

ELCOSEAL[®]

Geosynthetic Clay Liners

General Brochure



QUALITY - SUPPORT - EXPERTISE

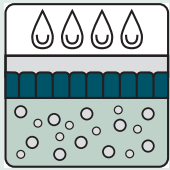


A Geosynthetic Clay Liner (GCL) is a geosynthetic composite, engineered for environmental containment applications. GCLs consist of a layer of high-quality sodium bentonite powder sandwiched between two or more layers of durable geotextiles, reinforced by needle-punching to improve confinement and internal shear strength.

ELCOSEAL® GCLs provide the equivalent hydraulic protection as a one metre thick layer of compacted clay. To ensure the waste being contained is compatible with the lining system, Geofabrics can perform compatibility testing through our Geosynthetic Centre of Excellence.

ELCOSEAL® GCLs allow landfills and other waste containment structures (such as tailings dams) to be built faster and more cost effectively when compared to traditional lining systems.

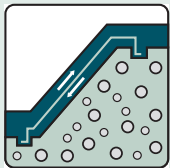
FUNCTIONS



Rapid Sealing

When in contact with water or other liquids, ELCOSEAL® GCLs rapidly hydrate to create a containment barrier equivalent to a one metre thick layer of compacted clay.

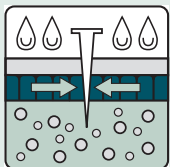
The rapid sealing performance of the ELCOSEAL® GCLs are derived from the increased surface area of the powdered sodium bentonite clay used in the ELCOSEAL® GCL.



Shear Resistance

To resist the high shear stresses generated by the long, steep slopes within a landfill or tailings dam, ELCOSEAL® GCLs use high tenacity polypropylene fibres that are needle punched through the thickness of the GCL.

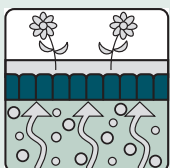
The design of a stable lining system requires consideration of the shearing stresses applied to the ELCOSEAL® GCL.



Self Healing

ELCOSEAL® GCLs can self-heal around holes, punctures or protrusions. In the ELCOSEAL® GCL, the sodium bentonite clay is confined vertically by the thermally locked geotextile layers but can swell laterally around the puncture.

The self-healing nature of ELCOSEAL® GCLs is important when considering the leakage from any installation damage.



Gas Containment

ELCOSEAL® GCLs are used in conjunction with gas collection systems to prevent the migration of gases from landfills or contaminated sites.



TYPICAL APPLICATIONS

LANDFILLS

The hydraulic sealing performance of the ELCOSEAL® GCLs allows it to completely or partially replace the traditional thick layers of compacted clay in landfill liners and caps. The strength of the ELCOSEAL® GCLs allows it to resist high shear forces along the steep slopes within landfills.

The ELCOSEAL® Manufacturing Quality Assurance program is rigorous, complying with the very high requirements of the Victorian EPA Best Environmental Practice Management guidelines for landfills.



MINING

ELCOSEAL® GCLs are widely used in tailing ponds and mine closures or rehabilitation projects. ELCOSEAL® GCLs reduce the contaminant transport to assist mining companies achieve environmental compliance for their waste containment structures.

The Geosynthetic Centre of Excellence regularly tests mining waste or liquor for mining companies to ensure compatibility is achieved with the ELCOSEAL® GCL lining system, thereby reducing risk for the mine operator and allowing efficient design of the lining system.



SECONDARY CONTAINMENT

The ease of installation and reliable pipe penetration construction process encourage the use of ELCOSEAL® GCLs as a secondary containment barrier in above ground impoundments. ELCOSEAL® GCLs resist the leakage of hydrocarbons into the surrounding environment should the tank rupture.



PONDS AND DAMS

The low permeability, high internal shear strength and easy installation process enables ELCOSEAL® GCLs to provide excellent liquid containment, such as in reservoirs, irrigation canals, as well as ponds and lagoons.



VERTICAL CONTAINMENT

The high mechanical and internal shear strength of the ELCOSEAL® GCL allows it to be used as a vertical cut-off barrier, preventing the lateral movement of liquids. A common application is adjacent to irrigation canals.



ADVANTAGES OF ELCOSEAL® GCLs

Reduced Risk	<p>Compared to traditional compacted clay liners, ELCOSEAL® GCLs reduce the risk on a landfill or waste containment project through several means, including:</p> <ul style="list-style-type: none"> • Compatibility testing at the Geosynthetic Centre of Excellence ensuring the site specific liquor or waste will be contained by the lining system. • Strict Manufacturing Quality Assurance provides a higher level of consistency in the lining layer. • Laboratory support is provided for the construction QA process for ELCOSEAL® GCLs.
Enhanced Performance and Reliability	<p>ELCOSEAL® GCLs have been manufactured in Australia for over 20 years, and used widely around Australia and internationally. The proven performance stems from various manufacturing features, including:</p> <ul style="list-style-type: none"> • Consistent low permeability performance. • Proven edge sealing techniques. • The powdered bentonite clay allowing instant sealing.
Cost Benefits	<p>ELCOSEAL® GCLs offer engineers a number of economic benefits over traditional compacted clay layers or alternative lining systems, including:</p> <ul style="list-style-type: none"> • Simpler installation processes, reducing the time required to construct a landfill cell or waste containment structure. • Simple overlaps along the edges removes the need for specialist installation crews. • Supply of ELCOSEAL® GCL rolls to specific roll lengths allows a single roll to be installed down a slope, reducing the installation time and wastage. • By removing the need for 1m thick compacted clay layers, the ELCOSEAL® GCL increases the void spacing within the landfill.

ELCOSEAL® GCL RESEARCH AND DEVELOPMENT

Through our Geosynthetic Centre of Excellence, Geofabrics is committed to pursuing research and development of ELCOSEAL® GCLs in various in-situ environments. For information or a tour of the Geosynthetic Centre of Excellence, please contact the Technical Department at the Geosynthetic Centre of Excellence on (07) 5594 8600.

SUPPORTING LITERATURE

Datasheets and Specifications	<ul style="list-style-type: none"> • ELCOSEAL® GCL Technical Data Sheet • ELCOSEAL® LX Laminated GCL Technical Data Sheet • Geosynthetic Clay Liner Model Specification
Installation Guidelines	<ul style="list-style-type: none"> • ELCOSEAL® GCL Installation Guidelines • ELCOSEAL® LX Laminated GCL Installation Guidelines
OH&S	<ul style="list-style-type: none"> • ELCOSEAL® Material Safety Data Sheets • ELCOSEAL® GCL Spreader Bar Safe Usage Guidelines
Technical Notes	<ul style="list-style-type: none"> • Bentonite Technical Notes - ELCOSEAL® GCL Technical Notes
Quality Assurance	<ul style="list-style-type: none"> • Manufacturers Quality Assurance & Control for ELCOSEAL® GCL • ELCOSEAL® GCL Construction Quality Assurance Checklist
Other	<ul style="list-style-type: none"> • ELCOSEAL® GCL Project List

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