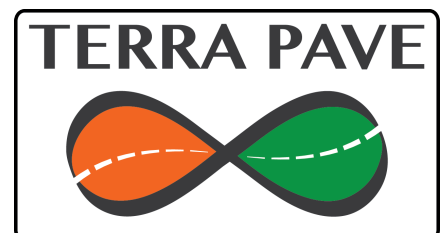


# TERRA TOP-SEAL

# WHITE™

## APPLICATION MANUAL



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\* Equation Calculation page

This manual is intended to assist customers in understanding and working with Terra Pave products for pavements. It describes types of equipment, process and recommendation of aggregates.

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Printed on recycled paper

# TOP-SEAL WHITE™

Top-Seal White™ (TSW) is all-purpose environmentally-friendly liquid soil stabilizer and additive that permanently attaches itself to dust particles and tightly binds them together. Simply diluted with water in a water truck, TSW™ is applied directly to the soil and compacted. An irreversible curing process will then transform TSW™ into a permanently hardened soil base. It is ideal for haul roads or any other area with extremely heavy traffic, such as truck parking lots and staging areas. TSW™ :

- transforms the base into a solid, yet flexible mass that resists fracturing,
- prevents base failure, dust pollution and soil erosion,
- increases soil strength,
- reduces its permeability,
- can be used as a stand-alone for upgrading paved and unpaved road stabilization,
- reduces the construction cost and time.

Field-testing with the Texas Department of Transportation has revealed that Top-Seal White's strength is comparable to that of cement stabilization. Other tests have shown that its resistance to moisture significantly exceeds Environmental Protection Agency standards.

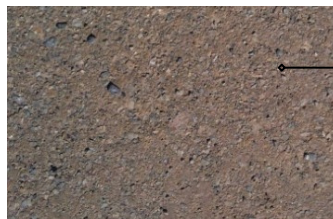
## MAIN APPLICATIONS :

- Aircraft Runways
- Base Stabilization
- BMX Tracks
- Bunker Liners
- Cart Paths
- Roads
- Driveways
- Farms & Ranches
- Parking Lots
- Coal Rail Car Capping
- Slope Erosion Control
- Helicopter Landing Pads
- Heavy Haul or Mining Roads
- Hydroseed & Hydro mulch Tackifier
- Water Retention Basins & Pond Linings
- Hazardous Material Capping & Sealing
- Mine Tailings Capping & Reclamation
- Landfill Capping & Reclamation
- Military Convoy & Tank Trails
- Odor & Vapor Suppression
- Temporary Roads & Detours
- Walking Trails & Paths
- Foundations
- Shoulders



Loose Soil

1



TSW after 24 hrs  
of curing time

2

# REQUIRED EQUIPMENT

Routine road construction equipment is sufficient for the proper installation. This typically consists of a motor grader, a compactor, and a water truck:

Size of equipment dependent on the size of the job



Motor Grader



Compactor



Water Truck

The compactor can be rubber tire or steel drum, or both, if available. The rubber tire compactor is preferable for initial compaction, and the steel drum works best to finalize treatment into a smooth and even surface. If only a steel drum compactor is on site, then the operation will need to be closely watched to make sure that the treated soil is not sticking to the drum. If this occurs, then more time should be given for the soil to dry out prior to the compaction.



# TOP-SEAL WHITE PREPARATION

TOP-SEAL WHITE™ (TSW) – The product is typically shipped in 275-gallon (1000 liter) totes. TSW can be ordered in any quantity and shipped worldwide. Top-Seal White is a multi-purpose commercial- grade liquid soil additive that can be incorporated into many different types of stabilization projects, and the performance criteria is adjusted simply by increasing or decreasing the application rate.

Amount of product for different applications:

1. Heavy Vehicle/Auto traffic: 0.50 gallon/square yard
2. Light Vehicle/Auto traffic: 0.35 gallon/square yard
3. Very Light /Auto traffic: 0.25 gallon/square yard
4. Solar farm/Albedo/Erosion Control/Walking traffic: 0.15 gallon/square yard

A front loader, fork lift, or a transfer pump can be used to deliver the product from 275-gallon totes into the water truck.

Aggregates: We recommend the aggregates which work best with Top Seal White™ specified in the following link by Texas Department of Transportation:

<http://ftp.dot.state.tx.us/pub/txdot-info/cmd/cserve/specs/2014/standard/s247.pdf>



Mixing before application for use with the above TXDOT specified aggregates:

1 part of TSW to 5-15 parts of water | 1:05 to 1:15 (depending on soil moisture content for optimum compaction for water addition to the Terra Pave White concentrate)



# TOP-SEAL WHITE APPLICATION

It is crucial to scarify (loosen the soil) as much as possible prior to the first application. This will help ensure a deeper and more thorough penetration into the soil base. The soil can easily be loosened with the scarifying teeth of a motor grader prior to making the first application. In rural and farm areas, a disk harrow is often available and ideal for scarifying the soil. Blade mixing the product into the soil with a motor grader is also an excellent method for mixing into a soil base.

## APPLICATION - 1

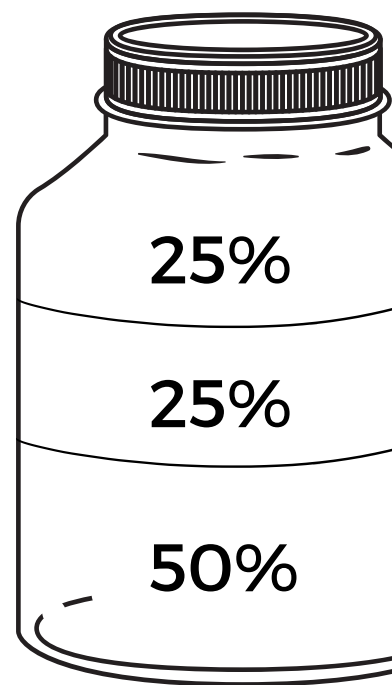
Approximately 50% of the total TSW-water dilution should be distributed into the soil as evenly as possible with no overlaps and no runoffs. A good spray bar is essential for this part of the operation; a pressurized spray bar is ideal. At this point, the product will settle into the lower base, and when the entire product has disappeared from the surface, the initial compaction can begin.

## APPLICATION - 2

25% of the total solution should be applied with the second application, and this should be followed with a second compaction effort to further tighten the soil with TSW. The final compaction (optional) operation should be continued until specifications have been met for the particular soil being treated. At this point, the initial curing will have begun.

## APPLICATION - 3

The third application is an over-coat that acts as a reinforcement or sealant over the treated base. It is recommended to wait a day or two prior to making this application in order to allow for the initial curing to harden and better support the sealing properties of the final application. During this application, the remaining product (25% of the total amount) should be evenly distributed over the area of coverage and allowed to completely soak into it prior to allowing traffic. Further compaction is not necessary and not recommended when over- coating with final applications.



The photos above illustrate the condition of a road surface before and after treatment with TSW. The second photo was taken six months after the treatment.

# TOP-SEAL WHITE APPLICATION PHOTOS

01



Loose soil prepared for application of TSW

02



First application of Top-Seal White

03



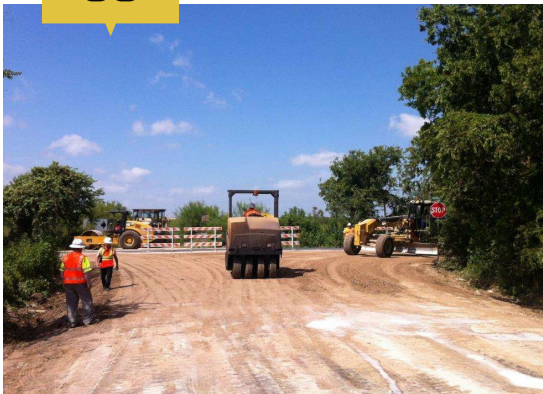
TSW soaking into the soil

04



Motor Grader  
TSW mixing with the soil

05



Initial Compaction

06



Second application of TSW

Please contact [info@ecoestates.us](mailto:info@ecoestates.us) to learn more about your application.



# TOP-SEAL WHITE APPLICATION PHOTOS

07



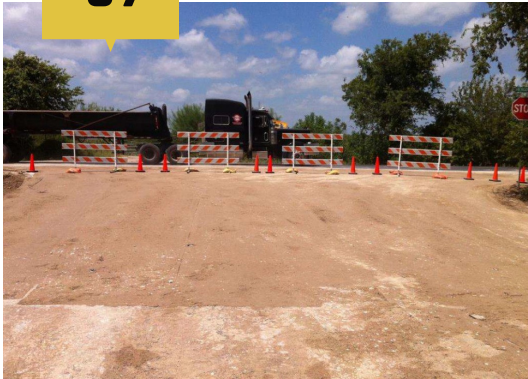
Motor grader after the second application

08



Second Compaction

09



Final application of TSW

Neither a motor grader nor a compactor is required for the final application. TSW can be only sprayed over.



Ideal state of a treated base with TSW

2 weeks later

In order to have a better understanding, please check out the video of our past project in which TSW is applied:



# EXXON TSW PROJECT PHOTOS

Exxon road design for heavy haul road (HHR) supporting up to 140psi SPMT wheel loads. Transporting up to 12,000 Metric Tone modules.



The design was for 10,000 cumulative axle passes over any one point.





# TPI SPRAY BAR ASSEMBLY KIT



Center piece (4 ft) and two extensions (3 ft each)



5.5 Hp transfer pump (optional)



Intake hose (Color may vary)



Output hose and connectors





### **TPI SPRAY BAR IN ACTION**

The bar is placed low to the surface for better penetration. The spray bar provides a very even distribution of TPI products into the area of coverage. Compared to traditional gravity feed or single outlet distribution systems, the efficiency of the TPI spray bar kit pays for itself from the savings of a much more efficient application of TPI products.

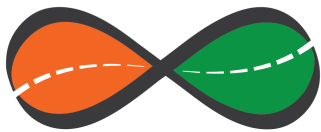
**NOTE:** As shown in the photo, plastic ties are provided with the spray bar kit to firmly attach the system to any component of the water truck. The spray bar can be removed simply by cutting off the ties.

# HAND-HELD SPRAY BAR

## For Small Projects and Tight Spaces



**TERRA PAVE**  
INTERNATIONAL



# TerraPave White Calculation (Imperial)

## Example A with reference to page 3 Topic Amount of product for different applications

### #1 Heavy Vehicle/Auto traffic:

#### Key points:

- **Dilution rate:** 1 gallon TerraPave White : 5–15 gallons water (depending on ground condition, traffic, load).
- **Application rate** (for auto traffic): **0.5 gallons of TerraPave White per square yard**
- **Formula** (considering road depth be 6"):  
$$\text{Road Width (yards)} \times \text{Road Length (yards)} \times 0.5 = \text{Gallons of TerraPave White}$$

#### Example:

- Road length = 1 mile = 1,760 yards
- Road width = 8 yards
- Calculations:  $1,760 \times 8 \times 0.5 = 7,040$  gallons of TerraPave White
- **Water needed** (at 10:1 dilution for this example ):  
 $7,040 \times 10 = 70,400$  gallons of water

## Example B with reference to page 3 Topic Amount of product for different applications

### #2 Light Vehicle/Auto traffic:

#### Key points:

- **Dilution rate:** 1 gallon TerraPave White : 5–15 gallons water (depending on ground condition, traffic, load).
- **Application rate** (for auto traffic): **0.35 gallons of TerraPave White per square yard**
- **Formula** (considering road depth be 6"):  
$$\text{Road Width (yards)} \times \text{Road Length (yards)} \times 0.35 = \text{Gallons of TerraPave White}$$

#### Example:

- Road length = 1 mile = 1,760 yards
- Road width = 8 yards
- Calculations:  $1,760 \times 8 \times 0.35 = 4,928$  gallons of TerraPave White
- **Water needed** (at 10:1 dilution for this example ):  
 $4,928 \times 10 = 49,280$  gallons of water

## Example C with reference to page 3 Topic Amount of product for different applications

### #3 Very Light Vehicle/Auto traffic:

#### Key points:

- **Dilution rate:** 1 gallon TerraPave White : 5–15 gallons water (depending on ground condition, traffic, load).
- **Application rate** (for auto traffic): **0.25 gallons of TerraPave White per square yard**
- **Formula** (considering road depth be 6"):  
$$\text{Road Width (yards)} \times \text{Road Length (yards)} \times 0.25 = \text{Gallons of TerraPave White}$$

#### Example:

- Road length = 1 mile = 1,760 yards
- Road width = 8 yards
- Calculations:  $1,760 \times 8 \times 0.25 = 3,520$  gallons of TerraPave White
- **Water needed** (at 10:1 dilution for this example ):  
 $3,520 \times 10 = 35,200$  gallons of water

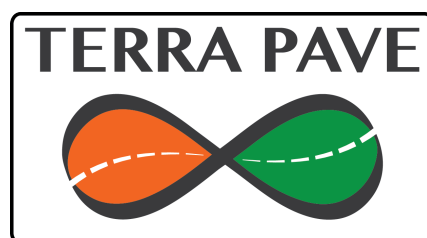
**Example D with reference to page 3 Topic Amount of product for different applications  
#4 Solar Farm/Albedo/Erosion Control/Walking traffic:**

**Key points:**

- **Dilution rate:** 1 gallon TerraPave White : 5–15 gallons water (depending on ground condition, traffic, load).
- **Application rate** (for light traffic, solar farm, erosion control, walking traffic): **0.15 gallons of TerraPave White per square yard**
- **Formula** (considering road depth be 6"):  
$$\text{Road Width (yards)} \times \text{Road Length (yards)} \times 0.15 = \text{Gallons of TerraPave White}$$

**Example:**

- Road length = 1 mile = 1,760 yards
- Road width = 8 yards
- Calculations:  $1,760 \times 8 \times 0.15 = 2,112$  gallons of TerraPave White
- **Water needed** (at 10:1 dilution for this example ):  
 $2,112 \times 10 = 21,120$  gallons of water



## TerraPave White Calculation (Metric)

### Example E with reference to page 3 Topic Amount of product for different applications

#### #1 Heavy Vehicle/Auto traffic:

##### Key points:

- **Dilution rate:** 1 liter TerraPave White : 5–15 liters water (depending on ground condition, traffic, load).
- **Application rate** (for auto traffic): **2.262 liters of TerraPave White per square meter**

##### Key Points:

- **Formula** (considering road depth be 15 cm):  
 $\text{Road Width (meters)} \times \text{Road Length (meters)} \times 2,262 = \text{Liters of TerraPave White}$

##### Example:

- Road Length = 1 kilometer = 1,000 meters
- Road Width = 7 meters
- Calculations:  $1,000 \times 7 \times 2.262 = 15,834$  liters of TerraPave White
- **Water Needed** (at 10:1 dilution for this example):  
 $15,834 \times 10 = 158,340$  liters of water

### Example F with reference to page 3 Topic Amount of product for different applications

#### #2 Light Vehicle/Auto traffic:

##### Key points:

- **Dilution rate:** 1 liter TerraPave White : 5–15 liters water (depending on ground condition, traffic, load).
- **Application rate** (for auto traffic): **1.585 liters of TerraPave White per square meter**
- **Formula** (considering road depth be 15 cm):  
 $\text{Road Width (meters)} \times \text{Road Length (meters)} \times 1.585 = \text{Liters of TerraPave White}$

##### Example:

- Road Length = 1 kilometer = 1,000 meters
- Road Width = 7 meters
- Calculations:  $1,000 \times 7 \times 1.585 = 11,095$  liters of TerraPave White
- **Water Needed** (at 10:1 dilution for this example):  
 $11,095 \times 10 = 110,950$  liters of water

### Example G with reference to page 3 Topic Amount of product for different applications

#### #3 Very Light Vehicle/Auto traffic:

##### Key points:

- **Dilution rate:** 1 liter TerraPave White : 5–15 liters water (depending on ground condition, traffic, load).
- **Application rate** (for auto traffic): **1.132 liters of TerraPave White per square meter**
- **Formula** (considering road depth be 15 cm):  
 $\text{Road Width (meters)} \times \text{Road Length (meters)} \times 1.132 = \text{Liters of TerraPave White}$

##### Example:

- Road Length = 1 kilometer = 1,000 meters
- Road Width = 7 meters
- Calculations:  $1,000 \times 7 \times 1.132 = 7,924$  liters of TerraPave White
- **Water Needed** (at 10:1 dilution for this example):  
 $7,924 \times 10 = 79,240$  liters of water

## Example D with reference to page 3 Topic Amount of product for different applications

### #4 Solar Farm/Albedo/Erosion Control/Walking traffic:

#### Key points:

- **Dilution rate:** 1 liter TerraPave White : 5–15 liters water (depending on ground condition, traffic, load).
- **Application rate** (for light traffic, solar farm, erosion control, walking traffic): **0.678 liters of TerraPave White per square meter**
- **Formula** (considering road depth be 15 cm):  
$$\text{Road Width (meters)} \times \text{Road Length (meters)} \times 0.678 = \text{Liters of TerraPave White}$$

#### Example:

- Road Length = 1 kilometer = 1,000 meters
- Road Width = 7 meters
- Calculations:  $1,000 \times 7 \times 0.678 = 4,746$  liters of TerraPave White
- **Water Needed** (at 10:1 dilution for this example ):  
 $4,746 \times 10 = 47,460$  liters of water

