PENTUSOIL

PETROCHEMICAL SOLUTIONS FOR A BETTER FUTURE

# Infrastructure Materials

Containment, separation, drainage and reinforcement, sourced against the load case, the chemistry and the design life your project is working to.

- Geomembrane, geotextile, geocomposite, geogrid, geocell and GCL
- Material selected against exposure, chemistry and design life
- Producer certification supplied with the consignment
- Technical review before order where the application is unusual

INTRODUCTION

# The liner is only half the job

A geomembrane that meets every figure on its data sheet will still fail if the seams are wrong, the subgrade was not prepared, or the wrong thickness was specified for the load above it. Most containment failures are installation failures, not material failures.

We source the material. Installation is carried out by specialist contractors, and the quality of that work decides whether the system performs. This catalogue covers the material ranges in full, and closes with the things worth writing into an installation specification before anyone starts welding.

Ranges shown are indicative of what we can source. Exact availability, tolerances, warranty terms and certification vary by producer and quantity, and are confirmed at quotation.

## What to send with an enquiry

- Containment volume or area, and the drawings if you have them.
- What is being contained, and its chemistry and temperature.
- Slope angles, which decide smooth against textured sheet.
- Subgrade condition and what goes on top of the liner.
- Design life, and any standard or specification you are working to.

PRODUCT 01

# Geomembrane

The barrier layer. A geomembrane is specified by what sits on top of it and what it has to hold back. A pond liner under still water and a landfill basin under thirty metres of waste are the same product family and completely different specifications. Thickness, surface texture and polymer all follow from that load case.

## Types we source

- HDPE. Best chemical resistance and highest strength; the default for landfill and mining.
- LLDPE and VLDPE. More flexible, far more forgiving of settlement or an uneven subgrade.
- Polypropylene. Reinforced and unreinforced, for cold-weather flexibility and prefabricated panels.
- Textured. Single or double-side, raising interface friction so liner and cover stay on the slope.
- Coloured. White-surfaced sheet to cut surface temperature and improve defect visibility.

### ORDERING INFORMATION

| | |
|---|---|
| Product | HDPE / LLDPE / PP geomembrane |
| HS code | 39201090 |
| Thickness | 0.5 mm to 3 mm |
| Width | 1.60 m to 2.5 m standard, to 8.5 m by source |
| Roll length | 50 m to 200 m |
| Surface | Smooth both sides, single-side textured, double-side textured, V-grid |
| UV resistance | High; carbon black and antioxidant package |
| Warranty | Producer material warranty, commonly ten years; confirmed per source |
| Lead time | Quoted per enquiry, by source and quantity |
| Minimum order | Typically 10,000 m2; smaller volumes on request |
| Packing | Nylon-wrapped rolls on pallets |

## APPLICATIONS

- Landfill basins, cells and capping
- Mining heap leach and tailings
- Reservoirs, canals and irrigation ponds
- Fish and shrimp farming ponds
- Tunnel and underground waterproofing
- Petrochemical secondary containment
- Road and railway subgrade sealing
- Golf course lakes and landscape features

PRODUCT 02

# Geotextile

Needle-punched nonwoven in polypropylene and polyester, specified for five functions: separation, reinforcement, filtration, drainage and protection. Very few applications use only one. A road separator is also filtering fines out of the aggregate, and a geomembrane cushion is also draining the interface.

We source virgin-fibre geotextile as standard. Regenerated fibre costs less but gives inconsistent strength and shortens service life, which is not visible on delivery and very visible in year eight, so we only quote it where you ask for it.

## ORDERING INFORMATION

| | |
|---|---|
| Product | Needle-punched nonwoven geotextile |
| Raw material | Virgin polypropylene or polyester fibre |
| HS code | 560394 |
| Weight | 70 GSM to 1000 GSM |
| Width | 2 m to 6 m |
| Roll length | 50 m to 200 m |
| Functions | Separation, reinforcement, filtration, drainage, protection |
| Minimum order | Typically 10,000 m2; smaller volumes on request |

## APPLICATIONS

- Road and railway subgrade separation
- Drainage trenches and French drains
- Geomembrane cushion and protection
- Landfill leachate collection blankets
- Asphalt overlay crack control
- Hard armour and rip-rap underlayment
- Embankment and wall reinforcement
- Tunnel drainage systems

PRODUCT 03

# Geocomposite

Geotextile bonded to geomembrane, supplied as a single roll. A geomembrane almost always needs a cushion against puncture from the subgrade or the cover material. On site those are two separate operations, and the second is the one that gets rushed when the programme tightens. Bonding them at the factory removes that risk and shortens the works.

## Builds

- Two-layer. One geotextile face bonded to one barrier film, where only one side needs protecting.
- Three-layer. Geotextile on both faces, protecting against puncture from the subgrade below and the cover above.

### ORDERING INFORMATION

| | |
|---|---|
| Product | Geotextile and geomembrane composite |
| Build | Two-layer or three-layer |
| Barrier film | HDPE or LLDPE, thickness to specification |
| Fabric | Needle-punched PP or PET, weight to specification |
| Width | To project requirement, typically 2 m to 6 m |
| Roll length | 50 m to 200 m |
| Jointing | Wedge or extrusion welding on the barrier film |
| Minimum order | Typically 10,000 m2; smaller volumes on request |

PRODUCT 04

# Geogrid

A geogrid works by interlocking with the aggregate pushed through its apertures. The soil cannot move laterally, so the load spreads across a wider area and effective bearing capacity rises. That mechanism depends on tensile modulus at low strain, not on ultimate breaking strength, which is why a grid quoted only on its kN/m figure tells you very little. Ask for the strength at two and five per cent strain.

## Types we source

- PP uniaxial. Strength in one direction, for retaining walls, steep slopes and embankments.
- PP biaxial. Equal strength both directions, for subgrade stabilisation under roads and yards.
- Multiaxial. Triangular apertures giving near-uniform stiffness through 360 degrees.
- Polyester. PVC-coated yarn, high modulus and very low creep for permanent loads.
- Fiberglass. Very high modulus, bonded into asphalt overlays to arrest reflective cracking.
- Basalt fibre. Similar stiffness with better thermal and chemical durability.

### ORDERING INFORMATION

| | |
|---|---|
| Raw material | PP, HDPE, PVC-coated polyester, fiberglass, basalt fibre |
| Tensile strength | 35x35 kN/m to 100x100 kN/m |
| Width | 5 m standard |
| Roll length | 15 m to 30 m |
| Orientation | Uniaxial, biaxial, multiaxial |
| Aperture | Sized to the aggregate on site |

PRODUCT 05

# Geocell

A geocell physically encloses infill in cells, so it cannot spread laterally under load at all. That turns loose granular fill into a semi-rigid mattress which spreads load far more effectively than its thickness suggests. The same property makes it the standard answer for vegetated slopes: soil held in cells stays on a gradient that would otherwise wash off in the first heavy rain.

## ORDERING INFORMATION

| | |
|---|---|
| Raw material | HDPE or polypropylene |
| Strip thickness | 1 mm to 2 mm |
| Cell diameter | 220 mm to 350 mm |
| Cell depth | 50 mm to 200 mm |
| Strip surface | Smooth, textured or perforated |
| Transport | Supplied folded flat |

## APPLICATIONS

- Vegetated slope erosion control
- Planted retaining structures
- Channel and waterway linings
- Riverbank and shoreline protection
- Access roads over soft ground
- Working platforms and hardstandings
- Load support under pavements
- Tree root protection and permeable parking

PRODUCT 06

# GCL

A geosynthetic clay liner is a compacted clay liner delivered as a roll. The sodium bentonite core swells on contact with water to many times its dry volume, sealing the fabric into a barrier with permeability comparable to a metre of compacted clay, in about ten millimetres. The swelling also means minor punctures close themselves, which no geomembrane does.

## ORDERING INFORMATION

| | |
|---|---|
| Product | Needle-punched geosynthetic clay liner |
| Core | High-swelling powder sodium bentonite |
| Facings | Woven and nonwoven geotextile |
| Mass per unit area | 4000 GSM to 6500 GSM |
| Width | 5 m standard, customisable |
| Roll length | 15 m to 50 m, customisable |
| Jointing | Overlap with bentonite paste at seams |

GUIDANCE

# Specifying the installation

We supply the material. The welding, testing and documentation are carried out by the installation contractor, and that work decides whether the system performs. Whether you have already appointed an installer or are still tendering, the points below are worth writing into the specification rather than assuming.

## Design, before material is ordered

- Material selected against exposure, chemistry and design life - we can advise on this.
- Lining system defined as a whole: primary liner, protection, drainage and secondary containment.
- Panel layout that minimises seam length and keeps seams off the slope toe.
- Interface friction and veneer stability checked on every slope.
- Subgrade preparation, anchor trench detailing and penetration design agreed.

## What to require on site

- Welders qualified on the equipment being used, with records available.
- Trial welds at the start of every shift and after any significant temperature change.
- Air pressure and vacuum box testing across full seam length.
- Destructive peel and shear samples at set intervals.
- Repairs logged, patched and retested before cover.

## What to require at handover

- Panel-by-panel seam testing records, trial weld logs and repair register as one documented set.
- Producer certification and batch references for every roll used - we supply these with the material.
- As-built panel layout with seam numbering matching the test records.
- Written confirmation of the producer material warranty and its conditions.

SECTORS

- Landfill and waste containment
- Mining, heap leach and tailings
- Water reservoirs, canals and dams
- Roads, railways and airfields
- Tunnels and underground structures
- Agriculture, irrigation and aquaculture
- Petrochemical secondary containment
- Golf courses and landscape works

# Tell us what you need

Send us the material, application, grade or specification and the quantity you are working to. We will review the requirement, identify suitable options from our supply network and come back with what is available and on what terms. Where a substitution carries risk, we will say so.

**Request a quote**
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