

Unsealed Road Guidelines

Description

SOILBOND A01 is a water-based organic emulsion used for the stabilisation of pavement materials.

Key properties include:

- Increased cohesion;
- Reduced water sensitivity; and
- Improved wet strength.

Product Safety

SOILBOND A01 binder is classified non hazardous and non Dangerous Goods. This means it is safe for handling, storage and transportation. As, with all products, please refer to the Material Safety Data Sheet before use.

Applications

Wearing Course

Wearing course stabilisation with the SOILBOND A01 binder is used to:

- Improve pavement material strength;
- Improve low cohesion materials that deform and shove when subjected to traffic;
- Provide a material that has reduced moisture susceptibility; and
- Upgrade the quality of existing materials to that of higher quality.

The advantages of SOILBOND A01 bound wearing courses may be in the following applications:

- Low trafficked roads constructed from low strength materials;
- Improving the load carrying capacity of a pavement;
- Areas subjected to flooding; and
- Where life cycle costs can be minimised as an alternative to resheeting.

Shoulder Pavement

Shoulder stabilisation can be used to provide the same benefits as for wearing course with the additional points:

- Reduced loss of material as a result of traffic and weather erosion;
- Alternative approach to spray sealing shoulder pavements; and
- Improved strength to bear traffic loading occurrences.

Dust Control

The SOILBOND A01 binder used in unsealed applications provides the additional benefit of dust control as part of a suitable maintenance program. Regular topical applications of diluted binder will continue to bind the fine particles and reduce dust emissions. This is most beneficial for:

- Mine sites and haul road applications;
- Sensitive residential areas;
- Roads in agricultural areas with close proximity to crops;
- Development sites with temporarily constructed roads; and
- Trafficked unsealed roads where visibility is an issue.

soilbond®

Environmentally Friendly Path, track and Road Stabiliser and Dust Suppressant

Mix Design

The table below indicates the range of application rates and treatment depths to calculate the mix design. Individual mix design will be dependant on the site conditions, material properties and traffic volume.

| Treatment Depth in mm | SOILBOND A01 Rate % of Dry Weight of Material* | | |
|-----------------------|---|------|----|
| | 1% | 1.5% | 2% |
| | Usage Rate in kg/m ² | | |
| 75 | 1.5 | 2.25 | 3 |
| 100 | 2 | 3 | 4 |

* Based on a compacted density of 2 tonnes per m³

Construction

In situ Stabilisation

The following description is for a multiple pass grader process. Multiple passes ensure good uniformity of mixing. The general construction process is:

- 1) Rip the pavement to the recommended depth. If necessary, new crushed rock is added at this stage.
- 2) Apply water by water truck to assist incorporation of the binder and to obtain the required moisture content for compaction.
- 3) Apply correctly diluted binder by water truck at the recommended spread rate over several passes.
- 4) Blade mix the binder into the ripped material using a grader. Ideally, the grader will closely follow the water truck applying the binder. This allows minimal moisture evaporation prior to compaction. Continue blade mixing until the binder has consistently coated the material.

- 5) Use the "hand clench" test to confirm suitable binding and moisture content prior to compaction.
- 6) When the material is sufficiently mixed, levels should be adjusted and shaping of the road completed prior to compaction.
- 7) Compact with a steel smooth drum roller, in conjunction with a multi-tyred roller, until a smoothly graded finish is obtained. A diluted application of the binder using a water truck is applied as a slurry coat to achieve surface smoothness.
- 8) The stabilised pavement undergoes conditioning and curing process.

Stationary Stabilisation

Usually performed at the quarry, the crushed rock is loaded into storage bins. The material is then conveyed to a pug-mill mixer, where the binder is added and mixed uniformly in the same stage. Correct moisture content levels are also adjusted at this stage. When mixing is complete the mixed material is transported in trucks to the site for installation.

Quality Management

Quality management is essential to produce a material that will provide the desired performance in the field. To control quality the following factors should be considered:

- Uniformity of the material to be stabilised;
- Quantity and uniformity of distribution of the SOILBOND A01 binder;
- Thickness (and uniformity of thickness) of the stabilised layer;
- Quality of mixing;
- Compacted density; and
- Surface finish.