

Grass and Ground Reinforcement



Contents and Company Profile

PRODUCT

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TYPAR Geosynthetics is a division of Fiberweb, Inc., a leading global supplier of ground support and stabilization. The geosynthetics division, an expanding sector within the Fiberweb business, utilizes a broad range of international brands in its global footprint. With a strong background and proven excellence within the civil, construction, military, industrial, filtration, horticulture and landscaping industries, Fiberweb offers enhanced commercial opportunities, as well as adding value to existing customers through a broadening product portfolio.

Fiberweb offers a broad range of products through the TYPAR brand in the United States, Australia and Germany as well as TERRAM in the United Kingdom and the global DEFENCELL® and TUBEX® businesses.

With a growing portfolio of market respected brands, Fiberweb continues to develop products and ideas that provide the Next Answer to help customers achieve their goals.

All product sizes and weights are nominal figures and may vary marginally to those published. All information is offered in good faith and Fiberweb cannot be liable for any information given. Expert advice from an appropriate competent professional should be sought before determining any product is fit for purpose.

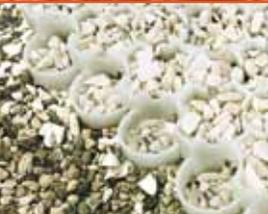
Our Commitment to the Environment

Fiberweb is committed to developing products and processes that reduce waste and negative impact on the environment. This includes the efficient use of materials and energy in design and product development, and an awareness of manufacturing processes' effect on the environment. For many years Fiberweb has focused on identifying and improving performance in key areas of environmental impact, which include waste reduction, energy consumption, water consumption, the use of recycled and biodegradable materials and packaging. All the company's thermoplastic extruded mesh and film finished products are 100% recyclable. The polymers used in their manufacture are chemically inert and therefore will cause no contamination when buried in the soil or exposed to water.

Product Selector Chart

Choosing the correct product

TYPAR manufactures a large range of products to reinforce, stabilize and protect grass and gravel surfaces. The chart below gives an overview of which product may be best suited for your project as determined by the existing ground conditions, the application and the frequency of use.

Product	Application	Maximum load capacity	Load indicator
 TURFPROTECTA Mesh .12" thick Hexagonal mesh	Permanent, grassed paths, pedestrian areas, access routes and occasional use car parking on firm, well-drained ground. Mesh is installed directly onto existing grass or an area to be seeded.	Pedestrian and occasional light vehicle usage	
 GRASSPROTECTA Mesh .43" thick (Standard grade)* Oscillated mesh filaments to aid traction	Permanent, grassed overflow car lots, wheelchair access routes, golf cart paths and heavily pedestrianized grass paths on firm, well-drained ground. Mesh is installed directly onto existing grass or an area to be seeded.	Light vehicle and heavy pedestrian usage	
 GRASSPROTECTA Mesh .55" thick (Heavy grade)* Oscillated mesh filaments to aid traction	Permanent, grassed overflow grassed car lots, access lanes, light aircraft taxiways, RV and trailer park areas and equestrian surfaces. Mesh is laid directly onto the existing grass surface or areas to be seeded on well drained, firm ground.	Standard vehicle loads up to H15 and heavy pedestrian usage.	
 BODPAVE®85 Pavers (grassed) 1.96" thick Interlocking cellular paving system	BODPAVE®85 cells can be filled with soil and seed to create a natural grass surface, ideal for permanent grassed car lots, helipads, emergency access lanes and other trafficked areas. BODPAVE®85 should be laid onto a free draining base and may be supported for improved stability.	Heavy vehicle loads up to H25 loading	
 BODPAVE®85 Pavers (gravel retention) 1.96" thick Interlocking cellular paving system	BODPAVE®85 cells can be filled with gravel for permanent car lots, emergency service access lanes, gravel drive-ways and other trafficked areas. BODPAVE®85 should be laid onto a well drained prepared base and may be supported for improved stability.	Heavy vehicle loads up to H25 loading	
 TYPAR GEOCELL GS Cells 4"-8" thick Cellular confinement system	TYPAR GEOCELL GS cells can be filled with soil or aggregate material to provide slope protection and load support. Suitable for slopes up to 45 degrees (1:1 slope) and on horizontal surfaces to provide a stable base for traffic and an even load distribution.	Heavy vehicle loads up to H25 loading, off-road industrial machinery	

* The suitability of a standard or heavy grade will be site specific. Please contact TYPAR to discuss with one of our technical managers. All TYPAR grass and ground reinforcement products are suitable for use as a source control solutions in LID and NPDES applications.

A

TYPICAL PROFILE BODPAVE®85 Porous Pavers



B

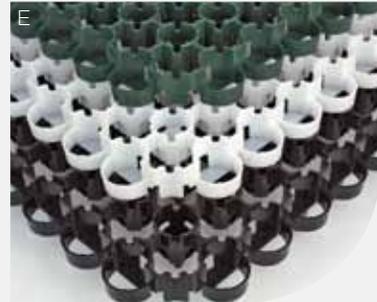
C



D



E



- A Not all layers will be appropriate for every application and drainage may be required. See BODPAVE®85 SDI (Specification, Design and Installation guidance) at www.typargeosynthetics.com.
- B Note that the 3.28 x 3.28' panels are supplied in 4 separate pieces that measure ~20 x 20"
- C BODPAVE®85 Paver
- D A residential driveway constructed using BODPAVE®85 pavers
- E BODPAVE®85 pavers are available in black, green or natural. Green and natural are subject to availability and minimum order requirements.

BODPAVE®85

Porous Paving Grids

BODPAVE®85 porous pavers are a modular, interlocking cellular and porous paving system for ground reinforcement.

It can be installed with either a grass or gravel filled surface.

Manufactured from UV stabilized 100% recycled HDPE, BODPAVE®85 pavers are strong, chemically inert and non-toxic, enabling it to provide a durable, safe and sustainable eco-friendly surface for trafficked areas.

APPLICATIONS

- Car / Bus Parking Lots (Grass or Gravel)
- Emergency Vehicle Access Roads
- Aircraft Taxiways and Helipads
- Walkways and Handicap Paths
- Golf Cart Paths
- Driveways and Residential Parking

BODPAVE®85 pavers are a cost effective solution to worn and rutted grassed areas, displaced gravel and for source control of surface water run-off.

BENEFITS

BODPAVE®85 pavers have been manufactured to offer a high load bearing performance, providing structural integrity and a positive mechanical inter-lock.

- Load bearing up to 367 tons/yd².
- Manufactured from 100% recycled polymer.
- Environmentally friendly, aesthetically pleasing and free draining natural grass or gravel surface.

The unique design of BODPAVE®85 pavers resist lateral movement, improves traction and allows expansion and contraction while promoting optimum grass growth, root protection and surface stabilization.

The open cell structure provides high surface water infiltration and is suitable for source control within a LID/ NPDES profile.

A Profile Examples



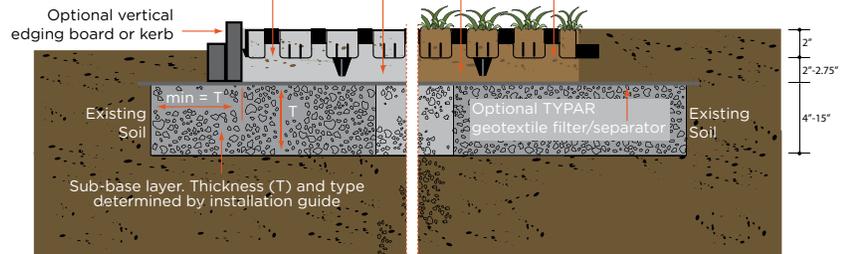
Gravel Grassed

Gravel option: 1.4" - 2" thick angular aggregate within the range of 0.25" - 0.75"

Grassed option: 2" - 2.75" thick consolidated 60:40 sand:soil rootzone

Gravel option: BODPAVE*85 pavers filled with angular aggregate in the range of 0.25" - 0.75"

Grassed option: BODPAVE*85 pavers filled to within 0.25" of the surface with 60:40 rootzone then seeded and fertilized



- A Gravel and grassed options
- B Pavers can be offset by one cell increments for curves/obstructions.
- C Open-walled cell structure promotes healthy grass cover and root growth, provides unrestricted lateral water and air flow, resists localized compaction and the formation of dry-cells normally associated with closed-wall systems.
- D Integral ground spikes to resist lateral movement and deformation.
- E Colored markers are available to delineate parking bays and traffic routes.
- F Integral, interlocking, snap-fit connections allow uninterrupted cell and loop edge connection, resist dislocation and vandalism, and enable positive location of cut-pieces.

BODPAVE®85

Porous Paving Grids

BODPAVE®85 pavers should be installed onto a well prepared, free draining, firm and relatively level sub-base (typically a Class 5 or reduced fines Class 7) using either a reduced-dig system or by employing a full sub-base construction

The panels (a pre-assembly of four pavers) connect together and are then filled with either a sand:soil rootzone and seeded or turfed for a grass surface, or filled with an angular aggregate for a gravel surface as determined by the application. Construction profiles for each application will be determined by the specific site conditions and load bearing criteria. Detailed design literature and technical support are available to download online from www.typargeo-synthetics.com.

All BODPAVE®85 paver applications must be provided with sufficient and adequate drainage facilities in order to function as intended. Failure to ensure this may compromise overall performance.

Plastic markers are available for marking parking bays and lines within areas of the BODPAVE®85 cellular paving system. The markers are designed to clip positively into the plaque shaped cells of the BODPAVE®85 pavers and can be fitted in various orientations to create solid or dotted lines and 'T' or 'L' shapes for parking bay heads, aisles and junctions.

They can be permanently fixed in place by applying a suitable high strength plastic (HDPE) glue or an outdoor frame sealant to the underside of the marker. 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 are bonded into place to resist displacement.

Marker Color	Dimensions	Polymer
White	0.75' x 23'	HDPE

Paver Dimensions	Nominal cell size	Quantity 3.25'²	Nominal weight (lbs/ft²)	Load bearing capacity (tons/yd²)	Polymer	Color
19.7" x 19.7" x 1.97" + 1.37" integral ground spike	2.64" plaque and 1.81" round	4 grids	1.27	367	Recycled polyethylene	Black Green
					Virgin polyethylene	Natural



A



B



C



D



E

- A GRASSPROTECTA mesh is simply unrolled and secured into position using steel u-pins (available to order)
- B Overflow parking lot
- C Golf course application
- D Light aircraft taxiways
- E Steel u-pins are used to secure GRASSPROTECTA to the ground.

GRASSPROTECTA

Grass Reinforcement Mesh

GRASSPROTECTA reinforcement mesh is a heavy duty polyethylene mesh used to reinforce grassed surfaces. It is a permanent solution for parking lots, pedestrian paths, light aircraft taxiways, equestrian surfaces and RV parks. The mesh is installed directly onto existing grass or an area to be seeded.

GRASSPROTECTA mesh reinforces grassed surfaces prone to wear, rutting and smearing. The oscillated mesh structure has been designed to increase traction and improve slip resistance by up to 97% compared to standard straight oriented meshes.

- High level of reinforcement - up to 8 tons per axle (imposed load)
- Ideal for permanent or temporary applications
- Fast and cost effective installation compared to plastic paving grids
- No excavation or soil removal necessarily required

GRASSPROTECTA mesh is supplied on 6.56' x 65.6' and 3.28' x 32.8' rolls in two thicknesses (0.45" and 0.55") as determined by the application and manufactured from partly recycled UV stabilized polyethylene (minimum 20% recycled polymer).

Grade	Nominal weight (lbs/ft ²)	Thickness	Tensile Strength (kN/m) [MD]	Roll Size
Standard	0.245	0.45"	12	6.56' x 65.6'
Standard	0.245	0.45"	12	3.28' x 32.8'
Heavy	0.41	0.55"	16	6.56' x 65.6'
Heavy	0.41	0.55"	16	3.28' x 32.8'

GRASSPROTECTA is made from green HDPE with recycled content with a low slip risk PTV value of >40

Installation is simple; after cutting the grass short the mesh is unrolled and pinned to the surface using metal U-Pins. By allowing plants to grow through its apertures, GRASSPROTECTA mesh allows the grass to intertwine with the mesh filaments creating a strong, discreetly reinforced surface capable of withstanding vehicle loads, limiting damage and reducing soil compaction. GRASSPROTECTA mesh can also be installed onto newly landscaped areas and seeded as required.

TYPAR strongly advises that newly installed GRASSPROTECTA mesh areas should be left unused until the grass has grown through the mesh apertures ensuring a strong interlock with the grass and mesh filaments is achieved - normally after a few weeks during the growing season, increasing to a few months out of the growing season. If the surface is used immediately grass growth may take a longer period of time to establish, thus limiting the effectiveness of the product.

GRASSPROTECTA mesh can be used in source control applications as part of a LID/NPDES system and is the perfect alternative to impermeable paved surfaces where natural grassed traffic lanes and drive-ways are preferred, where planning restrictions are applied or cost savings are being considered.

Fixing Pins

Product	U-Pins
Material	steel
Size (inches)	6.7 x 2.75 x 0.23 dia
Other	50 pack



A



B



C

- A Overflow parking lot
- B Lightweight and easy to install
- B TURFPROTECTA mesh is simply unrolled and secured into position using steel u-pins (available to order)

TURFPROTECTA

Grass Reinforcement Mesh

TURFPROTECTA mesh is a lightweight polyethylene mesh used to reinforce grassed surfaces. It is suitable for grassed paths, pedestrian areas and occasional-use car lots. The mesh is installed directly onto existing grass or an area to be seeded.

TURFPROTECTA mesh is a black or green, light-weight polyethylene mesh for grass reinforcement where occasional light vehicular or pedestrian use is required for car parking or access routes. Supplied in 6.56' x 98' rolls, the mesh is ideal for reinforcing grassed surfaces prone to wear and smearing which can create a muddy surface incapable of being used.

Suitable applications

- Paths
- Pedestrian areas
- ADA accessibility
- Access routes
- Occasional use car lots

Manufactured from 100% recycled high density polyethylene, the mesh is UV stabilized and simple to install; after cutting the grass short, the mesh is unrolled and pinned to the surface using metal U-Pins.

By allowing plants to grow through the mesh apertures, the blade intertwines with the mesh filaments creating a strong, discreetly reinforced surface, limiting damage and reducing soil compaction. It is advisable to allow the grass to fully establish before the area is used to create a stronger reinforced surface (this may take only a few weeks to a few months depending on the grass growing season.) The grass can however be mowed, rolled and fertilized as usual during this period. TURFPROTECTA mesh can be installed onto existing grassed surfaces or newly landscaped areas, for both permanent or temporary applications.

It is strongly recommended that installation be carried out during the growing season to allow a strong interlock between the mesh and the grass roots.

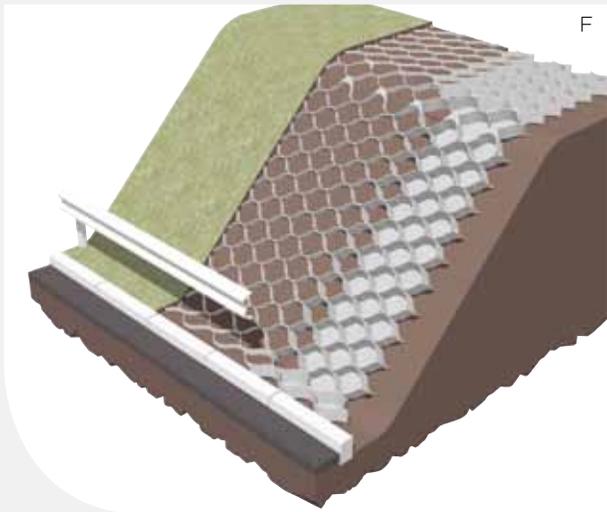
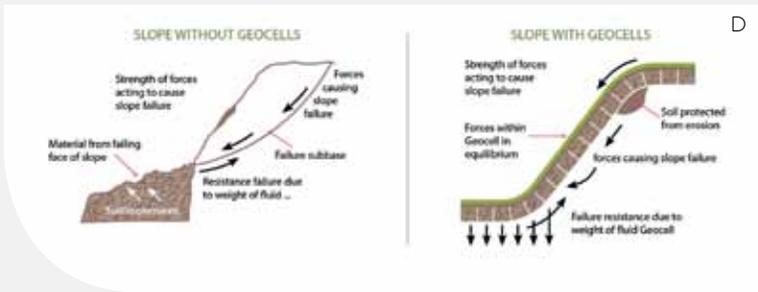
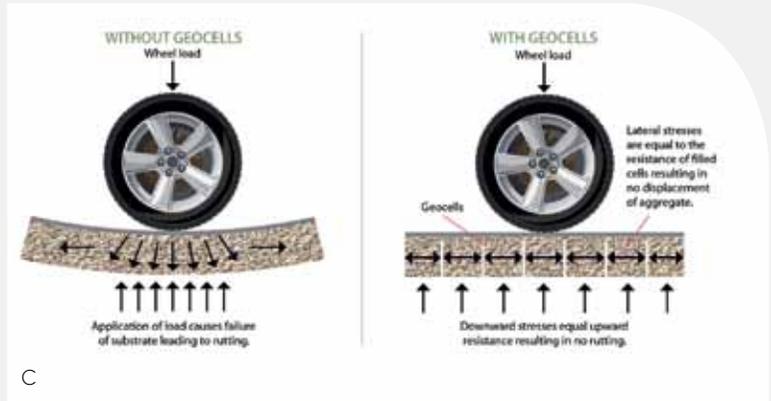
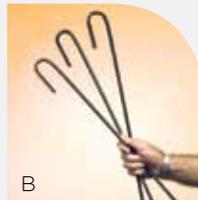
Size	Grade	Color	Mesh Aperture	Weight (lbs/ft ²)	Material
6.56' x 98.42'	Heavy	Black	0.86" x 1.06"	0.135	HDPE (100% Recycled)
6.56' x 98.42'	Heavy	Green	0.86" x 1.06"	0.135	HDPE (100% Recycled)

Fixing Pins

Product	U-Pins
Material	steel
Size (inches)	6.7 x 2.75 x 0.23 dia
Other	50 pack

TYPAR GEOCELL GS cells Ground Stabilization

- A TYPAR GEOCELL GS cells stabilize a residential driveway and provide treeroot protection
- B Steel Fixing Pins
- C TYPAR GEOCELL GS cells reduce substrate failure and the formation of ruts



TYPAR GEOCELL GS cells for slope stabilization

- D TYPAR GEOCELL GS cells prevent erosion on slopes up to 45 degrees
- E TYPAR GEOCELL GS cells installed on a roadside embankment
- F Typical installation of TYPAR GEOCELL GS for slope stabilization

TYPAR GEOCELL GS

Cellular Confinement System

TYPAR GEOCELL GS is a cellular confinement system for slope protection and load support applications.

The TYPAR GEOCELL GS cellular confinement system utilizes the strength and permeability of a geotextile to create a 3-dimensional cellular confinement system. Manufactured from dark grey PP/PE bicomponent fiber geotextile, the cell walls are permeable to water, air and nutrients, increasing stability and vegetative performance. The TYPAR GEOCELL GS system ships in compacted panel form and expands into a honeycomb formation to the desired shape and dimension on-site. The unique, lightweight, flexible material conforms to surface variations to improve ease of installation while resisting impact damage. A variety of infill materials, including native soils and recycled aggregates, may be used to reduce waste material and overall construction costs.

TYPAR GEOCELL GS for Slope Protection

The cellular structure of the TYPAR GEOCELL GS system improves resistance to erosive forces on steep, unstable, or slopes exposed to severe hydraulic or mechanical stresses. Variable cell depths and diameters provide cost-effective options for protection up to 1:1 (45 deg) slopes.

TYPAR GEOCELL GS for Load Support

TYPAR GEOCELL GS cells transfer downward forces laterally, reducing loads on underlying soils. The cellular confinement system is an ideal solution for providing stabilization over poor soil conditions, reducing constructed profile depth and cost, protecting soil and roots from compaction, and providing site access for light, heavy, and industrial vehicles.

Product	Panel Size	Cell Diameter	Cell Depth	Weight	Material	Application Method
TYPAR GEOCELL GS 250/100	16.4' x 23'	9.8"	4"	37.5 lbs	Non-woven PP/PE	Pedestrian/Light Vehicle Load Support and Slope Protection
TYPAR GEOCELL GS 250/150	16.4' x 23'	9.8"	6"	55 lbs	Non-woven PP/PE	Light Vehicle Load Support and Slope Protection
TYPAR GEOCELL GS 350/100	16.4' x 23'	13.8"	4"	24 lbs	Non-woven PP/PE	Slope Protection
TYPAR GEOCELL GS 350/150	16.4' x 23'	13.8"	6"	37.5 lbs	Non-woven PP/PE	Slope Protection
TYPAR GEOCELL GS 220/200	20' x 10'	8.7"	8"	44 lbs	Non-woven PP/PE	Heavy Vehicles Load Support

Fixing Pins

Product	Fixing Pin
Material	Steel Rod
Size (inches)	22" x 4" x 0.32" dia

BODMAT

Flexible Surface Reinforcement



BODMAT flexible surface reinforcement matting has been developed using the proven oscillated design of GRASSPROTECTA mesh and has been tested to a 5.9 CFH (Critical Fall Height.)

BODMAT matting can be installed in external applications by pinning using steel U-pins. It can also be installed in internal applications including horseboxes where a soft and flexible matting is required. Developed specifically for both animal and pedestrian traffic, BODMAT matting offers a pleasant, water pervious, enhanced-grip, under foot walking solution that is ideal for:

- Walkways and paths
- Grass play area reinforcement
- Recreation areas (parks, picnic areas)
- Event flooring
- Horseboxes and animal boarding areas

BODMAT flexible surface reinforcement is available in convenient roll form, and offers many user benefits:

- Flexible to allow use on contoured surfaces
- Can be used by wheelchairs and strollers
- Ideal for both people and animals
- Allows grass to grow through the mesh apertures
- Reinforces grass providing a softer surface in case of falls

BODMAT flexible matting is a designed and tested practical solution:

- Allows water / rain infiltration
- Flexible and durable
- Easily cut to shape/size
- Tested to a Critical Fall Height (CFH) of 5.9ft - BS EN 1177

Roll Size	Mesh Thickness	Color	Weight (lbs/ft ²)	Tensile Strength	Material
6.5' x 32.8'	0.5"	Black	0.73	12 kN/m	Elastomeric Blend

PATHMAT

Beach Access Mat



PATHMAT beach access mat has been specifically developed for use in permanent or temporary recreation access applications. Utilizing the proven oscillated mesh design ensures that rigidity and strength are preserved over soft sand surfaces while the elastomeric material is able to contour to undulating surfaces. This environmentally friendly, slip resistant product is easily installed and able to be removed and reinstalled per environmental regulations. Developed specifically for both animal and people traffic, the product provides a barefoot friendly surface for beach goers. Wherever a water pervious, enhanced-grip walkway access is required, PATHMAT beach access mat is the solution.

- Portable and easily removable rollout beach mat
- Pedestrian and wheelchair accessible
- Oscillated mesh provides strength over sand, pebble and turf surfaces
- Adapts smoothly to contoured surfaces
- Slip resistant surface providing a safe surface in wet conditions
- Minimal maintenance easy to use beach access mat
- Visually attractive design guides guests to desired locations

PATHMAT beach access mat is available in roll form allowing for a quick roll and pin installation. The UV stabilized elastomeric material is recyclable after use, reducing its environmental impact. The material

thickness, durability of construction and portability of the product make it the perfect solution for providing accessible beach pathways.

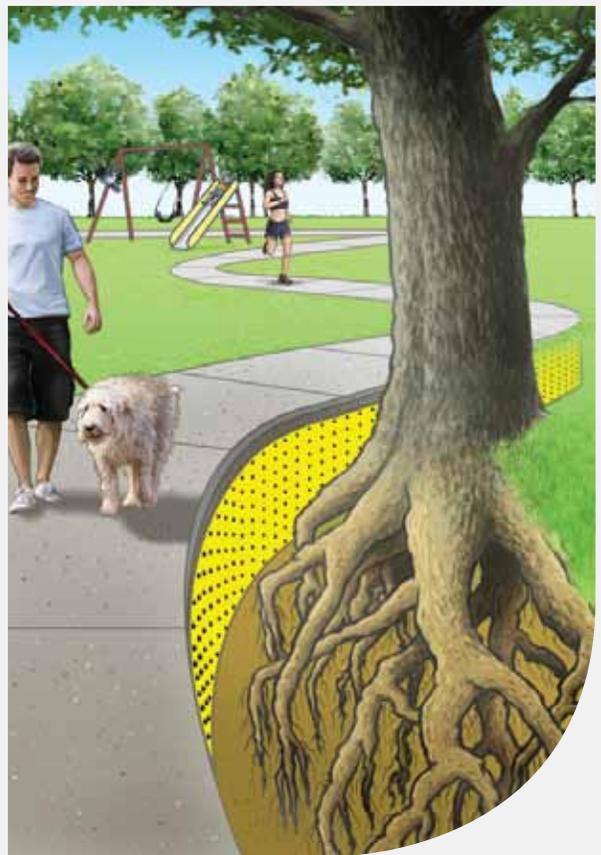
PATHMAT beach access mat can be used in a multitude of applications - wherever recreation access is required for walking and wheelchair accessibility. The mat is also able to be cut and formed around existing beach structures in addition to protected native beach dunes.

Flexible beach mat provides easy beach access for wheeled and pedestrian traffic.

Fixing Pins

Product	U-Pins
Material	Steel
Size (inches)	16" x 6" x .375 diameter
Other	10 per pack

Roll Size	Mesh Thickness	Color	Weight (lbs/ft ²)	Tensile Strength	Material
5' x 32'	0.53"	Blue	0.76	12 kN/m	Elastomeric PE Blend



TYPAR BIOBARRIER

Root and Weed Control System

An innovative chemical and physical barrier system combining the stopping power of Trifluralin with the strength and permeability of TYPAR GEOTEXTILES for over 35 years

The BIOBARRIER root and weed control system manages roots through the slow, controlled release of Trifluralin, a non systemic herbicide that has been used in food crop production for more than 40 years. Nodules containing Trifluralin are through-injection-molded to 4-ounce-per-square-yard, AASHTO Class 3, durable TYPAR GEOTEXTILE fabric, creating a continuous chemical and physical barrier against roots without impeding the flow of water, air or nutrients. Roots growing into the zone of inhibition are stopped, not just redirected, encouraging the plant to send energy to unimpeded areas of the root system, promoting healthy plant growth.

BIOBARRIER Root Control System

Used vertically, the BIOBARRIER root control system protects adjacent structures from root damage. Guaranteed protection for 15 years reduces the chance of injury and potential liability, as well as the costs associated with preventative maintenance and damage repair.

Root Control Width in	12	19.5	24	29	39	58.5
Building Foundations					●	●
Burial Vaults/Tombstones						●
Containers			●	●	●	●
Curbs		●	●			
Drain Lines	●	●	●	●	●	●
Earthdams						●
Golf Greens/Tees/ Cart paths		●	●	●	●	
Landfills						●
Medians			●	●	●	
Paths	●	●	●	●		
Planting Beds		●	●	●	●	●
Pots	●	●				
Retaining Walls				●	●	●
Roads		●	●	●		
Roof Gardens					●	●
Septic Tanks/Fields						●
Sidewalks		●	●	●		
Swimming Pools		●	●	●	●	
Tennis Courts		●	●	●	●	
Underground Pipes/ Cables	●	●	●	●	●	●
Underground Storage Tanks						●
Utility Substations		●	●	●	●	

BIOBARRIER Root Control is available in 20 foot or 100 foot roll lengths

BIOBARRIER Weed Control System

Installed horizontally below 3" of stone/wood mulch, the BIOBARRIER weed control system blocks weed establishment using two layers of defense: chemical and physical. Guaranteed for 10 years, weeds are unable to develop a strong root system in the mulch layer while ornamental tree and shrub roots expand unimpeded below the Trifluralin emitting fabric layer, eliminating unwanted competition and maintenance costs.

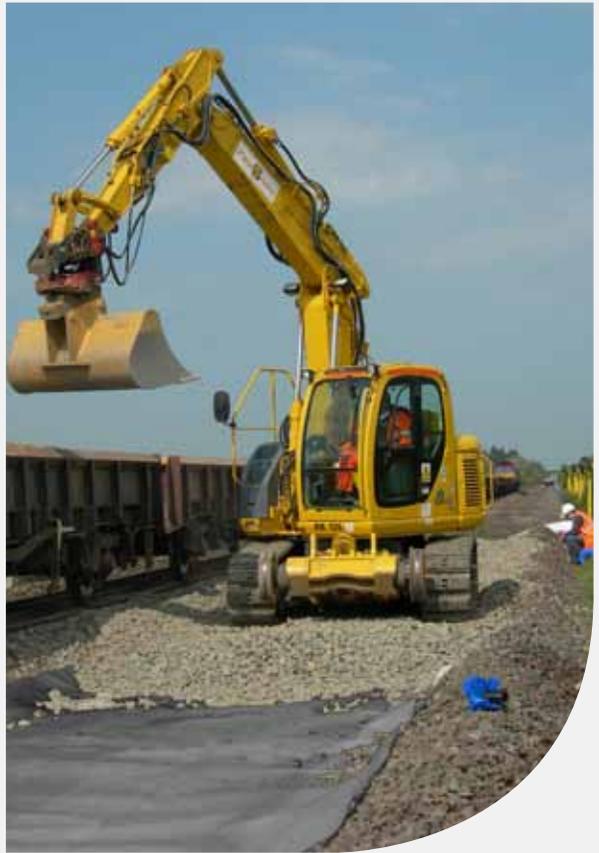
Weed Control width in.	29	39	58.5
Fence Rows	●	●	●
Guardrails	●	●	●
Landscaping	●	●	●
Pavers	●	●	●
Street Medians	●	●	●
Tombstones	●	●	
Tree Skirts			●
Utility Substations			●

BIOBARRIER Weed Control is available in 20 foot or 100 foot lengths

BIOBARRIER Surround System

Tree roots seek out air and moisture in the soil, causing expensive damage to underground infrastructure, septic lines, municipal pipes, swimming pools, and more. BIOBARRIER'S unique geotextile design lends it the flexibility to surround infrastructure, extending the life of your investment by providing protection from root damage for a minimum of 15 years,

Guaranteed for up to fifteen years!



TYPAR GEOTEXTILE

TYPAR non-woven, thermally bonded GEOTEXTILES utilize continuous filament technology for superior strength and uniformity, providing the ideal solution for construction and civil engineering applications.

Made in the USA, TYPAR GEOTEXTILES boast over 40 years of proven performance in separation, stabilization, and filtration applications. The continuous filament, thermally bonded design provides a higher strength:weight ratio than standard non-woven construction fabrics and maintains consistent permeability rates regardless of soil type or compaction. TYPAR GEOTEXTILE'S unique characteristics make it the ideal solution for road reinforcement, industrial yard stabilization, subsurface drain applications, erosion control, landfill separation, mulch underlayment, and septic system projects.

- Ideal for separation, stabilization, and filtration
- Higher strength:weight ratio
- Durable - 40 years of proven performance
- 20 percent recycled content
- Superior uniformity
- Consistent permeability even under compaction
- Filtering that prevents clogging
- Made in the USA
- Isotropic fabric provides stability and strength in all directions

Tough over time, TYPAR GEOTEXTILES preserve the original design, reduce construction and maintenance costs, and increase a project's longevity!

AASHTO Class M288			-	-	-	-	3	2	2	1	1
			TYPAR 3151	TYPAR 3201	TYPAR 3301	TYPAR 3341	TYPAR 3401	TYPAR 3501	TYPAR 3601	TYPAR 3801	TYPAR 3100
Mechanical (Marv)¹											
Grab tensile strength	ASTM D4632	lbs	35	60	120	120	130	160	240	300	335
Grab elongation	ASTM D4632	%	60	60	60	60	60	60	60	60	61
Trapezoidal tear strength	ASTM D4533	lbs	15	25	35	40	60	60	90	95	74
Puncture strength	ASTM D4833	lbs	10	18	25	34	41	56	67	93	-
CBR Puncture	ASTM D6241	lbs	-	-	-	-	225	310	370	510	697
Endurance (MARV)¹											
UV Resistance @ 500 hrs	ASTM D4355	%	-	-	-	70	70	70	70	70	-
Hydraulic (MARV)¹											
Apparent opening size ²	ASTM D4751	US Sieve	20/30	30	50	60	70	70	140	170	-
Permittivity	ASTM D4491	sec ⁻¹	1.5	1.0	0.8	0.7	0.7	0.5	0.1	0.1	0.123
Water flow rate	ASTM D4491	gal/min/ft ²	235	190	95	85	60	50	15	8	-
Physical (Typical)											
Unit weight		oz/yd ²	1.6	1.9	3.0	3.4	4.0	5.0	6.0	8.0	10
Roll diameter		in	7	7	8	8	9	10	10	12	-
Length		yd	100	100	100	100	100	100	100	100	-
Width		in	151	151	151	151	151	151	151	151	-
Roll area		yd ²	419	419	419	419	419	419	419	419	-
Roll weight gross		lbs	50	58	87	97	113	138	165	218	-
Width		in	-	-	-	-	187	187	187	187	-
Roll area		yd ²	-	-	-	-	519	519	519	519	-
Roll weight gross		lbs	-	-	-	-	142	175	209	275	-

Notes:
 (1) Minimum average roll values (MARV) in the weaker principal direction
 (2) O₉₅ Max. ARV

Product data sheets, case studies, installation guides and project information request forms are available on request or can be downloaded from www.typargeosynthetics.com. Please contact our sales team for reference projects or for further advice.

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