TOP-SEAL™

LIQUID SOIL SEALANT and STABILIZER

APPLICATION INSTRUCTIONS FOR TOP-SEAL

PROMOTED and SOLD in MORE THAN 30 COUNTRIES

TOP-SEAL *Liquid Soil Sealant and Stabilizer* is shipped concentrated in 55-gallon drums or 275-gallon totes. The product is non-hazardous, environmentally safe, and easy to use. There are no special equipment or handling requirements for using Top-Seal.

TWO TYPES OF APPLICATIONS FOR TOP-SEAL - OVERVIEW

1. **IN-DEPTH BASE STABILIZATION FOR CONSTRUCTION OR RECONSTRUCTION** of road bases, airfields, parking lots, and all other types projects that require improvement of traffic bearing capacity. Only routine construction equipment is required for installation of the product during this type of application. For stabilization of bases that will be paved, Top-Seal can be substituted for or used in combination with the much more expensive traditional stabilizers such as lime, cement, or fly ash with equal or better results. In preparation for applications, the product is simply added to the water used for moisturizing the soil prior to and during the compaction phase of road construction or improvement operations.

If paving is not an option, particularly if budgetary constraints are a factor, then with occasional service applications, a Top-Seal stabilized base can be permanently maintained in excellent condition. The service applications are highly diluted, very affordable, and they continuously accumulate with previous applications, thereby, promoting even more durable and longer lasting roads. After completion of base stabilization with Top-Seal, there will be a significant increase in strength and impermeability. For more details on base stabilization, refer to the section below titled "**Application Procedures for Stabilization**."

2. **TOPICAL APPLICATIONS** for existing roads on which reconstruction is not needed, or cannot be afforded, and **DUST POLLUTION CONTROL** is the main objective. In this type of application, Top-Seal hardens the upper base and eliminates dust pollution and soil erosion in the process. The procedures are very simple, and only a water truck or any other type of liquid distribution system is required to saturate the product into the soil. Normal daily traffic will compress the product into the road base, and this will ultimately satisfy a compaction requirement.

The advantages of the topical application are as follows: **It is fast, inexpensive, and can be accomplished with only a water truck**. This type of application is ideal for rural roads, farm roads, village roads, or any other type of unpaved structure that can be vastly improved and maintained on a very low budget.

BEST CONDITIONS FOR USING TOP-SEAL

- Use with any soil that is suitable for **compaction**.
- Apply from a spraying system that will deliver even distribution into the soil.
- Use proper construction and compaction procedures to achieve best possible results.

APPLICATION RATES

The amount of Top-Seal required for any given area of coverage will vary with soil type and traffic conditions. The typical rate of application for Top-Seal under normal conditions is approximately **.125** to **.16 gallons** per square yard (**.475 to .6 liters per square meter**) for **stabilization depth of 6 inches (15 centimeters)** and for general **dust pollution control**. For depths different than 6 inches (15 centimeters), divide the prescribed amount of product by 6 inches (15 centimeters) and multiply by the required number of inches (centimeters). Please refer to *Appendices 1* and 2 for more specific application information based on general soil types and traffic conditions.

DILUTION

For stabilization of a base with average soil and traffic conditions, dilute the prescribed amount of Top-Seal in a water truck with **9 parts water** and distribute into the area of coverage in **3 or more passes**. For higher requirements of Top-Seal due to poor soil or extra heavy traffic conditions, an extra pass can be added. For better penetration, it is generally recommended to use additional passes (as opposed to heavier concentrations of Top-Seal per pass) to treat bases with higher dosage requirements.

For dust pollution control, dilute Top-Seal in a water truck with **15 parts water** and distribute over the area of coverage in **4 to 5 passes**, or until all of the prescribed amount of product for initial applications has been evenly applied.

EQUIPMENT REQUIREMENTS AND APPLICATION PROCEDURES FOR BASE STABILIZATION

A front loader, fork lift, or a transfer pump can be used to deliver the product from 55-gallon drums or 275-gallon totes into the water truck. (Transfer pumps are shipped free when ordering a truckload or a container load of Top-Seal.)

- **REQUIRED EQUIPMENT.** For stabilization, only routine road construction equipment is required for the proper installation of Top-Seal. This typically consists of a **water truck**, **motor grader**, and a **compactor**. 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.

- **PREPARATION**. It is most ideal to **scarify** (loosen the soil) as much as possible prior to the first application with Top-Seal. 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 Top-Seal into a soil base. For average traffic and soil conditions, a base depth of **4** to **6** inches (**10** to **15** centimeters) is suitable for general stabilization with Top-Seal. Any method of loosening the soil and evenly mixing the product into it for in-depth penetration is acceptable.

- **FIRST APPLICATION**. Approximately **one-third** of the calculated amount of Top-Seal 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 all of the product has disappeared from the surface, the **initial compaction** should begin.

- **SECOND APPLICATION**. **Half of the remaining product** should be applied with the second application, and this should be followed with a final compaction effort to further tighten the soil with Top-Seal. The final compaction operation should be continued until specifications have been met for the particular soil being treated. At this point, the initial curing will have begun.

- **THIRD APPLICATION**. 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 should be evenly distributed over the area of coverage and allowed to completely soak into it prior to allowing traffic. For an even more durable and longer lasting base, an extra over-coat can be applied. Further compaction is not necessary and not recommended when over-coating with final applications.

EQUIPMENT REQUIREMENTS AND APPLICATION PROCEDURES FOR DUST POLLUTION CONTROL WITH TOPICAL APPLICATIONS

Simply dilute Top-Seal with a prescribed amount of water and distribute evenly into the soil in multiple passes until the dust pollution is completely under control. Typically, for average soil and traffic conditions, a dilution rate of **1** part product to **15** parts water (1:15) is recommended. Any delivery system, from small hand held tanks to large water trucks can be used for this type of application as long as the mixture of Top-Seal and water can be thoroughly and evenly applied. Very loose, dusty fine soil is ideal for treating and controlling with Top-Seal

EXPECTED RESULTS

After all the above procedures have been initiated for either stabilization or dust control, a **curing process** will begin as the powerful binding action of Top-Seal irreversibly transforms a road base into a into a solid mass of tightly cemented soil particles. Within 24 hours, under normal weather conditions, the upper level of the base will show a **dramatic increase in strength** and a **significant reduction in permeability**. Curing will continue for an amount of time similar to cement stabilization, but **traffic will generally not need to be interrupted** after the road base has been thoroughly compacted. As mentioned above, occasional service applications should be administered, as needed, to ensure that an unpaved road is permanently maintained in an excellent condition. There should be no need for reconstruction of a road during service applications.

Shown below are photos – before and after treatment with Top-Seal.

On-site technical assistance is available when first using stabilization products from Soils Control International. Please contact a Soils Control International representative for more information on stabilization and dust control with Top-Seal. Discounts are available when ordering large quantities from Top-Seal representatives or directly from Soils Control International.

Soils Control International, Inc.

PO Box 200117, Austin, Texas 78720-0117

(T) 254-526-5550 (F) 512-837-8882 (E) info@soilscontrol-usa.com (W) www.soilscontrol-usa.com

APPENDIX 1 – Calculations for Top-Seal - **METRIC**

HOW MUCH TOP-SEAL DO YOU NEED?

You Decide – We Provide

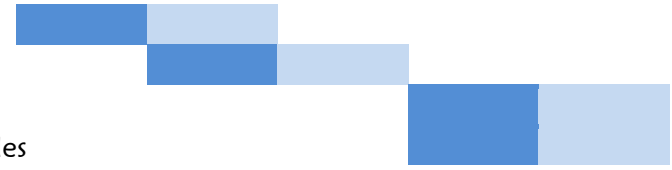
Product Performance Guaranteed!

Application Rates - Liters per Square Meter

0.452 0.565 0.633 0.700 0.769

TRAFFIC APPLICATIONS:

Light Traffic - Mostly Cars and Light Trucks-Low Speeds
Medium Traffic - Heavier Trucks-Higher Speeds
Heavy Traffic - 18 Wheelers-Haul Roads
Tracked Vehicles - Construction Vehicles-Military Vehicles



NON TRAFFIC APPLICATIONS:

No Vehicle Traffic - General Open Area Dust Control
Foot Paths
Soil Erosion Control
Landfill Liners and Covers

***COLOR CODES:**

Good Soil - Good Balance Between Fines & Aggregate - Easily Compacted
Poor Soil - Low Fines; Sandy; Granular – Poor Compaction

NOTE: If in doubt about soil type, then calculate in the higher range of application or consult with a representative from Soils Control International.

APPLICATION METHODS FOR TOP-SEAL

CONSTRUCTION OF A NEW ROAD or RECONSTRUCTION OF AN EXISTING ROAD:

Top-Seal is simply added to the water in a water truck (in the amounts shown above) during the wetting of the soil as it is being prepared for compaction. In this capacity, Top-Seal is used as a base stabilizer prior to construction of a wearing surface (asphalt, chip seal, cement, etc) for a paved road. Or, it can be used as a newly hardened unpaved road for dust control. The advantage of this method is that the road base will tend to be smoother and stronger and the aggregate will be tightly imbedded into it. The product can generally be administered in three applications with the final treatment acting as a sealant for the stabilized base. The applications are made between runs with the compactor.

TOPICAL APPLICATION ON AN EXISTING ROAD:

This approach is suitable if you are generally satisfied with the structural condition of the road and you simply want to improve surface hardness and control dust. In this capacity, the product is more diluted (from the amounts shown above) to help facilitate penetration and it is layered into the upper base with 4 or more applications. Generally, this type of application can be administered with an average dilution rate of 1:15 (1 part product / 15 parts water.) This method is faster and less expensive in terms of the time and cost for labor and equipment.

APPENDIX 2 – Calculations for Top-Seal – **U.S. MEASUREMENTS**

HOW MUCH TOP-SEAL DO YOU NEED?

You Decide – We Provide

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Application Rates - Gallons per Square Yard

0.100 0.125 0.140 0.155 0.170

TRAFFIC APPLICATIONS:

Light Traffic - Mostly Cars and Light Trucks-Low Speeds

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Heavy Traffic - 18 Wheelers-Haul Roads

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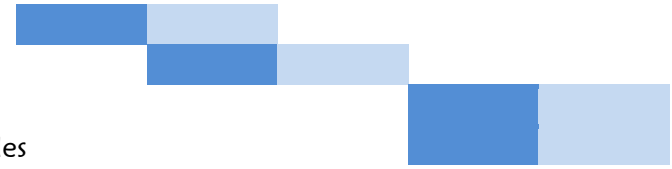

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