Geosynthetic Clay Liner

GCL

FEATURES

- GCL is self healing with high plasticity
- Easily installed and great for secondary containment
- Not a good primary liner, but great for a wetlands alternative
- 12” of cover soil required
- GCL is available in:
  - Bentomat ST
  - Bentomat CL
  - Bentomat DN
  - Claymax 600CL
  - Claymax 200R

GCLs are a great secondary or supportive layer used in conjunction with the right geomembrane. The use of GCLs and the proper liner can be your solution to sub-grade and leak protection issues.

Composite Linings: Geo Clay Liners can completely or partially replace thick, multi lift compacted clay layers in composite landfill liners and caps due to the efficiency of the high swelling natural sodium bentonite clay.

Colorado Lining can supply you with material or facilitate a full installation with one of our certified installation crews.

APPLICATIONS

- Landfill liners and covers
- Secondary containment
- Underlayment in poor sub-grade conditions
- Canals
- Civil projects
- Can replace 3 feet of natural clay liner in most designed liner systems.

FOR MORE INFO CALL 800.524.8672

COLORADO LINING INTERNATIONAL

WWW.COLORADOLINING.COM

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Product Data

GCL Material Information

Property	ASTM Test Method	Reinforced GCL			Non-reinforced GCL			Testing Frequency
		GT-Related	GT Polymer Coated	GM-GF Related	GT-Related	GT Polymer Coated	GM-GF Related	
Clay (as received)								
• swell index (ml/2g)	D5890	24	24	24	24	24	24	50 tonnes
• fluid loss (ml)[1]	D5891	18	18	18	18	18	18	50 tonnes
Geotextiles (as received)								
• cap fabric (nonwoven) mass/unit area (oz/yd2)[2]	D5261	5.9	5.9	5.9	3.0	3.0	n/a/3.0	25,000 yd²
• cap fabric (woven) mass/unit area (oz/yd2)	D5261	3.0	3.0	3.0	3.0	3.0	3.0	25,000 yd²
• carrier fabric (nonwoven composite) mass/(oz/yd2)[2]	D5261	5.9	5.9	5.9	3.0	3.0	n/a/3.0	25,000 yd²
• carrier fabric (woven) mass/unit area (oz/yd2)	D5261	3.0	3.0	3.0	-	-	-	25,000 yd²
• coating mass/unit area (oz/yd2)[3]	D5261	n/a	5.8	n/a	n/a	5.8	n/a	5,000 yd²
Geomembrane/Geofilm(as received)								
• thickness[4](mils)	D5199/D5994	n/a	n/a	15/20/4	n/a	n/a	15/30/4	25,000 yd²
• density (g/cc)	D1505/D792	n/a	n/a	0.92	n/a	n/a	0.92	25,000 yd²
• break tensile strength MD&XMD (lb/in.)	D6693	n/a	n/a	n/a	n/a	n/a	34	25,000 yd²
• break tensile strength MD & XMD (lb/in.)	D882	n/a	n/a	14	n/a	n/a	14	25,000 yd²
GCL (as manufactured)								
mass of GCL (lb/ft²)[5]	D5993	0.81	0.83	0.84	0.81	0.83	0.84	5,000 yd²
mass of bentonite (lb/ft²)[5]	D5993	0.75	0.75	0.75	0.75	0.75	0.75	5,000 yd²
moisture content[1](%)	D5993	35	35	35	35	35	35	5,000 yd²
tensile str. MD (lb/in.)	D6768	23	23	23	23	23	23	25,000 yd²
peel strength (lb/in.)	D6496	2.1	2.1	2.1	1.0	1.0	1.0	5,000 yd²
permeability[1] (cm/sec), "or"	D5887	5×10^{-9}	n/a	n/a	5×10^{-9}	n/a	n/a	30,000 yd²
flux[1] (cm³/sec-cm²),	D5887	1×10^{-6}	n/a	n/a	1×10^{-6}	n/a	n/a	30,000 yd²
GCL permeability[1],[6],[7] (cm/sec) (max. at 5 lb/in.²)	D6766	1×10^{-6}	n/a	1×10^{-6}	n/a	n/a	n/a	yearly
GCL permeability[1],[6],[7] (cm/sec) (max. at 70 lb/in.²)	D6766 mod.	5×10^{-8}	n/a	5×10^{-8}	n/a	n/a	n/a	yearly
Component Durability								
geotextile and reinforcing yarns[8] (% strength retained)	See § 5.6.2	65	65	n/a	65	65	n/a	yearly
geomembrane	See § 5.6.3	n/a	n/a	GM spec[9]	n/a	n/a	GM spec[9]	yearly
geofilm/polymer treated[8] (% strength retained)	See § 5.6.4	n/a	85	80	n/a	85	80	yearly

n/a = not applicable with respect to this property :

(1) These values are maximum (all others are minimum)

(2) For both cap and carrier fabrics for nonwoven reinforced GCLs; one, or the other, must contain a scrim component of mass ≥ 100 g/m2 for dimensional stability. This only applies to GM/GCL composites which are exposed to the atmosphere for several months or longer so as to mitigate panel separation.

(3) Calculated value obtained from difference of coated fabric to as-received fabric

(4) First value is for smooth geomembrane; second for textured geomembrane; third for geofilm

(5) Mass of the GCL and bentonite is measured after oven drying per the stated test method

(6) Value represents GCL permeability after permeation with a 0.1 M calcium chloride solution (11.1 g CaCl2 in 1-liter water); for termination criterion see § 5.6.1

(7) Test should be run on the pure bentonite only. Not on polymer modified bentonites.

(8) Value represents the minimum percent strength retained from the as-manufactured value after oven aging at 60°C for 50 days

(9) Durability criteria should follow the appropriate specification for the geomembrane type used; i.e., GRI GM-13 for HDPE, GRI GM-17 for LLDPE or GRI GM-18 for fPP