

## APPLICATION GUIDELINES FOR ENVIROBASE/TERRASEAL SOIL STABILIZER

### Test the soil:

1. Dig a hole in the area of the intended road to a depth of approximately 200 to 300mm and gather a soil sample.
2. Dry the sample by baking it in an oven in order that all moisture may evaporate.
3. Pulverize the soil sample.
4. Add some water to the sample and form it in a ball with the hands.
5. If it adheres and sticks together in a ball shape, the soil is acceptable for the application of EnviroBase/TerraSeal.
6. If it does not adhere, soil tests must be carried out and the results sent to us in order that recommendations may be provided to correct soil defects to allow EnviroBase/TerraSeal to be used.

### EnviroBase Dilution Rate

Dilution rate will depend on the moisture content within the existing soil:

- a. DRY soil : **100-110** parts water to 1 part EnviroBase/TerraSeal
- b. NORMAL soil : **80** parts water to 1 part EnviroBase/TerraSeal
- c. WET soil : **40-60** parts water to 1 part EnviroBase/TerraSeal

The treated soil's OMC (optimal moisture content) can be gauged by hand forming a ball with the soil. If the soil ball can be formed without crumbling (too dry) or sticking to your hands (too wet), OMC is reached.

### Coverage:

Approximate coverage per 200-litres drum: 4,000 sqm or 20 sqm per liter of EnviroBase/TerraSeal

Above coverage is based on approved application method with a treatment depth of 150mm. Treatment depth means the net treatment depth i.e. depth after final treatment and compaction.

### Treatment Depth:

For **normal load traffic roads**, a minimum treatment depth of 150mm is required (for this the soil needs to be scarified to a depth of 200mm)

For **heavy load traffic roads** (such as mining, logging roads etc. or roads taking vehicular traffic in of 30 tons or more) a minimum treatment depth of 300mm is required (for this the soil needs to be scarified to a depth of 400mm)

### Road Preparation:

As with any other road, it is essential to provide drainage. The preferred manner is by way of trenches alongside the road.

Standard road construction practices must also be adhered to.

Prior to start of EnviroBase/TerraSeal preparation/application the road must be trimmed using a grader.

### The EnviroBase/TerraSeal Application

#### Equipment needed:

- A rotovator (or reclaimer/pulverizer). If not available, a grader with scarifier attachment will do;
- A motor grader;
- A water tanker; and
- A minimum 12 tons vibratory drum roller or pneumatic tyre roller.

**Additional Material needed:**

$\frac{3}{4}$ <sup>th</sup> inch and above granular chip stones. This will be sprayed on the road surface during application to make the road slip proof.

**Methodology of Application:**

The methodology will greatly depend on the equipment used to scarify the road soil. If it is capable of scarifying to the required depth of the application (200mm or 400mm) in one stage, then further stages are not needed. If however, one-time scarifying is not possible; scarifying must be done in different stages.

**One-Time Scarifying to required depth:**

1. Begin loosening the soil with a scarifier to the required depth.
2. Remove all stones, rocks, etc.
3. After the soil is loosened, spray the loosened soil with the diluted EnviroBase solution and following with the grader.
4. Blade the wetted material back and forth to totally break down any lumps and thoroughly mix the solution into the soil. The soil needs to be wetted to slightly more than OMC (Optimal Moisture Content).
5. Blade the treated material into a windrow at the shoulder.
6. Blade the treated material onto the road surface and continue blading to shape and form the desired contour/crown. (reserve a small amount of treated fines at the shoulder for finishing)
7. *Begin compacting the shaped and formed road without vibration to retain the shape. Use the reserved material to fill in any small holes or low spots.*
8. Once the shape is smooth and shaped right, start vibratory to tighten it further.
9. The granular chip stones to be added and rolled into road surface after soil has become tightened but not fully compacted.
10. Continue compacting with full vibratory until the installation is very tight (no more ridges or roller marks visible) and then static roll for at least one hour.

**Second Day**

11. Usually, the finished road can be re-compacted on the second day. One or two passes with vibratory followed by an hour or so of static rolling.
12. If the weather is hot, a light spray of plain water is recommended to retard the curing process. In the meantime, the road can be opened to traffic.

**Scarifying in Stages:**

In the example below scarifying and EnviroBase/TerraSeal application is done in two stages to attain a treated surface of 150mm in depth.

**Top Layer**

13. Begin loosening the soil with a scarifier to a depth of about 10cm.
14. Remove all stones, rocks, etc.
15. After the soil is loosened, spray the loosened soil with the diluted EnviroBase solution and following with the grader. Blade the wetted material back and forth to totally break down any lumps and thoroughly mix the solution into the soil. You need to wet the soil to slightly more than OMC (Optimal Moisture Content).
16. Blade the treated material into a windrow at the shoulder.

**Bottom Layer**

17. Repeat steps 1-2 for the next 10cm layer of soil
18. Grade and shape the bottom layer material and lightly compact (one pass without vibratory followed by one pass with vibratory).
19. Blade the treated top layer material onto the bottom layer and continue blading to shape and form the desired contour / crown. (reserve a small amount of treated fines at the shoulder for finishing)
20. Follow steps 7 to 12.

## Important Notes

### Cracks:

Curing cracks:- These are deep cracks which usually appear the next day (**see photo for example**). Continued rolling will close them up.

Surface Cracks:- Surface cracks are usually the result of incorrect mixing process where some area did not get to be mixed or mixed properly.

Curing:- During curing process (minimum 7 days depending on humidity), moisture will continue to be pushed out from the treated soil layer which brings with it minute soil particles that get deposited on the road surface.

When dry: it gets very dusty.

When wet: very soggy. In fact it will look worse than those surrounding areas that were not treated

**These are normal occurrences during the curing period and should not be reason for concern. It will disappear after full curing.**

