand contact with both contaminated and uncontaminated water.

Through testing conducted at our on-site laboratory, we will determine the correct technology and application rate to meet your project's special needs.



Claymax® 200R is a non-reinforced GCL with two lightweight geotextiles encapsulating a layer of Volclay® sodium bentonite. Ideally suited for mild slopes, Claymax 200R maximizes both performance and value in one ingeniously straightforward product. A completely self-seaming GCL, there's simply no better GCL than Claymax 200R for lining the flat areas of a landfill.



Claymax® 600CL is a non-reinforced GCL consisting of two lightweight geotextiles encapsulating a layer of Volclay sodium bentonite with a composite laminate applied to one of the geotextiles. CLAYMAX 600CL is the ideal solution for flat areas of landfill caps and high hydraulic head conditions in bottom liner applications.



Bentomat® ST is a reinforced GCL consisting of a layer of Volclay® sodium bentonite encapsulated between two geotextiles, needlepunched together for maximum performance under a wide variety of field conditions. This integrated matrix of bentonite and needlepunched fibers provides high shear strength and allows Bentomat to maintain low permeability. Bentomat ST has a woven, slit-film upper geotextile for maximizing intimate contact in composite liner systems.



Bentomat® DN is a reinforced needlepunched GCL that not only has high internal shear strength, but also provides excellent interface friction on both sides of the GCL. Bentomat DN is ideally suited for steep-slope liner/cover systems where intimate geomembrane contact is less critical than overall liner system stability.



Bentomat® CL is a reinforced GCL composed of two carrier geotextiles needlepunched together to encapsulate a layer of Volclay sodium bentonite. A composite lamination gives the GCL excellent hydraulic performance and provided puncture and tensile strengths beyond conventional plastic membranes. Bentomat CL is ideal for landfills, ponds, surface impoundments and other containment projects.



[GCL PROPERTIES]

Bentomat® ST Certified Properties

TR-404bm - CETCO Reference Number
5-29-98

MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY, ft ² (m ²)	REQUIRED VALUES
Bentonite Swell Index ¹	ASTM D 5890	1 per 50 tonnes	24 mL/2g min.
Bentonite Fluid Loss ¹	ASTM D 5891	1 per 50 tonnes	18 mL max.
Bentonite Mass/Area ²	ASTM D 5993	40,000 ft ² (4,000 m ²)	0.75 lb/ft ² (3.6 kg/m ²)
GCL Grab Strength ³	ASTM D 4632	200,000 ft ² (20,000 m ²)	90 lbs (400 N)
GCL Peel Strength ³	ASTM D 4632	40,000 ft ² (4,000 m ²)	15 lbs (65 N)
GCL Index Flux ⁴	ASTM D 5887	Weekly	1 x 10 ⁻⁹ m ³ /m ² /sec
GCL Permeability ⁴	ASTM D 5084	Weekly	5 x 10 ⁻⁹ cm/s
GCL Hydrated Internal Shear Strength ⁵	ASTM D 5321	Periodic	500 psf (24 kPa) typical

Bentomat "ST" is a reinforced GCL consisting of a layer of sodium bentonite between a woven and a non-woven geotextile which are needle-punched together.

Notes

¹ Bentonite property tests performed at CETCO's bentonite processing facility before shipment to CETCO's GCL production facilities.

² Bentonite mass/area reported at 0 percent moisture content.

³ All tensile testing is performed in the machine direction, with results as minimum average roll values unless otherwise indicated.

⁴ Index flux and permeability testing with deaired distilled/deionized water at 80 psi (551 kPa) cell pressure, 77 psi (531 kPa) headwater pressure and 75 psi (517 kPa) tailwater pressure. Reported value is equivalent to 925 gal/acre/day. This flux value is equivalent to a permeability of 5x10⁻⁹ cm/sec for typical GCL thickness. The last 20 values prior to the last production date of the supplied GCL may be provided.

⁵ Peak value measured at 200 psf (30 kPa) normal stress. Site-specific materials, GCL products, and test conditions must be used to verify internal and interface strength of the proposed design.

Products

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