

# PourUSPave

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A SUPERIOR BRAND OF  
FLEXIBLE POROUS PAVING

Provided by: Eco-Smart, Inc.  
941.376.8484

[www.eco-smart.com](http://www.eco-smart.com)

# Learning Objectives

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- Traditional porous paving VS Flexible Porous Paving
- Benefits of Flexible Porous Paving
- History
- Applications
- Color Options
- Installation Techniques
- Testing
- Available Documents
- Pricing
- Quiz

Landscape  
Architecture  
Continuing  
Education  
System™

LA  
/CES™



Concrete



Pavers



Asphalt

## Commonly Used Permeable Paving

Rigid, routine vacuuming required, susceptible to cracking through freeze thaw, poor permeability.

# What is Flexible Porous Paving

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Slip Resistant  
Extremely Porous  
Non-Cracking  
Minimal Maintenance



WIRE FREE RECYCLED, COLOR COATED RECYCLED TIRE CHIPS.



TRIPLE WASHED AND KILN DRIED STONE AGGREGATE.



METHYLENE DIPHENYL DIISOCYANATE (MDI) BINDER



Save on Maintenance



Joint Pain Relief



Minimize Runoff

Flexible porous makes Good Sense

Also, a practical use for discarded tires



Final Report

**Pervious Pavements - Installation, Operations and Strength  
Part 4: Flexipave® (Recycled Rubber Tires) Systems**

Work Performed for the Florida Department of Transportation



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FDOT Project Number: BDK78, Work Order #977-01  
UCF Office of Research Account Number: 16-60-7024

August 2011

Available  
On perkEpave  
Website

**DISTRICT OF COLUMBIA  
DEPARTMENT OF TRANSPORTATION**



**GREEN INFRASTRUCTURE  
STANDARDS**

2014

Available  
On perkEpave  
Website

# PourUSPave

Established in 2017

Providing a Superior Flexible Porous  
Paving at Competitive Pricing with  
Outstanding Customer Service

- Quality colored rubber
- High tensile strength binder
- Triple washed kiln dried stone
- Optimum mix ratio
  
- Installations in 16 States and the District of Columbia
- 48 contractors and/or municipal work crews trained on installation techniques

## History of Flexible Porous Paving

Developed in Germany in early 1990s, Introduced to USA early 2000s under the Flexi Pave brand,  
Studied by University of Central Florida in 2011, Added to the DC DOT Standards in 2014

# Application

Save Trees and Minimize Sidewalk Maintenance – Walk Run Tree 11 Mix



SAVING MATURE TREES .



ELIMINATE TRIPPING HAZARDS.



MINIMIZE SIDEWALK MAINTENANCE.

# Application

Walking and Running Trails and Paths – Walk Run Tree 11 Mix



FLEXIBLE RUNNING SURFACE

ALONG TREE LINE.

THROUGH ENVIRONMENTAL AREAS.



# Application

Playground Fall Protection – Play Safe 01 Mix



ALL RECYCLED WITH  
FLEXIBLE BINDER



MANAGING STORMWATER.



TESTED FOR 5' - 11' FALL HEIGHT.

Application  
Ride Drive Park  
31 Mix

Tested to withstand  
26,000 per square  
foot

Residential driveways,  
parking stalls and  
trench drains



**Ride, Drive, Park**  
is durable and extremely permeable;  
minimizing impervious surface, allowing  
for additional building foot print.

Eliminating Impervious Surface

# Products are mixture of Rubber, Stone and Binder

Rubber and Stone can be mixed in a many combinations to achieve the required look and application to fit with the project design.

## Color Options



RUBBER  
OPTIONS



BLUE



BLACK



STONE  
OPTIONS



GREEN



GRAY



CYPRESS



NATURAL  
BEIGE



TAN



REDWOOD



BROWN



CRUSHED  
SALT & PEPPER

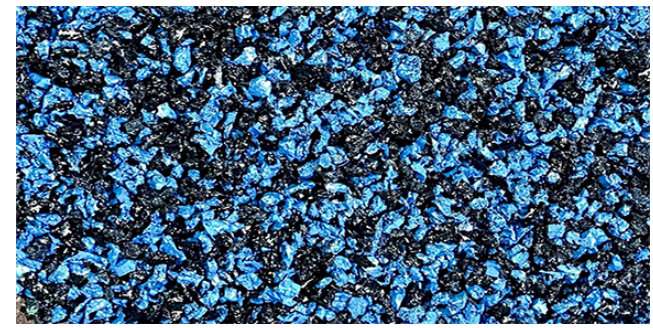
# Popular Color Combinations



GREY BROWN S&P STONE



BROWN GREEN BEIGE STONE



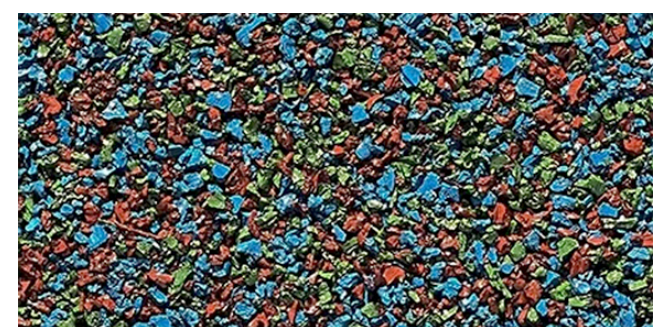
BLACK BLUE.



TAN BROWN BEIGE STONE



GREY GREEN S&P STONE



REDWOOD BLUE GREEN.

# Mixing Flexible Porous Paving

Rubber is supplied in 50 lb. bags, 40 bags to a full pallet

Stone is supplied in 50 lb. bags, 56 bags to a full pallet

Binder is supplied in either 5-gallon buckets or 250-gallon totes



Binder Stains  
Where Gloves  
And Keep off  
unwanted  
surfaces

Mist mixer with  
form release  
Often to  
prevent buildup

A crew of 6 can install an average 1,800 sq ft  
Over a prepared base in an 8-hr. workday

# PourUSPave Installation Tools & Consumables

Paddle type mortar mixer must be used to mix products

Form release needs to be applied to floats often for smooth finish

Installation Equipment, Tools & Consumables

- 2 Ex Large wheelbarrow
- 1- Broom
- 2 Shovels
- 1 X 6 Screed Board
- 8-12 cu ft Mortar Mixer Paddle Type
- Concrete Form Release
- Razor Knife
- 1- Concrete rake
- 18" 1- Fresno Float On Pole  
Handle Adpt - Kraft CC295  
Float - Kraft CC618
- Large Tarp
- 2- Spray bottles  
Fill with Form Release
- 2 Floats 18"
- Water bucket  
Fill with water add dish soap
- 2" paint brushes
- rubber gloves
- Bottle of dish detergent
- 2 Large Measuring bucket
- 2 Garden Sprayer  
Fill 1 with form release & 1 with water
- rags
- Spreading Tool - Fabricate from wood 1 x 3  
Dimensions: 32" total length, 2 1/2" top edge, 28" bottom edge, 4" end piece.

# Tree Surround Remediation

## IMPORTANT

- Do not damage roots
- Coat matting surface with binder
- Binder stains, avoid getting it on finished surfaces
- Tamp and compact stone base



### Step 1 - Remove Existing Soil

Remove existing soils to depth of 4"- 6" below elevation of existing concrete, where possible and without damaging existing tree roots.



### Step 2 - Place Clean #57 Stone

Place stone and tamp to 1.5 inches below existing concrete.  
No geotec fabric required around the root ball area of the tree.



### Step 3 - Coat Concrete With Binder

Coat matting surface with binder to assure perkE-pave adheres to the surface and eliminates tripping hazards that may develop over freeze thaw cycles



### Step 4 - Mix & Place

Mix 1 bag of rubber with 1 bag of stone and 5 quarts of binder (producing 16 sq ft - 1.5" thick) and place over stone; screed and finish with float coated with form release

# Trail, Path, Sidewalk Installation

## IMPORTANT

- The product is as good as the base, compact as necessary to support the required weight.
- Screeding is the first task in the finishing process
- Form release must be applied to the finishing tools often to achieve a smooth finish.
- Tools and mixer should be cleaned as soon as possible.
- Binder reacts with the binder and should never be introduced to the mix.



PLACE GEOTECH FABRIC AND  
STONE BASE



COMPACT  
STONE BASE



TRANSFER MIX TO POINT OF  
INSTALLATION



SCREED FIRST AND FINISH  
WITH FLOAT



# Extremely Permeable and Porous

- Flow through rate of over 2,000 gallons per hour per sq ft.
- Over 30% void capacity



# PourUSPave Test Results

Installation temperature range 45-90 degrees farinheit

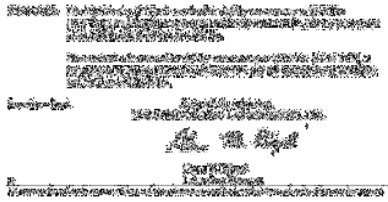


CLIENT: perkE pave, LLC DATE TESTED: 9/26/18  
 PROJECT: perkE pave REPORT NO: PP-1  
 DATE RECEIVED: September 26, 2018 TECHNICIAN: CHUCK Riegel

### COMPRESSION TEST

MATERIAL: Flexible Porous Paving (4" x 4") Material

IDENTIFICATION	Standard Mix #1	Standard Mix #2	Standard Mix #3	HD Mix #1	HD Mix #2
Subgrade Measurement	1.71	1.61	1.52	1.69	1.56
Measurement after 1,000 lbs.	1.68	--	--	--	--
Measurement after 2,000 lbs.	--	1.68	--	--	--
Measurement after 3,000 lbs.	--	--	1.49	1.49	--



### Permeability Test

#### 1) System Construction Summary

- A 10" diameter by 2" thick sample of perkE pave was poured into a 5-gallon bucket with the bottom of the bucket removed. Sample 10" diameter = 78.5 sq. in = .545 sq. ft.



#### 2) Testing Procedures

- A second 5-gallon bucket was filled with water. This bucket of water was poured into the bucket containing the perkE pave sample and the time it took to flow through the sample was clocked and repeated 5 times. The time recorded ranged from 10.5 seconds to 12.35 seconds. For testing purposes and to be conservative in calculating the permeability 15 seconds is being used in determining the results.



#### 3) Results

- 5 gallons of water will pass through .545 square ft of perkE pave in 15 seconds.
- Therefore 5 gallons of water will pass through 1 sq. ft in 8.175 seconds (conservatively 5 gallons of water will pass through 1 sq. ft of perkE pave in 9 seconds)
- 3,600 seconds in 1 hour divided by 9 = 400 x 5 = 2,000 gallons
- Published Factor: perkE pave has a permeability rate greater than 2,000 gallons per hour per square foot.**

I hereby verify that the results presented in this report were obtained on the sample as described, said date and are believed to be accurate representations of the performance of the perkE pave paving system.

*Thomas E Carroll*  
 Thomas E Carroll

May Flow rate - over 2,000 gallons Per hour per square foot

### Porosity Test

#### 1) System Construction Summary

- A perkE pave sample was constructed of recycled wire-free tire chips, a washed and kiln-dried stone aggregate and a urethane binder. Sample dimensions: 12" x 12" x 1.5" thick.



#### 2) Testing Procedures

- The sample was removed from the form after it was fully cured. The sample was then wrapped tightly along the bottom and up the sides with plastic and placed back into the form to hold the plastic membrane tightly in place to assure pores within the sample are the only voids available to store water.
- Next water was poured into the sample until the water filled the pours within the perkE pave to the top of the sample with no puddling.



#### 3) Results

- A square foot of perkE pave 1.5" thick will hold 56 oz of water.
- A cubic foot of perkE pave will hold (8 X 56 oz) 448 oz (3.5 gal) of water.
- 3.5 gal/7.48 gal (gal in a cu ft of water) = .467 void in a cu ft of perkE pave
- Published Factor: perkE pave has a 40% void capacity**

I hereby verify that the results presented in this report were obtained on the sample as described, on said date and are believed to be accurate representations of the performance of the perkE pave paving system.

*Thomas E Carroll*  
 Thomas E Carroll  
 March 4, 2021

Over 30 % void capacity  
 1 sq ft x 1.5" holds 56 oz of water



Suitability Test Report

Issued To: perkE pave LLC  
 418 Wilson Street  
 Pottstown, PA 19464  
 USA

Standard: F1292 (2018) Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment

System Name: perkE pave Safe 3 inch

Date of Suitability Testing	Dec 17, 2019
Suggested Retest Date	Dec 17, 2026
Report Number	F1292-121719-01
Pages	5

Evaluated ASTM F2970 (2015) Performance Property	Test Results @ 6 ft Fall (Avg Values)		Test Results @ 7 ft Fall (Avg Values)	
	Gmax	HIC	Gmax	HIC
Point 1	135	718	136	945
Point 2	133	722	159	968
Average	134	717	158	957

Meets a critical fall height of 7 ft using ASTM F1292-18

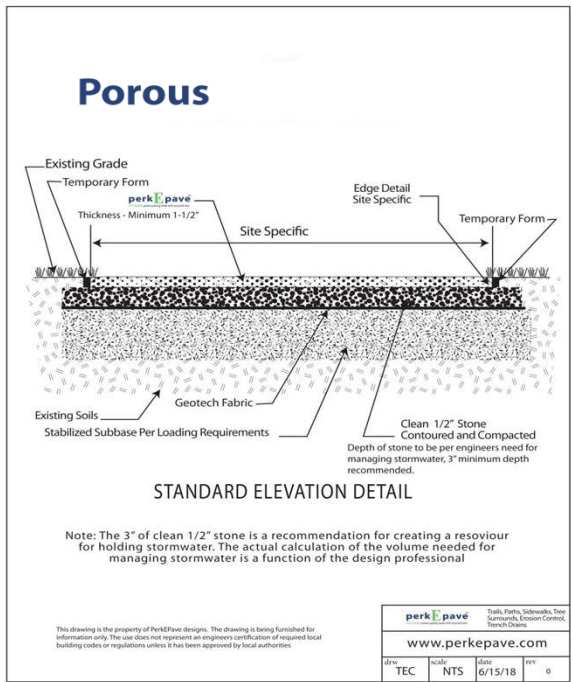
Note:  
 1 - Key construction details are highlighted in Section 3 (page 3) of the report. Specifications and installation instructions containing these key details have been supplied and provided. Necessary tools and methods to achieve proper anchoring have also been addressed in the specification and installation instructions.  
 2 - This document contains enhanced digital and duplication security features. More information can be found on our website: [www.aset-services.com/usa](http://www.aset-services.com/usa)  
 3 - This report contains 5 pages, and may not be used for commercial purposes unless it is reproduced in its entirety.  
 4 - Suggested Retest: Periodic retesting is suggested by ASET SERVICES in order to ensure that products continue to conform to the standard. Periods retesting can involve lab or field testing.

Walk Run Mix 22,000 lb. per sq ft  
 Ride Drive 26,000 lb. per sq ft

Play Safe - tested for 5'-11' Fall Heights

# PourUSPave Specs & Details

Water reacts with the binder and should never be introduced into the mix



**DEFINITION**

- A. Flexible Porous Paving: Paving system comprised of combination of three components: recycled passenger car tires, aggregate, and urethane binder that provides a strong, pervious, yet flexible paving.

**INSTALLER QUALIFICATIONS**

- A. Flexible Porous Paving installer shall be required to be familiar with installation procedures and to have attended the Manufacturer installation training program.
- B. Flexible Porous Paving installer shall employ no less than two Manufacturer-trained Flexible Porous Paving technicians on staff who directly oversee and perform the installations during all Flexible Porous Paving placement.

**PROJECT CONDITIONS**

- A. Protect stored rubber and aggregate from moisture by covering material with sheet plastic. Binder to be stored within a temperature range of 45 to 90 degrees F.
- B. Avoid placing pervious paving if rain, snow, or frost is forecast within 24 hours. Protect fresh paving from moisture and freezing.
- C. Base aggregate shall be a clean #57 stone.

**FLEXIBLE POROUS PAVING**

- A. Stone: Triple-washed and dried coarse aggregate (1/4 to 3/8 inch) per ASTM C 33. Bagged in 50 lb. quantity.
- B. Nominal maximum aggregate size shall not exceed 1/3 of the specified paving thickness.
- C. Rubber: Recycled passenger tires ground to 1/4" nominal with wire remnants removed.
- D. Binding agent: urethane liquid prepolymer based upon Diphenylmethane Diisocyanate.
- E. Mix Design: Using materials mix ratio as acceptable by the Manufacturer for the intended application.
- F. The volume by weight of aggregate shall be as required by the Manufacturer for the intended application.
- G. Forms shall be clean and free of debris of any kind, rust, and hardened concrete and make use of a Bio-diesel or vegetable oil as a form release.

**EXECUTION**

- A. Prepare subgrade as specified in the contract documents or as directed by the Engineer. Porous Flexible Paving has a thickness of 1.5", over Clean Coarse Aggregate (#57 stone) with 95% compaction per AASHTO T-180, with an ideal thickness of 4 inches over stabilized sub-base,
- B. Construct subgrade to ensure that the required paving thickness is obtained in all locations.

# Quiz

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What cures PourUSPave and should never be added to the product mixture?  
Moisture, Water

What is the average curing time for PourUSPave?  
24 Hours

What are storage requirements for PourUSPave Rubber, Stone, and Binder?  
Stored at above 45 degrees F and kept dry

What should be applied to the finishing floats to assure a smooth finish?  
Form Release

# Quiz

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When should the tools and mixer be cleaned?

As soon as possible after use

What precaution should be taken when working with the binder?

Wear gloves and not allow the binder to get on unwanted surfaces.

What is the average square footage a 6-man crew can install in a day?

1,800 square feet

What type of mortar mixer is required for mixing perEpave?

Paddle Type

# Quiz

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What is the flow through rate for a square foot of PourUSPave?  
2,000 gallons

What is the installation temperature for installing PourUSPave?  
45-90 degrees F

What is the first phase of finishing to assure a flat surface?  
Screeding

What should be applied to the finishing floats to assure a smooth finish  
Form Release



Thank You

Eco-\$mart, Inc

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[www.eco-smart.com](http://www.eco-smart.com)

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