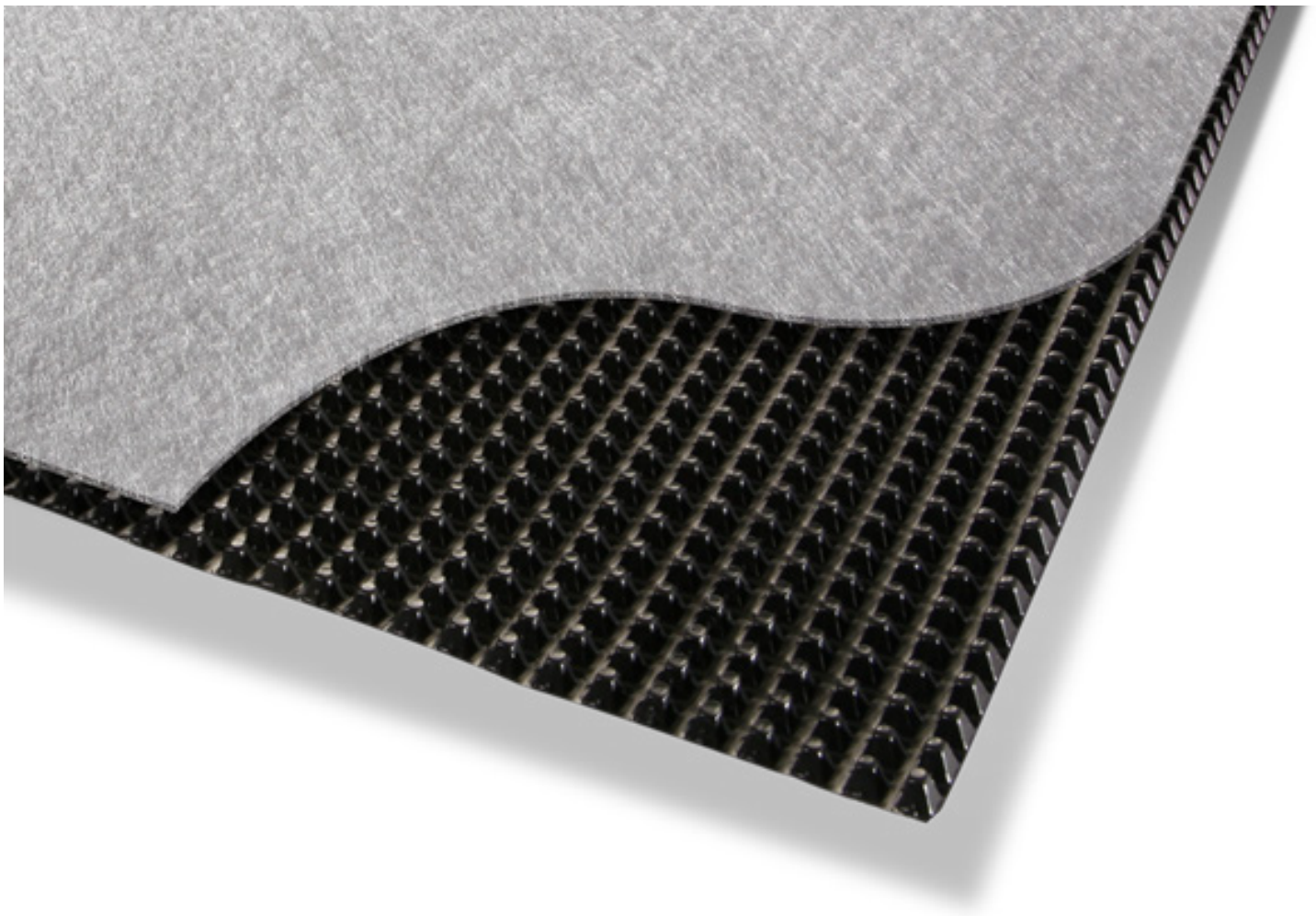


Pozidrain Drainage Geocomposite

Combined Drainage and Waterproofing Liner

Specifically Designed to be Highly Flexible to Accomodate Contours of the Drainage Profile



Product Information

Pozidrain drainage geocomposite is a wide-width pre-formed drainage and gas venting solution, providing a sustainable, environmental alternative to traditional filter stone drainage layers. Pozidrain is used extensively for landfill and contaminated land drainage on slopes and basal areas to remove water, liquids and gas quickly & efficiently.

Pozidrain Drainage Geocomposite

Benefits

- Eliminates filter stone
- Creates more landfill void
- Allows use of lower specification backfill materials
- Reduces excavation and backfill
- High impact and crush strength
- High flow capacity and long performance life
- Compatible with geomembrane systems and acts as the protection layer to geomembrane liners
- Ease and speed of installation without specialist equipment
- Massively reduced traffic volumes compared to drainage stone
- Wide rolls are suited for rapid installation on large landfill and restoration projects
- Chemically inert – resistant to petrol, oils, acid, alkalis, leachate and common chemicals

Pozidrain geocomposite is a market leading drainage membrane used to replace traditional aggregate drainage layers on landfills, soil reclamation and remediation projects.

Pozidrain consists of a high strength, flexible polyethylene cusped drainage core with a non-woven geotextile filter fabric bonded onto one or either side. The geotextile filters a wide range of materials and is bonded to the core to ensure that it does not deform into the drainage channels under the load of the backfill material. The drainage composite allows fluids and gases to percolate into the core whilst supporting the backfill material. The collected fluids are then transported along the core to a discharge point.

The HDPE core in Pozidrain forms a high-performance drainage void, using the spaces between the cusps. This unique core design offers clear passageways which allows flow in all directions, even in the event of damage or a blockage occurring.

Applications

- Leachate or ground water drainage collection in landfill containments
- Drainage layer between the soil cover and geomembrane of a landfill cap
- Landfill basal drainage
- Landfill slope drainage
- Hazardous gas venting / methane venting from landfills
- Ground water drainage/collection
- Leakage detection layers within the landfill base lining
- Vertical cut-off trenches
- Embankment drainage & reinforcement
- Slope stabilisation
- Capillary break layer in contaminated land reclamation
- Geomembrane protection



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Carbon Footprint Reduction – Global Synthetics Systems vs Traditional Methods

Global Synthetics are committed to reducing the carbon footprint caused directly or indirectly by our manufacturing processes, products and their installation within civil engineering projects. The tables below show examples of the percentage carbon savings you could make using an Global Synthetics solution in place of traditional methods.

Soil Drainage

The use of Global Synthetics Pozidrain Drainage Geocomposite can save up to 64% on carbon footprint compared with traditional granular soil drainage methods:

Global Synthetics System	Traditional Method	Carbon Saving
Pozidrain	Granular Drainage Blanket	
• Light-weight drainage geocomposite • Reuse of site soils • Recycled Materials	• Imported Quarried Drainage Gravel with a Geotextile Filter • Additional Excavation and Waste Soils	64% Saves 4.0kg CO ₂ e/m ²

Carbon saving value based on the average value of two assessments: French Drain vs. ABG Fildrain Type 6 (93% carbon saving), and Stone Drainage Blanket vs. Pozidrain 7S250/NW8 (95% carbon saving). The French Drain was assumed to be 700mm deep and 500mm wide, lined with a typical non-woven separation geotextile. Fildrain Type 6 is a 7mm thick drainage geocomposite which is installed vertically in a trench with a perforated pipe at the base. The trench is backfilled with arisings and the system provides equivalent or better drainage performance to standard French Drain designs. It is assumed that the carbon value of installation is approximately equivalent for each method. The Stone Drainage Blanket was assumed to be a 300mm thick layer of drainage gravel lined with a geotextile separator above and below. Pozidrain 7S250/NW8 is a 7mm thick drainage geocomposite which provides equivalent or better water flow to that of a 300mm thick granular drainage layer. The soil sent to waste has not been included in the analysis.

Block of Wall Drainage

The use of Global Synthetics Deckdrain geocomposite can save up to 94% carbon footprint compared with traditional concrete block backfilled with gravel methods

Global Synthetics System	Traditional Method	Carbon Saving
Deckdrain	Porous Concrete Blocks	
• Light-weight drainage geocomposite • Low Carbon Hand Installation • Recycled Materials	• Concrete Blocks Backfilled with Gravel • Machine Installation	94% 31kg CO ₂ e/m ²

Carbon saving taken directly from the Costain case study (Wilson, 2018) which is a case study comparing the use of ABG Deckdrain with traditional solutions for drainage behind concrete bridge abutment retaining walls. The traditional solutions assessed were no-fines concrete (97% carbon saving) and hollow concrete blocks backfilled with gravel (92% carbon saving). The carbon saving stated is based on the hollow concrete blocks. The assessment in the case study discounted the removal of waste material, was based on actual distances to quarries/suppliers and material quantities as assessed by Costain.

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Permeable Paving

The use of Global Synthetics Sudspave permeable paving can save up to 54% carbon footprint compared with traditional permeable block paving methods.

Global Synthetics System	Traditional Method	Carbon Saving
Sudspave	Permeable Block Paving	
• Interlocking Geosynthetic Pavers with Porous Gravel Backfill • Quick Installation • Recycled Materials	• Concrete Blocks Backfilled with Porous Jointing • Labour-intensive Laying Process	54% Saves 20kg CO ₂ e/m ²

This assessment was based on a permeable block paving surfacing compared with ABG Sudspave – a porous paving surface comprising interlocking plastic pavers backfilled with gravel. The carbon footprint associated with excavation and road foundation construction have not been included in this assessment, since just the surfacing is compared. The carbon footprint associated with construction is also discounted due to the difficulty of comparison, although it is expected that the installation of a Sudspave solution would have a lower carbon footprint. The permeable block paving assumes a 60mm paver on a 50mm bedding layer. The embodied carbon is assessed as 36 kgCO₂e/kg (Marshalls.co.uk, 2018) which includes transportation. Added to this is the embodied carbon in the bedding layer and fine gravel in the joints between the pavers. The Sudspave design is a 40mm plastic paver on a 20mm bedding layer (a design which is generally structurally and hydraulically equivalent or better). The carbon footprint of transportation has been added to the Sudspave assessment.

Gravity Retaining Walls

The use of Global Synthetics Webwall Geocell can save up to 77% on the carbon footprint compared with traditional gabion basket gravity retaining walls:

Global Synthetics System	Traditional Method	Carbon Saving
Webwall	Gabion Baskets	
• Geocellular Recycled plastic backfills with site won soil • Reduced soil waste and reduced imported soil • Green finish	• Galvanised or PVC coated stainless steel mesh baskets • Hand placed imported stone fill	77% Saves 234kg CO ₂ e/m ²

This assessment was based on the results from the 'Axis Business Park Environmental Bund' case study from the WRAP report (Corney, 2010). This case study has been adjusted to be specific to the use of ABG products transported to the same location (60 miles from ABG). The WRAP report calculated the carbon footprint of a 9.5m high gabion basket wall and compared it to a that of an equivalent reinforced earth design (the latter was the adopted solution). The ABG carbon saving assessment used the values assessed in the WRAP report for the gabion design and compared it to the calculated footprint of an ABG Reinforced Webwall design very similar to the equivalent reinforced soil design in the WRAP report. The emissions during construction were assumed to be the same as those in the WRAP report.

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Highway Fin Drains

The use of Global Synthetics Fildrain Fin Drain geocomposites can save up to 74% carbon footprint compared with traditional granular stone fin drain methods.

Global Synthetics System	Traditional Method	Carbon Saving
Filldrain	Granular Findrain	
• Light-weight drainage geocomposite • Re-use of site soils • Recycled materials	• Imported quarried drainage gravel with a geotextile wrap • Additional excavation and waste soils	74% Saves 4.2kg CO ₂ e/m ²

Embankment Starter Layers

The use of Global Synthetics Fildrain Drainage Geocomposite can save 57% on the carbon footprint compared with traditional granular stone drainage methods for embankment starter layers:

Global Synthetics System	Traditional Method	Carbon Saving
Filldrain	Granular Drainage Blanket	
• Light-weight drainage geocomposite • Re-use of site soils • Recycled materials	• Imported quarried drainage gravel with a geotextile wrap • Additional excavation and waste soils	57% Saves 4.2kg CO ₂ e/m ²

General Assumptions

The analysis method follows that described in the WRAP report (Corney, 2010). The carbon associated with four key stages is assessed a) the carbon associated with waste soil, b) the embodied carbon of imported materials, c) the transportation of imported materials to site, and d) the carbon associated with construction on site. The carbon footprint of waste material is based on fuel burnt during excavation, loading, and transportation to landfill. These calculations assume that waste material is transported at a rate of 10m³ per load, 15 minutes excavation and loading time per load, and a 15 mile return journey to the nearest landfill. The fuel efficiency of the vehicles used is assumed as 25 L/hr (excavation and loading) and 4.4 miles/L (transportation). The carbon footprint of burning diesel is assessed as 2.67 kg CO₂ e/L based on the value given for 'Diesel (average biofuel blend)' in the DEFRA report (Department for Environment Food & Rural Affairs, 2018).

The embodied carbon of the various imported gravels used in these assessments is assumed to be quarried limestone or similar, with an embodied carbon footprint of 0.09 kg ECO₂ e/kg (kilograms of embodied carbon dioxide equivalent per kilogram of product) as per the ICE report (Hammond and Jones, 2011). The embodied carbon of all ABG's geosynthetic products is based on Global Synthetics internal assessments (Heritage, 2018) and 'Obtaining reliable embodied carbon values for geosynthetics' (Raja, 2015).

The transportation of imported materials is generally based on the installation site being 100 miles from ABG and 5 miles from the nearest quarry. Fuel economy is estimated as 4.4 miles/L. The weight of material transported varies for each item. The carbon footprint associated with construction is based on estimates where possible and ignored in more complicated situations for simplicity of calculations.

About Us

Leaders in Geosynthetics

Global Synthetics is a 100% Australian-owned company, proud to offer a complete range of high-quality geosynthetic products backed by over 200 years of combined staff experience in the industry.

We have supplied products to some of the largest recent infrastructure works in Australia. Global Synthetics provides major benefits to any geotechnical engineering project with the right products and our technical expertise.

Global Synthetics products are used in the following applications:

- Pavement Stabilisation
- Ground Improvement
- Soil Reinforcement and Retaining Structures
- Water Management
- Drainage Systems & Hydraulic Works
- Landfills
- Coastal Erosion Structures

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