

GEOSYNTHETIC CENTRE OF EXCELLENCE

PROVIDING APPLICATION-BASED RESEARCH TO DEVELOP GEOSYNTHETIC SOLUTIONS

The Geosynthetic Centre of Excellence is a dedicated R&D laboratory, developed to support the engineering community by facilitating a linkage between their projects and specialist facilities.

The Geosynthetic Centre of Excellence works in an open collaborative way with consulting engineers, regulators, universities and government agencies. Increased environmental regulation and community involvement is driving engineers to understand in greater detail the role of geosynthetics in engineering structures.

Initially focused on landfill and waste containment systems, the Geosynthetic Centre of Excellence will grow to facilitate practical, application based research across a broad range of geosynthetic applications.

THE GEOSYNTHETIC CENTRE OF EXCELLENCE IS DESIGNED TO

- > Ensure the Geofabrics product range is optimised and adapted for emerging applications
- > Provide evidence-based research to help customers select the right product for critical applications
- > Solve site-specific problems at mines, waste containment facilities and other sites
- > Provide access to testing equipment that is the first of its kind in Australia
- > Foster collaboration between Geofabrics and the local and international academic community
- > Meet challenges that are particular to Australia, such as working with acid sulphate soil

RECENT PROJECTS INCLUDE



bidim®
Continuous Filament Polyester Geotextiles

The Geosynthetic Centre of Excellence helped a remote mine site select the geotextile filtration layer for their tailings dam by UV exposure, filtration characteristics and strength parameters.



ELCOSEAL®
Geosynthetic Clay Liner


The lining of a waste water pond at a mine site required the Geosynthetic Centre of Excellence to test the waste liquor with the lining system to ensure adequate containment performance.



ELCOROCK®
Geotextile Sand Containers

The Geosynthetic Centre of Excellence researched the long term in-service performance of the **ELCOROCK®** coastal protection system. Results validated the design life expectancy of this unique system.

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GCL CHEMICAL COMPATIBILITY

ASTM D5084 / ASTM D5887 / ASTM D6766

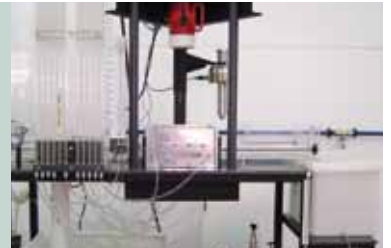
- > Interaction with site-specific leachate and other potentially incompatible liquids
- > pH, Temperature, Salinity, EC and TDS monitoring of influent and effluent liquids
- > Real-time volume change measurements
- > Design-specific confining and head pressures
- > Exhumation analysis



TRANSMISSIVITY AND IN-PLANE FLOW RATE

ASTM D4716

- > Measures Hydraulic Transmissivity (m^2/s) and In-Plane Flow Rate ($L/s\cdot m$)
- > 10 – 2000kPa loading capacity
- > Flow rates up to 145 L/min
- > 0.005 to 1.3 gradients
- > 305 mm x 305 mm loading area
- > Full design-specific analysis



GCL INTERNAL SHEAR AND INTERFACE FRICTION

ASTM D5321 / ASTM D6243

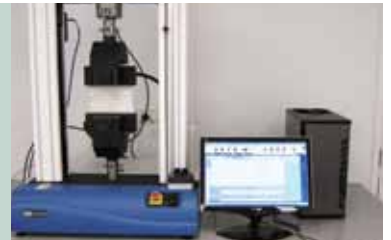
- > Full design-specific interface analysis
- > 500kPa loading capacity
- > 0.00003 to 10 mm/min with 90 mm vertical and horizontal travel
- > Peak and residual shear plots, failure envelopes and friction angles
- > Adhesion/cohesion intercepts



50kN UNIVERSAL TESTING MACHINE

TEST METHODS AS PER BELOW

- > Wide Width Tensile Strength and Elongation to AS 3706.2
- > Trapezoidal Tear Strength analysis to AS 3706.3
- > Geotextile Seam Strength to AS 3706.6
- > GCL Average Peel Strength to ASTM D6496
- > GCL Strip Tensile Strength to ASTM D6768
- > Geocomposite Ply Adhesion to ASTM D7005



GEOMEMBRANE PROTECTION EFFICIENCY

ASTM D5514 / ASTM D5617

- > Variety of stone profiles
- > 700kPa loading capacity
- > Topographic profile mapping
- > Design-specific subgrade-geotextile combination analysis



REAL TIME UV RESISTANCE

ASTM D5970

- > Short and long-term analysis
- > 45° angled racking, facing due North in full sun
- > Tensile analysis correlated with local weather information for test period
- > Can hold up to 200 x 50 mm wide test specimens
- > Extreme UV Index location (during Summer months) providing conservative results



GCL FLOW BOX

ASTM STP 1308

- > GCL overlap leakage rate analysis
- > 200kPa loading capacity
- > Five drainage zones



XENON-ARC ACCELERATED WEATHEROMETER

AS 3706.11 / ASTM D4355

- > Tests the long-term effects of UV light, heat and moisture on geotextiles
- > Xenon lamps with a spectral output closely simulating solar radiation
- > Flatbed technology to permit testing of geotextiles imbedded with soils
- > 3000 cm² exposure area
- > Touch screen control and colour display



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