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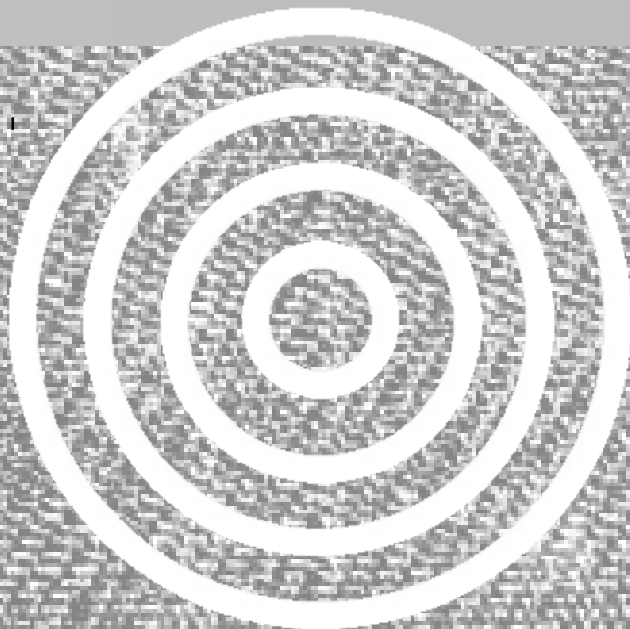
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Common Arrangement

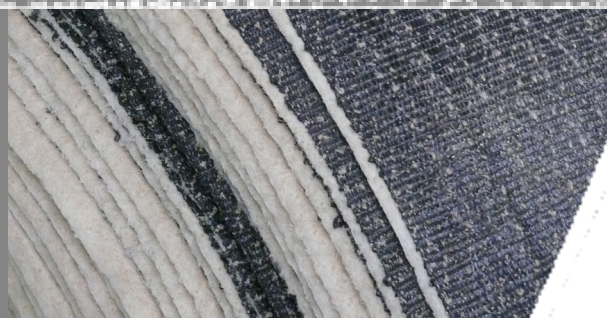
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Bentotex



Geosynthetic Clay Liner



Geosynthetics

Bentotex

Geosynthetic Clay Liner



Bentotex is a Geosynthetic Clay Liner (GCL), an impermeable lining material used as a fluid or containment barrier.

An innovative composite product, Bentotex GCL consists of naturally occurring Sodium Bentonite Clay held in a sandwich between a non woven and a woven geotextile. The geotextiles are then needle-punched together through the intermediate bentonite layer, securing the bentonite in place and reinforcing the otherwise weak layer of clay (when hydrated), allowing the product to withstand shear stresses much better than other unreinforced GCL's.

When hydrated, unconfined bentonite can swell up to 15 times its dry volume. When confined by needle-punching between two geotextiles the swell is controlled forming a dense, impervious waterproofing membrane.

Performance

Bentotex GCL100 when hydrated, provides a better hydraulic performance than a metre of compacted clay. Natural environmental stresses such as freeze/thaw and dessication/rewetting cycles have no effect on the performance of Bentotex GCL. Differential settlement is accommodated by the high plasticity and self sealing properties of sodium bentonite. Traditional compacted clay layers (CCL's) on the otherhand can crack in these conditions leading to significant increases in leakage.

As an alternative to a traditional compacted clay layer Bentotex GCL is extremely cost effective. Fully hydrated it has an average thickness of 10mm; but the same permeability as a full metre of compacted clay. This means less excavation is required providing savings not only in plant and labour but also the disposal of the excavated material.

Where very alkaline soils exist and there is a question of cat-ion exchange; we can undertake tests to ascertain suitability or offer our Bentotex CL grade which has an integral geomembrane to provide ultimate performance.



Fernhill Farm, Priddy, Avon

Self Healing and Self Sealing

Bentonite clay is allowed to migrate out of the geotextile layers in the joint areas enabling Bentotex GCL to self seal. Sodium bentonite swells when hydrated giving it the ability to seal around penetrations, self heal punctures and seal at overlaps.



East Barnet College (Faraday Project),
Hertfordshire

Bentotex Geosynthetic Clay Liner



Installation

Bentotex GCL is easy to install, requires no specialist skills, equipment, or power source on site as it does not need welded joints. Installation is not dependant on prevailing weather and Bentotex GCL can be laid in cold inclement conditions. This is not the case with traditional lining materials.

Design

Geosynthetics Limited employs an incredible knowledge bank. Our employees have a vast knowledge of materials, products and applications. Not only can we assist in the design of your containment system, recommend the correct products regardless of source and install the whole system, we can develop the quality control procedures necessary to ensure your system works from day one.

Applications

- Reedbeds
- Spill or Secondary Containment
- Wetlands
- Lakes
- Ponds
- Liquid Containment
- Reservoirs
- Mining Applications
- Water Course Liners



Top, Middle & Bottom: Piddlehinton ADP, Dorset

Please call
01455 617 139
or email sales@geosyn.co.uk
for further information.

Wide
product
range

Large
stock
holding

Next day
delivery

Bentotex SWP Waterproofing Membrane



Building Applications - Bentonite waterproofing system

Bentotex SWP is a highly effective waterproofing membrane for below ground foundation surfaces. Bentotex SWP can be installed both vertically and horizontally. The superior performance of Bentotex SWP is based on the remarkable high swelling and self healing properties of sodium bentonite and the strength of the interlocked geotextiles. When hydrated the bentonite expands under confinement, forming an impervious membrane that will be maintained for the life of the structure.

Typical applications include backfilled concrete walls, beneath structural rafts/slabs, tunnels and property line construction. In property line applications Bentotex SWP can be installed directly against metal sheet piling, timber lagging and concrete / shotcrete retaining walls. Bentotex SWP can be installed directly over a properly prepared soil substrate.

Features and Benefits

Cost Effective	No PCC slab or protection course
Durability	Withstands inclement weather and resists construction related damage
Superior	Mechanical bond tenaciously secures product and prevents water migration
Long Service Life	Provides waterproofing protection for the life of the structure
Easy to Install	Quick and easy installation without adhesives or special equipment
Self Sealing	Active, swelling properties of sodium bentonite seals punctures



Foundation Slab Waterproofing Application of Bentotex SWP

Design
service

Onsite
support



Geosynthetics

Quality Assurance



Specifiers, engineers and contractors have the assurance of knowing that all of the products specified within the Bentotex range have been tested and certified to the relevant EN standards.

Certified Quality

Bentotex GCL liners are manufactured within a quality system certified to ISO 9001/2000; and the production control is certified to EN 13491, 13492, 13493, 13361, 13362, 15382. Each roll has an individual identifier and stringent records are kept of each roll's final destination.

Geosynthetics Limited Service Commitment

Geosynthetics Limited is committed to offering the most comprehensive range of geosynthetic products from stock. Fast delivery is our speciality. We are committed to offering a next day delivery service and proud of our customer service record.

Accreditation

Bentotex GCL are CE marked in accordance with The Construction Products Directive (CPD 89/106/EEC). CE marking demonstrates conformity to The Construction Products Directive (CPD 89/106/EEC) and indicates the stringent testing and certification of Factory Production Control (FPC) that Bentotex GCL has gone through to meet the highest European geotextile standards.



Please call - 01455 617 139
or email sales@geosyn.co.uk for more technical
advice and further information.

Geosynthetics

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Technical Specification



Bentotex GCL 100 is a reinforced needle punched geosynthetic clay liner (GCL) specifically designed for landfill, lagoon and bund lining. Bentotex GCL 100 offers the following advantages:

Very low flux value	Excellent slope stability characteristics
Lowest flux of all available GCL's	Superior climatic resistance
Highly competitive installation costs	High chemical resistance
Fast and easy to install	Resistance to differential settlement
Self-sealing if punctured	

Material Property	Test Method	Required Values
Cover Geotextile		Non-Woven PP
Cover Geotextile Weight		200 g/m ²
Carrier Geotextile		Woven PP
Carrier Geotextile Weight		100 g/m ²
Montmorillonite Content	(XRD) Analysis	>90%
GCL Index Flux	ASTM D5887	$1 \times 10^{-9} \text{ (m}^3\text{/m}^2\text{).s}$
GCL Permeability	ASTM D5887	$1 \times 10^{-11} \text{ m.s}$
Bentonite Fluid Loss	ASTM D5891	< 18 mL
Bentonite Mass/Area ⁽¹⁾	ASTM D5261	5 kg/m ²
Tensile Strength (MD/CD)	EN ISO 10319	10/10 kN/m
Strain at Max Load	ASTM D6432	30%
Static Puncture Resistance	EN ISO 12236	1800 N
GCL Peel Strength	ASTM D4632	65 N
Bentonite Swell Index	ASTM D5890	27mL/2g minimum
Thickness	EN ISO 9863-1	6 mm
Roll Dimensions		5 x 45m
Roll Area		225 m ²
Roll Weight		1220 kg

Notes:

1. Bentonite mass/area reported at 12% moisture.

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