

Geosynthetic Clay Liners (GCLs) are a kind of green waterproof materials, and are used in landfill and mining caps and covers, landfill and mining base seals, canal and dam liners, ponds and lakes and other waterproofing applications.

Product Introduction

Geosynthetic Clay Liner (GCL) is high-tech green synthetic waterproof material which has been researched for 2 years, it's made by high quality geosynthetic clay sandwiched by 2 layers of compound geosynthetic cloth which was needle punched. It's widely used on the waterproof of waste proposal construction projects, artificial lake (river), tunnel, pool, or basement.

GCL is made by 3 layers. The top and the bottom material is geosynthetic cloth. These layers can protect and reinforce the GCL, thus GCL will strengthen its solidity and firmness. The middle layer of GCL is geosynthetic clay, which is made by natural clay mineral inorganic material, bearing high dilatibility and high water absorbability. The permeability in Water is very low – max 5×10^{-9} cm/sec.



Manner of Producing



To meet the need of actual on-site construction, our GCL is provided with fine structure reliability and stability in addition to its low Permeability, geosynthetic clay itself is granule, when meeting water it will reduce its snip-resist ness, and will be more slide between two layers, so that clay and cloth will form a whole. Adopt special needle punched design, special needle punched procedure is to puncture from top cloth and bottom cloth through geosynthetic clay layer by thick fibre; which will strengthen the GCL scissor-resistness.

Product Excellency

In waterproof projects, GCL not only can be used exclusively, also can be pressed on clay or used together with the Geomembrane, when the conditions allow the following materials: clay, bitumen, concrete, Geomembrane, GCL as waterproof function. The GCL will perform its strong competitive ability, bearing the excellency below:



1. Because the geosynthetic clay and non woven geosynthetic cloth intertwist together, it will perform a good efficiency in permeability, not easy to be eroded, and also not easy to reduce its waterproof efficiency because of dryness, wetness and frozen, melt.
2. The product is packed by rolls; it's very convenient for transportation and installation.

3. Our GCL bear the self-heal ability, for the geosynthetic clay will auto slide if met any leaking point, the joint distance is only 0.2 m, and splash some (0.4kg/m) geosynthetic clay powder to strengthen the waterproof ability in this area to meet the waterproof request.
4. It is very easy to install, no need for any special facility request.
5. The cost is very low.
6. Mature technology.
7. Volume is small, can enhance cubage to a high dimension.

Compare with clay:

Compared with clay, the main excellency of GCL is: small volume, light weight, convenience of being installed, furthermore its scissor-resist ness and anti-drought ness can not be compared with clay.

Compare with geosynthetic membrane:

Compared with geo-membrane, the main excellency is performed in below several points:

1. GCL bears fine softness and diligence, suiting for asymmetry sedimentation.
2. When GCL meets water, the geosynthetic clay in middle layer will expand thickness into several time of itself, and protected by outer geosynthetic cloth, so it is not easy to be broken by sting, and the condition request compared with geosynthetic membrane is very low, when adopting symmetrical clay cover, the request of maximum granule is not bigger size than 32mm.
3. The join of GCL, especially the joint of tunnel and GCL, or the around of construction, it is easier than geo-membrane, and can guarantee the airproof.
4. Compared with the geo-membrane, The GCL is provided with fine interface friction ability.



Product Analysis Report

Geosynthetic Clay Liners (GCLs) are high performance needle punched environmental reinforced composites which combine two durable geotextile outer layers with a uniform core of natural Sodium Bentonite clay to form a hydraulic barrier. Fibers from the non-woven geotextile are needle punched through the layer of bentonite and incorporated into the other geotextile (either a woven or non-woven). Unique properties, including increased internal shear resistance and long-term creep resistance result from this production.

When hydrated under a confining load, the bentonite swells to form a low permeability clay layer with the equivalent hydraulic protection of several feet of compacted clay. The excellent hydraulic properties and slope performance of the JIAYE GCLs make the product ideal for many lining and cap containment projects.



Primary features of the GCLs:

1. High internal shear strength
2. Uniform bentonite content
3. Excellent installation durability
4. More versatile than compacted clay
5. Increased airspace and liner efficiency
6. Improved leakage performance

Product Specifications

1	GEOTEXTILE PROPERTIES	TEST METHOD	VALUE (SI)
	PP nonwoven (Mass/Unit Area)	ASTMD 5261	200g/m ² (MARV)
	Woven Scrim (Mass/Unit Area)	ASTMD 5261	110g/m ² (MARV)
2	BENTONITE PROPERTIES	TEST METHOD	VALUE (SI)
	Swell Index	ASTM D 5890	24ml/2g (min)
	Moisture Content	ASTM D 4643	12% (max)
	Fluid Loss	ASTM D 5891	18ml (max)
3	FINISHED GCL PROPERTIES	TEST METHOD	VALUE (SI)
	Bentonite (Mass/Unit Area)	ASTM D 5993	5.00kg/m ² (MARV)
	Grab Strength	ASTM D 4632	500 N (MARV)
	Grab Elongation	ASTM D 4632	10% (Typical)
	Peel Strength	ASTM D 4632	70 (N)
	Permeability	ASTM D 5084	5×10 ⁻⁹ cm/sec (max)
	Index Flux	ASTM D 5887	1×10 ⁻⁸ m ³ /m ² /sec (max)
4	DIMENSIONS		
	Width x Length	Nominal	4.5×40.0 m
	Area Per Roll	Nominal	180m ²
	Packed Weight	Typical	900 kg