



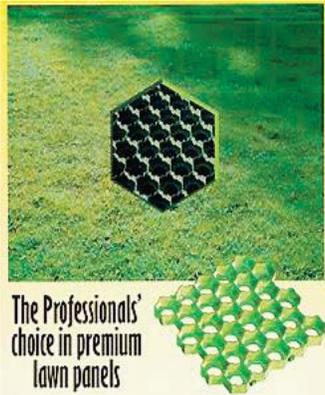
The Green Products Company

"Building A Greener Tomorrow!"

A DIVISION OF ACOUSTICAL SURFACES, INC.

123 Columbia Court North ■ Suite 201 ■ Chaska, MN 55318
(952) 448-5300 ■ Fax (952) 448-2613 ■ (800) 708-0517

Email: sales@thegreenproductscompany.com
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PermaTURF®

GREEN QUALITIES:

- Erosion Control
- Storm Water Management
- Permeable

DESCRIPTION:

With a maximum load capacity of 100 tons per square yard, PermaTURF® premium lawn panels can support extremely heavy loads without rutting, even in wet conditions, making them ideal for residential, commercial, and public areas. The function of PermaTURF® lawn panels is to provide a solid foundation for grassed areas subject to erosion, ruts, run off, or heavy traffic. While the honeycomb porous cells allow for natural drainage and root protection especially needed in high traffic areas, the rigid plastic panels offer turf reinforcement for heavy vehicles.

With our four-sided patented interlocking system, these panels create a bridge structure within the topsoil layer to support and distribute concentrated weight loads. In addition, the system insures stability of the panels to maintain root development and healthy growth within the honeycomb cells – yielding a landscaped appearance with virtually no maintenance!

A landscaped look can be achieved by using PermaTURF® panels in conjunction with sod (rolled turf), seeded grass, moss, ground vegetation, mulch, or small stones such as pea stone.

INSTALLATION:

PermaTURF® installation in just 4 easy steps!

Simply remove the topsoil, replace with a gravel/sand mix, and level ground surface. Easily Installed by connecting the panels.

Spread loam over PermaTURF® panels, seed, and fertilize. That's it! A beautiful driveway extension...and only you know it's there!

Features of Porous Pavers

Commonly we are asked about using PermaTURF Porous Pavers in conjunction with turf and/or pea stone for parking or driveway situations. This is how we typically address the application for PermaTURF.

PermaTurf Porous Pavers provide: **(1)** turf reinforcement for all kinds of traffic areas, **(2)** storm water and erosion control, **(3)** environmental enhancement, **(4)** aesthetic appeal, **(5)** and health benefits.

Using PermaTURF to create a secure grass root system, it is imperative that the root system of the indigenous turf is protected within the cells of the panel; thus, traffic does not harm the root structure as vehicles ride on the top of the panel's cells, allowing the roots to penetrate below the panel cells to a natural depth. The entire base and panel structure is not designed to retain water; it allows for natural drainage into the soil while providing a solid foundation.

We cannot specify the type or amount of sub-structure needed as it is totally based on the existing conditions of the climate, turf, and other factors in your area. Generally the sub-base will be constructed the same as needed for driveways paved with asphalt or concrete with consideration of load weight. For specifics see installation instructions.



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MATERIALS FOR SUB-BASE:

Base Course: Sandy gravel material from local sources commonly used for road construction. Sources of the material can include either "pit run" or "crusher run". To ensure long term porosity, crusher run material will generally require sharp sand to be added to mixture (20-30% by volume). To provide adequate root zone development for turf, selected materials should be nearly neutral in pH (range from 6.5 to 7.2). Alternative materials such as crushed shell, limerock, and/or crushed lava may be considered for a course base provided that it is mixed with sharp sand (20-30%) and brought to proper compaction. (Crushed shell and limerock alone will set up like concrete without sands added.)

Specification/Description for Porous Pavers

Material HDPE/PP 100% Recycled Polyethylene

Color Grass Green

Panel Size/Coverage 13"x13"x1 1/2" / 1 Ft²

Cells per Unit 30

Cell 2 1/4" diameter

Unit Weight 1 1/4 Lbs.

Stabilization UV Inhibitors

Design Patented 4-side Interlocking Design

Permeability 94%

Load-Bearing Capacity 500+ tons/m², installed (tests available upon request)

Units per Pallet* 360

Weight per Pallet 450 Lbs.

*Pallet: 30 tiers of panels, each tier is 12 sf interlocked

PERMEABILITY:

There are a number of factors to consider when comparing runoff of various surfaces – concrete, asphalt - with the application of PermaTURF Porous Pavers. As a rule, PermaTURF porous pavers provide a lower runoff coefficient attributable to 90% and greater permeability per square foot of surface area, depending on the sub-base content and depth of base. Using PermaTURF over a base content of:

1. Rock and sand will generate minimal surface runoff.
2. Clay soils will vary depending on the depth of the base.

PermaTURF and all similar porous paver companies refer to the method established by the Technical Release #55, US Department of Agriculture, Soil and Conservation to access storm water management.

No porous paver can influence runoff or permeability of storm water; general rules apply.

Advantage: PermaTURF Porous Pavers are lightweight injection molded units (13" x 13" x 1-1/2" h) made of the highest quality of plastic – 100% recycled polyethylene HDPE/PP. The high premium resins and UV inhibitors guarantee the strength and longevity of the pavers.

Advantage: PermaTURF Porous Pavers have a patented 4-sided interlocking design of honeycomb shaped cells with a 1 1/2" diameter opening on the bottom to allow maximum grass root penetration and development. The couplings support the connecting panels, forcing the weight to be distributed over a larger area, and making panel separation impossible.

In addition to securing the panels into one solid, contiguous area, the patented interlocking system does not allow the panel units to be pulled apart. The 4-sided panel-to-panel connection securely fastens into one continuous section, which is extremely important when major forces are applied by traffic including pressure from turning, braking, and acceleration.

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Permeability					Runoff % - 24 Hr Rainfall
					Sand to Clay Soils
Inches		CN30	CN58	CN71	CN78
1	+	0	0	0.01	0.06
1.2	+	0	0	0.03	0.1
1.4	+	0	0	0.05	0.14
1.6	+	0	0	0.05	0.18
1.8	+	0	0.01	0.11	0.21
2	+	0	0.02	0.13	0.24
2.5	+	0	0.05	0.2	0.32
3.3	+	0	0.09	0.25	0.38
4	+	0	0.17	0.35	0.47
5	+	0	0.23	0.42	0.54
6	+	0.01	0.29	0.48	0.6
7	+	0.03	0.34	0.53	0.64
8	+	0.05	0.39	0.57	0.67
9	+	0.08	0.43	0.61	0.7
10	+	0.1	0.46	0.64	0.73
11	+	0.12	.49	0.66	0.75
12	+	0.15	0.52	0.68	0.76



Advantage: Subtle changes in ground conditions could easily result in panel separation and connection failure with a different type of joint connection i.e. snap on connectors or pegs. The PermaTURF design is differentiated from other types of panels as the connections will actually become stronger as more pressure is applied; thus providing a secure panel locking mechanism. The interlocking design facilitates installation, allowing one person to place over 500 square feet an hour.

- Ecologically and environmentally safe.
- Made of 100% recycled plastic.
- Easy installation – 500 sq. ft. per hour!
- Interlocking system prevents horizontal and vertical movement.
- Natural Drainage.
- Virtually no maintenance.
- Never needs replacement.
- A Professional landscaped appearance.
- PermaTURF® panels will preserve your lawn.

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Advantage: PermaTURF Porous Pavers have the highest load-bearing capacity due to the wall-to-wall injection molded composition, exceeding that of any flexible pavers including pavers with freestanding cells.

Tests performed under the guidelines of DIN EN ISO 604 using only free standing PermaTURF hollow panels established a load force capacity of more than 5038 kN/m² with a maximum force of 15.75 kN. Tests using free standing hollow panels are a vital factor in ascertaining precise strength, durability and quality of the panels. PermaTURF pavers installed, resting on a filled base course, support the equivalent of 500 tons+ /m² of total loading magnitude, which exceeds any load-bearing weight conceivable.

Caution: Tests results claiming 'X' amount of psi [pounds per square inch] are misleading and inaccurate and do not reflect the quality and durability of the product when tests are performed after the product is installed and resting on a filled base course.

Advantage: PermaTURF renders an aesthetic landscaped appearance that is far more attractive than asphalt or concrete, and extends the natural environment while keeping the grounds and air clean.

The various applications for these panels are limited only by your imagination. Some examples may include:

- Walkways
- Foundation Perimeters
- RV/Boat/Trailer Parking
- Pool Circumference
- Driveway Edging
- Extended Parking
- Around & Under Fencing
- Sport Dugouts
- Dog Runs
- Animal Pens
- Outside Kennels
- Patio/Courtyard
- Veterinary Kennels
- Golf Cart Paths
- Golf Courses
- Firelanes
- Greenhouses
- Downspout Drainage
- Parking Lots
- Pool/Shower Area
- Mailbox Area
- Wheelchair Paths
- Pavement Border

PERMATURF HISTORY:

PermaTURF originated in Germany and its usage in various applications is widely accepted throughout Europe where the governments have the most stringent environmental and ecological regulations.

In 1996, PermaTURF Porous Pavers was the chosen product for the twenty-acre parking lot at Universal Studios in Bottrop, Germany. In 2004, the US Defense Department chose PermaTURF for its project in Guam. In 2006, PermaTURF was the preferred product for the Botanical Gardens' project in Washington, DC and the New Jersey Turnpike breakdown lane project. In 2009, PermaTURF was the selected choice for a major road project in The British Virgin Islands and the Factoryville Borough Joint Municipal Park project in PA. The application of PermaTURF for these distinct and different projects demonstrates that the preferred choice by the Professional Landscape Architecture Industry is PermaTURF.

PermaTURF is the most tested and technically developed product in the market. With a patented 4-sided interlocking design that insures stability of the panels without any separation, PermaTURF offers the only porous paver that does not require pegs, anchors or fasteners. Moreover, the design of each panel, with 30 honeycomb shaped cells, provides a wall-to-wall construction that allows equal distribution of weight and guarantees the highest load-bearing capacity: a load-bearing magnitude exceeding that of any flexible pavers.

With PermaTURF, there are many design options because of the size, light weight and ease of installation. The base underneath the pavers is the key to any permeable material. Topography, rainfall, soil and climate are diverse throughout the country and, therefore, simple modifications are necessary to each base system to achieve the optimal performance.