Ground Reinforcement Solutions

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TERRAM
Geosynthetics you can trust

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Grass & Ground Reinforcement

TERRAM brand products represent a range of solutions to reinforce, stabilise and protect grass and gravel surfaces. The chart opposite provides an indication of which product may be best suited for your project as determined by the existing ground conditions, the application and the frequency of use.

It is only in the last thirty years or so that the demand has grown for soft unpaved solutions that can be trafficked and are more aesthetically pleasing than concrete and asphalt.

However, soft paved options that also offer long-term performance have required technological advances.

It is now possible to construct walkways, service roads and car parks which are not only pleasing to the eye but can also be discreet, retain their appearance and continue to perform when other non-engineered alternatives are worn and unattractive.

TERRAM product solutions are predominantly natural grassed surfaces, whilst some can also provide gravel surfaces.

The products have been specifically developed with different trafficking requirements in mind because the demand can vary from occasional foot traffic to frequent-use or heavily-loaded vehicles.

Therefore, it is important for you to know that you are working with a leading company who offer a full range of professional solutions and who also have technical, industry-based experience to assess the problem and provide the most appropriate cost-effective solution, rather than offering a one-size-fits-all approach.

TERRAM products, manufacturing and laboratory capability

TERRAM brand products are manufactured by PGI, the world's top producer of nonwovens and the UK's largest manufacturer of geotextiles. The TERRAM geotextiles, geocells and geocomposites along with other related materials such geonets, pavers and grass protection materials are proven and trusted throughout the UK and abroad. The UK manufacturing capability, based in Maldon, Essex, has been expanded and updated to a state-of-the-art facility which includes a comprehensive testing, research and development laboratory.

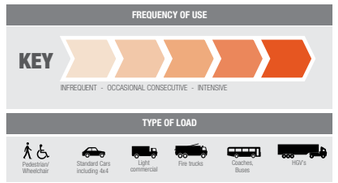
The TERRAM team provides a unique range of value engineered solutions for the construction of highways, railways, landfills, pipelines, coastal/ waterways defences and in landscape engineering.

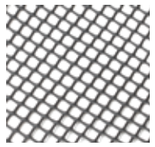
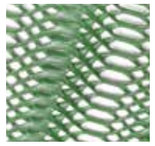
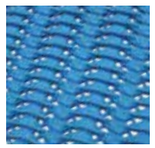
With unrivalled expertise and experience in geosynthetics, accumulated over a 40 year period since the first TERRAM products were launched, the Company remains committed to the development of innovative and cost-effective geosynthetic solutions.

Product Selector

for vehicular applications

The chart below provides an overview of which product may be best suited for your grass or ground reinforcement project as determined by the existing ground conditions, the application and the frequency of use. All products are suitable for pedestrian applications.



	Product	Frequency Of Use	Suggested Applications	Loading	Page
	**TURFPROTECTA** Two grades of recycled plastic mesh for grass reinforcement	Infrequent vehicular use	Overflow grass car parks Pedestrian/ wheelchair access routes		6
	**GRASSPROTECTA** Two grades of thick plastic grass reinforcement mesh	Occasional consecutive vehicular use	Overflow grass car parks Pedestrian/ wheelchair access routes		8
	**BODPAVE 40 (Grass)** Medium duty plastic porous paving grid for grass reinforcement	Regular vehicular use	Grass car parks Fire access routes		10
	**BODPAVE 40 (Gravel)** Medium duty plastic porous paving grid for gravel retention and stabilisation	Infrequent vehicular use	Fire access routes Car parks Driveways Cycle routes		10
	**BODPAVE 85 (Grass)** Heavy duty interlocking plastic porous pavers for grass reinforcement	Occasional consecutive vehicular use	Grass coach parks Grass car parks Fire access routes		13
	**BODPAVE 85 (Gravel)** Heavy duty interlocking plastic porous pavers for gravel retention and stabilisation	Frequent/Intensive vehicular use	Coach parks Fire access routes Car parks Driveways Cycle routes		13
	**TRUCKPAVE (Grass)** Heavy duty recycled plastic porous paver for grass surfaces	Regular vehicular use	Overflow grass car parks Pedestrian/ wheelchair access routes		16
	**TRUCKPAVE (Gravel)** Heavy duty recycled plastic porous paver for gravel	Frequent/Intensive vehicular use	HGV yards, HGV access roads Fire access routes Coach parks Car parks		16
	**PATHMAT** Flexible plastic mesh for sand stabilisation	Occasional consecutive use	Beach access for Pedestrians/ Wheelchairs		22

This product selector is for guidance only. Many variables affect the final determination of the suitability of a product and we would advise speaking to our technical sales team for further guidance. Product selection determined by application & site conditions.

Turfprotecta™ Reinforcement Mesh

Permanent grassed paths, pedestrian areas, wheelchair access routes and infrequent-use car parks on firm, well-drained ground.

TURFPROTECTA lightweight polyethylene mesh is used to reinforce grassed areas intended for very occasional/infrequent light vehicular or pedestrian use, and which are prone to wear and smearing.

The Standard grade is suitable for:

- Paths
- Pedestrian areas
- Wheelchair access routes

The Heavy grade is suitable for:

- Access routes
- Occasional-use car parks

TURFPROTECTA mesh is simple to install. The sward grows through the mesh apertures and knits with the filaments to create a strong, discreetly reinforced surface which is capable of withstanding vehicle loads, limiting damage and helping to reduce compaction.

The grass can be mown, rolled and fertilised as usual during this period. The mesh soon becomes unobtrusive. TURFPROTECTA mesh can also be installed onto newly-landscaped areas and seeded as required.

It is strongly advised that installation is carried out during the growing season to allow the sward to knit with the mesh prior to allowing traffic to use the area. This would normally be after a few weeks during the growing season. Immediate use could restrict growth and limit the effectiveness of the installation.

Newly landscaped installation using green TURFPROTECTA laid and covered with a layer of topsoil and seed.

After just a few weeks the grass grows through the mesh offering a strong stabilised surface.

TURFPROTECTA mesh is a source-control product for Sustainable Urban Drainage Systems (SuDS) and is a suitable alternative to impermeable paved surfaces where natural grassed traffic routes are preferred, or where planning restrictions are applied or cost savings are being considered.

Fixing Pins & Pegs

Steel U-pins or plastic pegs to secure TURFPROTECTA to the ground. Yellow marker pegs are available if required.

Fixing pin & peg product details

PRODUCT	SIZE (mm)	OUTER	MATERIAL
U-Pins	170 x 70 x 6 dia.	50 Pack	Steel
Black Pegs	140 long	100 Pack	Recycled HDPE

Turfprotecta product details

SIZE (m)	GRADE	COLOUR	MESH APERTURE (Diamond/Oval)	WEIGHT	MATERIAL
2 x 30	Standard	Green/Black	25 x 29	550kg/m²	HDPE 100% Recycled
2 x 30	Heavy	Green/Black	22 x 27	660kg/m²	HDPE 100% Recycled

**Available in various roll sizes and Weights.*

Grassprotecta™ Grass Reinforcement Mesh

Permanent grassed overflow car parks, residential parking, access routes, holiday park areas, verges and wheelchair access routes on firm, well-drained ground.

GRASSPROTECTA heavy-duty polyethylene mesh reinforces grassed surfaces prone to wear and smearing e.g. permanent car parking and heavily-used pedestrian areas. The oscillated mesh structure provides greater traction and significantly higher slip resistance when compared with standard mesh alternatives. GRASSPROTECTA mesh is available in two thicknesses: 14mm and 11mm.

Benefits

- High level of reinforcement – up to 8t per static axle load on firm ground
- Suitable for permanent applications
- Can accommodate shallow slopes
- Fast and cost-effective installation
- No excavation or soil removal is normally required
- Higher slip-resistance than standard mesh products

GRASSPROTECTA mesh is simple to install. The sward grows through the mesh apertures and knits with the filaments to create a strong, discreetly reinforced surface which is capable of withstanding vehicle loads, limiting damage and helping to reduce compaction by reducing direct contact with the soil surface. The grass can be mown, rolled and fertilised as normal during this period and the mesh soon becomes unobtrusive.

GRASSPROTECTA mesh can also be installed onto newly-landscaped areas and seeded as required. It is strongly advised that newly-installed areas remain untrafficked until the sward and the mesh have knitted - normally after a few weeks during the growing season, increasing to a few months out of season. Immediate use may restrict growth and limit the effectiveness of the installation.

Applications

The Standard (11mm) grade is suitable for:

- Light-usage, overflow car parks
- Wheelchair (DDA) access routes
- Golf-buggy paths
- Heavily-pedestrianised paths

The Heavy (14mm) grade is suitable for:

- Overflow car parks
- Light-aircraft taxiways
- Caravan sites and other holiday areas
- Some equestrian surfaces
- Verge stabilisation

GRASSPROTECTA mesh is a source-control solution for Sustainable Urban Drainage Systems (SUDS) and is a suitable alternative to impermeable, paved surfaces where occasional-used, natural-grassed, traffic routes are preferred, or where planning restrictions may be applied or cost savings are being considered.

Fixing Pins & Pegs

Steel U-pins or plastic pegs to secure GRASSPROTECTA to the ground. Yellow marker pegs are available if required.

Fixing pin & peg product details

PRODUCT	SIZE	OUTER	MATERIAL
U-Pins	170 x 70 x 6 dia.	50 Pack	Steel
Black Pegs	140 long	100 Pack	Recycled HDPE

Grassprotecta product details

SIZE (m)	GRADE	COLOUR	MESH APERTURE (Diamond/Oval)	SLIP RISK PTV VALUE	WEIGHT	THICKNESS	MATERIAL
2 x 20	Standard	Green/Black	3:1 Ratio	.40 (Low)	1.2kg/m²	11mm	Recycled/Virgin HDPE blend
2 x 20	Heavy	Green/Black	3:1 Ratio	.40 (Low)	2kg/m²	14mm	Recycled/Virgin HDPE blend

**Available in various roll sizes and Weights*

Bodpave™40 Porous Pavers

Permanent grassed or gravel car parks, fire access routes, cycle paths, driveways, access roads and other trafficked areas where a structurally-sound, well drained base is present or will be installed.

BODPAVE 40's open cell structure allows unrestricted healthy grass root growth and water infiltration and can be used as part of a Sustainable Urban Drainage Systems (SUDS). The paver grids also incorporate 25mm 'ground-spikes' on the base which fix through the adjacent paving grid's edge-loops to provide the entire structure with firm anchorage and structural integrity.

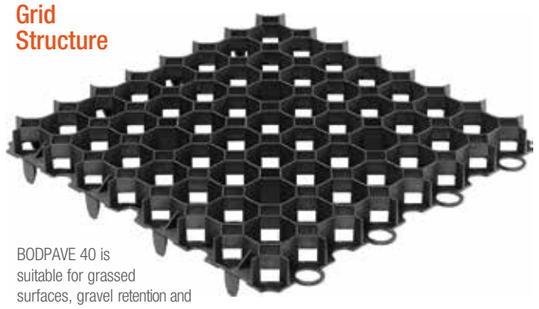
BODPAVE 40 porous grass pavers are an interlocking cellular paving grid system for grass and ground reinforcement applications where there is regular pedestrian or vehicle use. BODPAVE 40 permeable paving grids allow full rainwater penetration and are manufactured from UV stabilised 100% recycled HDPE, in black or green. BODPAVE 40 pavers are strong, chemically inert & non-toxic, enabling them to provide a durable, safe & sustainable eco-friendly surface for trafficked areas.

Applications

- Car parks
- Emergency access routes
- Aircraft taxiways & helipads
- Wheelchair and disabled access
- Pedestrian walkways
- Golf buggy paths
- SUDS source control

BODPAVE 40 grass pavers are a cost effective solution to worn and rutted grassed areas, displaced gravel and for source control of surface water run-off. Designed to be installed onto a well prepared, free-draining and relatively even surface using either Terram 'Reduced -Dig System' or by employing a full sub-base construction incorporating a geogrid reinforcement layer. The paving grids simply connect together and are filled with either a sand : soil rootzone and seeded or turfed providing a visually pleasant and stable surface structure through which grass can be grown, or filled with

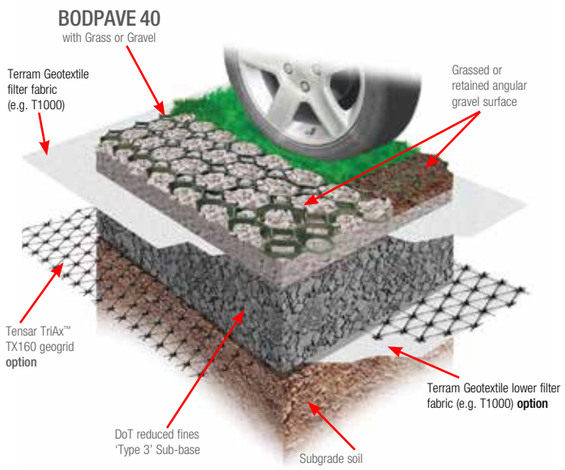
Grid Structure



BODPAVE 40 is suitable for grassed surfaces, gravel retention and SUDS source control applications.

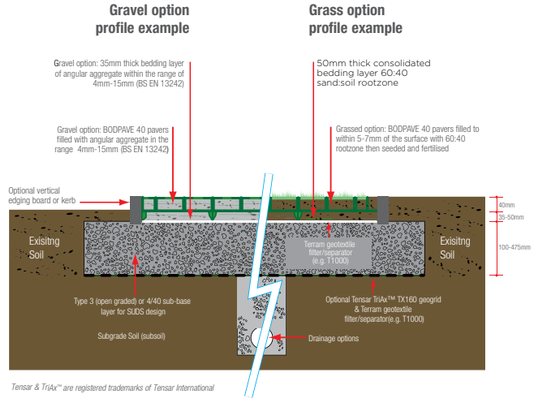
an angular gravel for use as a gravel retention reinforcement surface. Construction profiles for each application will be determined by the specific site conditions & loading criteria. Detailed design literature and technical support are downloadable from www.terram.com.

Typical profile



Not all layers will apply to every application and drainage may be required. Please refer to design guidance documents.

Typical profile



Tensar & TriAx™ are registered trademarks of Tensar International

Bodpave 40 product detailspaver

PAVER SIZE (mm)	QUANTITY (per m²)	WEIGHT (Nominal)	LOAD BEARING CAPACITY	MATERIAL
500 x 500 x 40	4 Grids	4.8kg/m²	150tonnes/m²	100% Recycled Polyethylene
500 x 500 x 40	4 Grids	4.8kg/m²	150tonnes/m²	100% Recycled Polyethylene

**Available in various roll sizes and Weights*

Bodpave™85 Porous Pavers

Permanent grassed or gravel car and coach parking, fire access routes, helipads, taxiways, cycle paths, driveways, access roads and other trafficked areas where a structurally-sound, well drained base is present or will be installed.

BODPAVE 85 is an interlocking cellular porous paving system for ground reinforcement which can be installed with either a grass or gravel filled surface.

The design of BODPAVE 85 pavers allows them to positively interlock with each other and resist shear. Once filled, they provide a high level of load-bearing performance. They are laid on a free-draining base and can be filled with either gravel for immediate frequent/intensive use, or with a seeded sand/soil to establish a grassed surface for occasional consecutive use. Both options mean that the resulting pavement is porous and in sympathy with the environment.

Note: a grassed surface may not be suitable for every application.

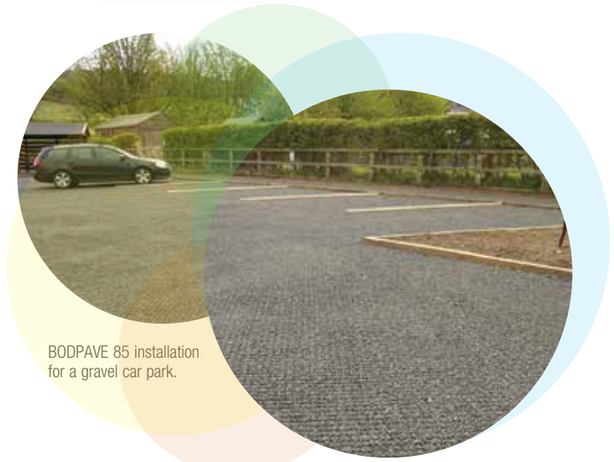
The unique BODPAVE 85 design resists lateral movement whilst accommodating expansion and contraction, promotes surface traction and stability and encourages grass growth by protecting the roots.

Grid Structure

BODPAVE 85 is suitable for grassed surfaces, gravel retention and SUDS source control applications.

Applications (Grass or Gravel)

- Car / coach parks
- Emergency / HGV service access routes
- Aircraft taxiways & helipads
- Walkways and disabled access
- Golf buggy paths
- Driveways & residential parking
- SUDS source control



BODPAVE 85 installation for a gravel car park.

TERRAM Data Sheets, Installation & Design Guidances and Case Studies can be downloaded from **www.terram.com**

Bodpave™85 Porous Pavers

System features:

- Natural grass or gravel surface options
- High load-bearing capacity up to 400t/m² when gravel filled
- 92% open surface structure - SuDS source-control compliant
- Can accommodate inclines up to 1:8 / 12% / 7° and ocalised gradient changes
- No pinning required except on excessive gradients
- Accelerated installation with 1m x 1m panels (four pre-connected pavers supplied as standard)
- Environmentally friendly and aesthetically pleasing
- Suitability for hot and cold climates due to expansion/ contraction capability
- Less wastage as pavers can be incrementally off-set connected to accommodate curves/obstructions
- Non-toxic and chemically inert to the chemicals naturally found in soils
- Manufactured in the UK using recycled HDPE (black and green) with additional UV stabilisation

Marking bays when using BODPAVE 85 pavers

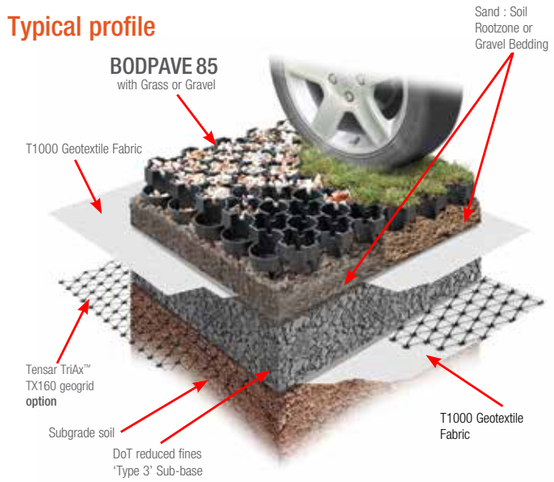
Plastic markers are available for marking bays within areas of BODPAVE 85 paving. The markers are designed to clip positively into the plaque-shaped cells and can be fitted in various orientations to create solid/dotted lines and T or L shapes, etc, for parking bay heads, aisles and junctions. They can be permanently fixed in place by applying a suitable high-strength adhesive or an outdoor-frame sealant to the underside of the markers. If required, the markers can be reduced in size to create single-cell or double-cell-sized units by cutting accurately along the lines between each textured square/pyramidal section. It is recommended that these cut units are bonded in place to resist displacement.

A Tensar TriAx™ TX160 grid should be included beneath the sub-base layer to reduce the total design thickness.

The panels (a pre-assembly of four pavers) connect together simply, ready to be filled with a sand : soil rootzone and seeded for a grass surface, or filled with an angular gravel as determined by the application. The construction profile for each application will be as a result of site-specific conditions and the service-life-loading criteria. Design and technical support documents are available to download freely from www.terram.com.

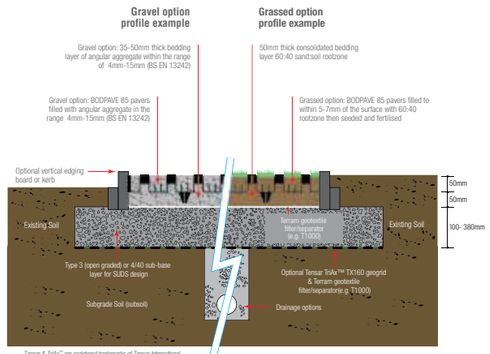
All BODPAVE 85 installations must be provided with sufficient and adequate drainage in order to function as intended. Failure to do this may compromise performance.

Typical profile



Not all layers will apply to every application and drainage may be required. Please refer to design guidance documents.

Typical profile



Tensar Triax TX160 details

ROLL SIZE	NOMINAL UNIT WEIGHT (mm)	MATERIAL
4m x 75m	69kg	PP

Line marker details

COLOUR	SIZE	MATERIAL
White/Yellow	215 x 70	HDPE

Bodpave 85 product details

PAVER SIZE (mm)	NOMINAL CELL SIZE (mm)	QUANTITY (per m²)	COLOUR	WEIGHT (Nominal)	LOAD BEARING CAPACITY	MATERIAL
500 x 500 x 50	67 Plaque & 46 Round	4 Grids	Black	6.48kg/m²	400tonnes/m²	Recycled Polyethylene
500 x 500 x 50	67 Plaque & 46 Round	4 Grids	Green	6.48kg/m²	400tonnes/m²	Recycled Polyethylene

**Each paver includes a 35mm integral ground spike*

Truckpave™ Porous Paving

Permanent grassed or gravel HGV access roads, HGV yards, fire access routes, coach parks and car parks where a structurally-sound, well drained base is to be installed.

Manufactured from recycled plastic, TRUCKPAVE cellular paving is robust, durable and capable of withstanding all levels of traffic up to and including coaches, dustcarts and HGVs.

TRUCKPAVE's cells can be filled with either grass seed/topsoil or gravel, making them suitable for stabilising areas where a grass or stone surface is desirable. TRUCKPAVE pavers are the economic, environmentally-friendly and lightweight alternative to concrete grass concrete-type pavers.

Applications

- Lorry, coach and car parks
- Emergency fire access roads
- HGV service access roads
- Road widening
- Grass verges, including where HGV overrun occurs
- Footpaths
- Service yards and other areas where forklift trucks operate
- Lay-bys
- Loading areas

Benefits

- TRUCKPAVE 80 and TRUCKPAVE 100 comply with the HSE manual-handling limit (concrete units exceed this limit)
- TRUCKPAVE 80 has tongue and groove interlocking for additional stability
- Meets SLW60 load category - vehicles up to 60t gross weight, 10t wheel load
- Flexible and resistant to cracking unlike concrete alternatives
- Because of its insulating qualities, plastic achieves greatly improved volume and quality of grass compared to concrete units
- High compressive strength
- TRUCKPAVE 100 is available with anti-skid surface detail for additional traction on gradients
- Pavers do not transfer heat and dry out soil infill
- Harmless to plants and animals
- Environmentally friendly - manufactured from recycled plastics

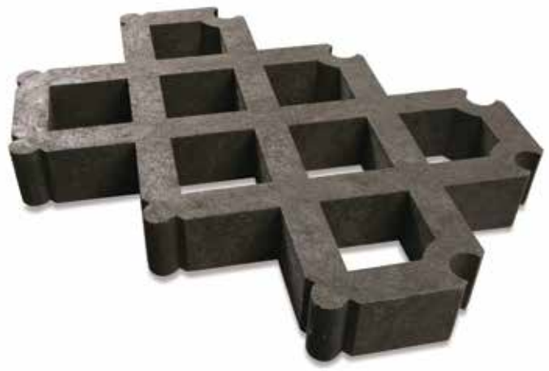
Installation

TRUCKPAVE pavers should be installed onto a well-prepared, free-draining, firm and relatively-level stone sub-base (a reduced-fines Type 3 for example). As an option a Tensar Triax TX160 geogrid at the base of this layer will allow a reduction in the sub-base depth. The sub-base is overlaid with a TERRAM geotextile filter/separator (e.g. T1000) followed by 20mm of coarse sand as a bedding layer for the pavers.

Once laid, the paver cells can be filled with a free-draining angular stone (e.g. 10mm gravel) or a good quality friable top soil and grass seed at 30/40 g/m^2. The cells should not be overfilled so remove excess topsoil or stone from the surface. The topsoil settlement that will occur within the paver cells is desirable as this will allow grass growth without direct impact from traffic.

Perimeter pavers should be restrained using pinned timber sleepers or precast kerbs. The pavers can be cut with a hand saw or power cutter for fitting around obstructions. The whole area should be compacted with either a plate vibrator or a small compacted with either a plate vibrator or a small roller.

For large TRUCKPAVE installations with full edge restraint to all sides it may be advisable to allow for expansion due to fluctuations in temperature. Please contact our technical sales team for advice on this or any other issues relating to design and installation of the pavers.



TRUCKPAVE PRODUCT DETAILS

PRODUCT	DIMENSIONS (mm)	WEIGHT (kg)	UNITS (Nominal)	UNITS/PALLET	COLOUR
TRUCKPAVE 80	600 x 400 x 80	9	4.17	80 No (19.18m²)	Grey
TRUCKPAVE 100 with anti-skid surface	600 x 400 x 100	12	4.17	60 No (14.39m²)	Grey

Geocell Tree Roots Protection

Permanent protection of tree roots where a road, access route or driveway is required when existing trees are to remain undamaged by the excavation and finished trafficked surface.

TERRAM GEOCELL tree-root protection is a cellular-confinement system fabricated from a permeable geotextile and is designed as an acceptable solution for tree-root protection where a road, access route or driveway is required. See Arboricultural Advisory and Information Services APN12: Driveways close to trees.

The system confines the sub-base, stabilises the ground and ensures that the roots beneath are protected from vehicle loads whilst still being able to breathe and obtain moisture and nutrients.

A TERRAM GEOCELL is supplied as flat packed panels which are opened to form the characteristic honeycomb structure. These are positioned and pinned to the ground using J shaped metal pins and filled with a suitable, permeable fill. The geocell confines the fill and ensures that downward forces are spread laterally reducing loads on the underlying soils. Without the cellular system, the surface would become rutted and compacted with the traffic loads damaging the tree roots and potentially resulting in the death of the tree.

Applications

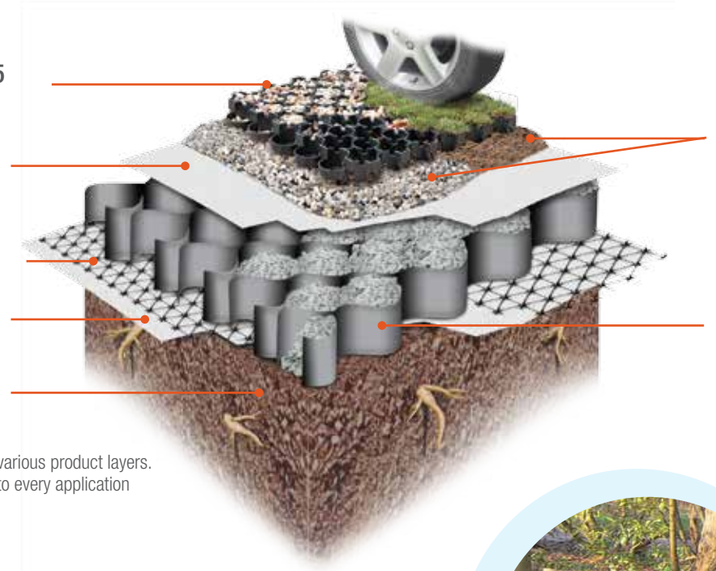
- Permanent woodland trails
- Paths
- Driveways
- Roads
- Access routes
- Parking areas

Once filled, the geocell can be trafficked but it is not intended to be a permanent surface solution unless it is paved e.g. with BODPAVE 85 pavers.

A TERRAM GEOCELL may be used as a temporary expediency e.g. when access to a site is limited by the presence of tree roots. On completion, the geocell can be removed, with the ground left undamaged, or paved with an appropriate surfacing.

A geocell is the ideal solution for tree-protection areas. The tough permeable fabric allows water and oxygen to penetrate through to the roots.

Typical profile



Typical profile showing various product layers. Not all layers will apply to every application and are optional.

Metal fixing pins

Metal fixing pins can be used to fix the cells to the ground.

PRODUCT	SIZE	MATERIAL
Geocell-pins	550 long x 8 dia.	Steel

Geocell product details

PRODUCT	PANEL SIZE (mm)	CELL Dia & DEPTH (mm)	PANEL WEIGHT	GROUND REINFORCEMENT LOAD CAPACITY	MATERIAL
GEOCELL 25/15	5 x 7	250 dia x 150	25kg	Light Vehicles	Non-Woven PP/PE
GEOCELL 22/20	6 x 3	220 dia x 200	25kg	Light Vehicles	Non-Woven PP/PE

Geocell Slope Erosion Control

Erosion control for grassed or vegetated slopes up to 1:1. Permeable fabric allows water, air and nutrient flow.

TERRAM GEOCELL is a relatively shallow cellular confinement system which is used to combat erosion on slopes up to 1:1. The geocell is fabricated using a geotextile so it is permeable and allows water to flow between cells encouraging drainage and vegetation.

It is supplied as compact man-handleable panels ready to be expanded on site to 5m x 7m or 6m x 3m areas with a honeycomb of diamond-shaped cells that are 100mm, 150mm or 200mm deep.

Applications

- Cut or fill embankments
- Dams or spillways
- Revetments
- Abutment protection
- Geomembrane protection
- Soil-nailing cover
- Landfill lining

Metal fixing pins

Metal fixing pins can be used to fix the cells to the ground.

PRODUCT	SIZE	MATERIAL
Geocell-pins	550 long x 8 dia.	Steel

Once placed and secured on the slope, the geocell can be filled with soil or a mineral fill. The result is that the confined fill is able to better resist the erosive effects of wind and run-off. The expanded panels should be fixed at every perimeter cell and at 1m centres throughout using steel fixing pins.

The geocell is flexible enough to be formed around trees and other obstacles.

Seeded topsoil is the most suitable fill for less-exposed slopes, with small shrubs offering improved protection, whilst a granular material offers the highest protection.

Geocell product details

PRODUCT	PANEL SIZE (mm)	CELL Dia & DEPTH (mm)	PANEL WEIGHT	GROUND REINFORCEMENT LOAD CAPACITY	MATERIAL
GEOCELL 25/10	5 x 7	250 dia x 100	17kg	Pedestrian Loads	Non-Woven PP/PE
GEOCELL 25/15	5 x 7	250 dia x 150	25kg	Light Vehicles	Non-Woven PP/PE
GEOCELL 35/10	5 x 7	350 dia x 100	11kg	N/A	Non-Woven PP/PE
GEOCELL 35/15	5 x 7	350 dia x 150	17kg	N/A	Non-Woven PP/PE
GEOCELL 22/20	6 x 3	220 dia x 200	20kg	Heavy Vehicles	Non-Woven PP/PE

Grasscarpet Grass Protection

Temporary reusable grass covering to provide clean and stable pedestrian or vehicular access.

GRASSCARPET is a heavy-duty composite comprising of a grass-protection mesh bonded to a strong non-woven geotextile. It is used to provide two functions: temporary protection or access over grassed surfaces; particularly in wet and muddy conditions:

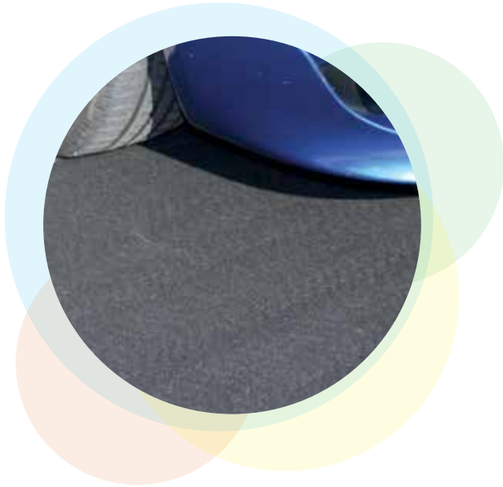
- With the mesh laid face down on the ground and the geotextile upwards the composite GRASSCARPET provides a clean, stable and safe surface for pedestrians, whilst protecting the grass from damage
- With the geotextile laid face down on the ground and the mesh upwards: the composite GRASSCARPET stabilises the grass surface to resist deformation and pumping-up of mud during temporary vehicle access

The GRASSCARPET mesh is manufactured using part-recycled high density polyethylene (HDPE) and it is formulated to provide slip resistance.

GRASSCARPET composite is an ideal covering for wet and muddy grass:

- Garden parties, weddings, exhibitions and concerts
- Marquee flooring and paths
- Temporary car parks and wheelchair access routes
- Temporary pedestrian and vehicle access routes

For Fixing Pins & Pegs see page 9.



Grasscarpet product details

SIZE (m)	WEIGHT	CBR PUNCTURE RESISTANCE	MATERIAL (Carpet)	MATERIAL (Mesh)
2 x 20	2.4kg/m^2	Green/Black	Polypropylene	Polypropylene

TERRAM Data Sheets, Installation & Design Guidances
and Case Studies can be downloaded from **www.terram.com**

Pathmat Beach Access Matting

Flexible surfacing for temporary or permanent access over soft sand surfaces and beach access.

TERRAM PATHMAT beach access mat is a flexible surface stabilisation for permanent or temporary access applications over soft sand surfaces. Utilising the proven oscillated mesh design ensures that rigidity and strength are preserved, providing a reinforced stable surface. Manufactured from a UV stabilised elastomeric polymer, PATHMAT is able to contour to undulating surfaces and provides a barefoot friendly surface for beach goers and is suitable for wheelchair access. Wherever a water pervious, enhanced-grip walkway access is required, PATHMAT beach access mat is the solution.

Applications

- Lightweight and easy to install. Two people can install a 1.56m x 10m section in just 10 minutes
- The elastomeric material provides safe edges
- The blue color provides highly visible access route to recreation areas
- Easily cleaned by using a broom, blower or pressure washer

Available in roll form PATHMAT can be cut and formed around existing beach structures in addition to protected native beach dunes.

Benefits

- Portable and easily removable rollout beach mat
- Pedestrian and wheelchair accessible
- Adapts smoothly to contoured surfaces
- Slip resistant surface providing a safe surface in wet conditions
- Visually attractive design guides guests to desired locations

Connectors and fixing U-pins are available:

Pathmat product details

ROLL SIZE (m)	WEIGHT	ROLL WEIGHT	COLOUR	MATERIAL
153 x 10	4kg/m^2	62.5kg	Polypropylene	Elastomeric PE Blend

Safety Rubber Mat Play area safety

Permanent impact absorbing, slip resistant permeable matting for play areas, fitness/ fun trails and pathways.

TERRAM SAFETY RUBBER MAT's are environmentally friendly, slip resistant and impact absorbing. They are ideal for children's play areas: around most multi-function play frames, springers, swings, fitness/fun trails and pathways. The rubber mats are placed onto existing grass areas and secured to the ground. The grass sward grows through the mat's apertures.

Benefits

- Tested by RAPRA to BS EN 1177:1998 3m Critical Fall Height (CFH)
- Used on flat or contoured grass surfaces
- Unobtrusive once the sward has grown
- Wheelchair and pushchair accessible
- Absorbs shock and noise
- Excellent durability
- Slip resistant
- Resist wind uplift once secured correctly
- Apertures allow for drainage to leave the surface dry
- Requires no special skills or tools to install
- No costly base works unlike conventional tiles or wet-pour, rubber surfacing

Check the suitability of this product prior to installation as the CFH value will be affected by soil type, moisture and grass cover.

If the area is prone to being wet and soft then it is best to first stabilise the area with TURFPROTECTA Standard mesh. Otherwise the Safety Rubber Mats are placed directly over the area and secured using plastic pegs with the mat edges coupled together using cable ties (suitable pegs and ties are available to purchase). See the full Specification, Design and Installation Guidance Note which can be downloaded from www.terram.com.

PRODUCT	CABLE TIES	BLACK PEGS
MATERIAL	Nylon	HDPE
SIZE (mm)	90 long	140 long
OUTER	100 pack	100 pack

Safety rubber mat product details

ROLL SIZE (m)	WEIGHT	THICKNESS (mm)	COLOUR	MATERIAL
1 x 1.5	12kg	62.5kg	Black	Recycled Rubber

TERRAM Data Sheets, Installation & Design Guidances and Case Studies can be downloaded from **www.terram.com**

Terram Geotextile Separator/Filter

Permeable filter/separator geotextile for separating sub-base construction layers from intermixing.

Terram non-woven standard geotextiles deliver separation and filtration. They are resistant to all naturally occurring soil acids and alkalis and is unaffected by biological contaminants such as bacteria or fungi.

Terram geotextiles are important to use in paving construction particularly for installations involving BODPAVE 85 porous ground reinforcement paving grids - for grass or gravel surfaces in applications including car parks, access roads and pavements.

Terram geotextiles (e.g. T1000) allows full water penetration whilst separating fine material (soil/sand) from larger material and offers essential ground stabilisation. The geotextile fabric can be used in conjunction with a geogrid to further improve sub-base performance.

Geotextile product details

PRODUCT	SIZE (mm)	CBR PUNCTURE RESISTANCE (Mean peak strength)	TENSILE STENGTH	MATERIAL
T1000	4.5 x 100	1500N	8kN/m	Non-Woven PP/PE
T900 Minipak	4.5 x 11.1	1350N	7.5kN/m	Non-Woven PP/PE

Terram Rootguard™

Root control barrier to protect buildings, walls, paths, access roads, drainage pipes and underground cables from root damage.

TERRAM ROOTGUARD and TERRAM ROOTGUARD PLUS are used to protect buildings, walls, paths, drainage pipes, cables and lawns from potential damage caused by root development. Tree roots grow very close to the surface and are the cause of considerable damage. Structures with shallow foundations can be undermined. Damaged pipes, or pipes with faulty joints can become blocked by roots. Root growth is also known to cause desiccation of soils to the extent that soil shrinkage can result in parts of the foundation no longer being supported. When this occurs structures may subside and crack, and in these circumstances expensive underpinning may be the only solution. The choice of TERRAM ROOTGUARD product will depend upon the application, specifically whether water needs to pass through the product.

TERRAM ROOTGUARD - permeable solution

In some instances it may be necessary to have a water-permeable solution e.g. surrounding land drains. Although some permeable barriers may not provide the highest level of protection (see TERRAM ROOTGUARD PLUS), they still provide excellent resistance.

TERRAM ROOTGUARD is a geotextile manufactured from polypropylene/polyethylene fibres. It provides excellent resistance to root development; confirmed in numerous trials and commercial projects.

TERRAM ROOTGUARD has high tensile strength, high puncture resistance and is capable of withstanding the differential forces that can develop in clay soils.

TERRAM ROOTGUARD PLUS - impermeable solution

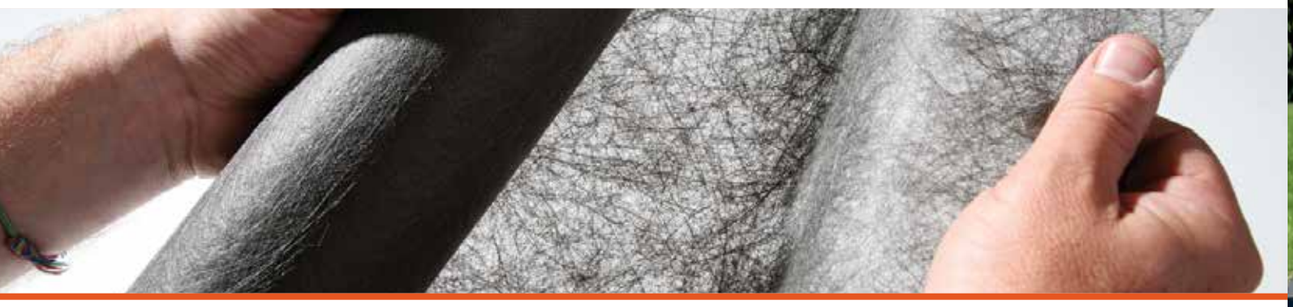
Research has demonstrated that high-density polyethylene (HDPE) can withstand penetration by even the most vigorous of tree roots. TERRAM ROOTGUARD PLUS - a composite of TERRAM ROOTGUARD and an HDPE membrane is the choice when there is no requirement for water to pass through the barrier. This product will provide the greatest degree of protection. Both products are chemically inert to natural soil conditions and resistant to biodegradation.

Terram rootguard product details

PRODUCT	ROLL SIZE (m)	WEIGHT	CBR PUNCTURE RESISTANCE	COLOUR	MATERIAL
TERRAM Rootguard	2.25 x 25	260g/m^2	3250N	Black	Non-Woven PP/PE
TERRAM Rootguard Plus	2 x 25	275g/m^2	2550N	Black	Non-Woven PE/HDPE coated

TERRAM Data Sheets, Installation & Design Guidances
and Case Studies can be downloaded from **www.terram.com**

Terram Weedguard



Permanent permeable weed suppression geotextile for landscaping, gardening and construction applications.

TRERRAM WEEDGUARD is proven for suppressing weeds in landscaping and garden applications without the need for chemicals. This geotextile is designed to allow the passage of water, oxygen and nutrients while blocking weeds. TERRAM WEEDGUARD is installed at the interface between soil and a decorative layer such as bark chippings, stone chippings, pebbles or gravel.

TERRAM WEEDGUARD is supplied in roll sizes to suit small gardens to large landscape project:

The geotextile is unobtrusive grey, easy to cut, does not fray, simple to position, flexible to adapt to uneven ground and can be secured using plastic pegs. *(See page 23).*

- Weed-control fabric which avoids the use of chemicals
- Lightweight and simple to install
- Maintenance free and resistant to microbiological and chemical attack
- Ideal for landscaping, garden beds and beneath decking

Terram weedguard product details

ROLL SIZE (m)	WEIGHT	CBR PUNCTURE RESISTANCE	COLOUR	MATERIAL
2.25 x 50	90/g/m^2	1000N	Dark Grey	Non-Woven PP/PE

TERRAM Data Sheets, Installation & Design Guidances and Case Studies can be downloaded from **www.terram.com**

Further market specific literature available:

- Railways
- Road and Highways
- Landfill
- Coastal & Waterways
- Pipelines / Utilities
- Forestry & Landscaping
- Fruit & Viticulture

www.tubex.com

Application specific literature, product data sheets, case studies and installation guides are available on request or can be freely downloaded from **www.terram.com**

PGI excels in the innovative application of technology to create versatile, high-performance materials which are unique, cost-efficient and deliver significant added value.

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