



DUSTEX - FOR UNPAVED ROADS



WHY CHOOSE DUSTEX FOR DUST & ROAD STABILISATION?

Dustex, our premier dust control product, has been developed specifically for road stabilisation and dust control applications. Dustex is a unique binder which offers the following benefits:

- Is compostible and biologically friendly
- Prevents wind erosion
- Reduces road-water usage by up to 90%
- Significantly reduces maintenance costs
- Increases the load bearing capacity of existing road materials

Dustex carries no environmental «baggage». This ligno-sulphonate based product is derived from a renewable and sustainable resource, plantation timber, and has absolutely no effect on flora or fauna when applied to roads and other dusty surfaces. Rather, Dustex is an environmentally beneficial product, reducing dust exposure for humans and animals and eliminating dust coverage of roadside foliage. Dustex is non-toxic and not harmful for humans or animals.



Problem Surface

Treated Surface

HOW DOES DUSTEX FUNCTION?

An important property of lignosulphonates is their ability to act as binders. The binding action of lignosulphonates is both chemical and physical in nature and results from the intermolecular forces between the sulphonated lignin molecules and the molecules on the surface of the particles being bonded. The size of the adhesive molecule is important for the formation of the cohesive bond and is also partly responsible for the strength of the cohesion. The bond is strong enough to resist the abrasion of tyres.

Lignosulphonates are effective binders for different types of soils and road aggregates and as such are not material specific. As a binder it glues the particles together and the treated surface layer becomes stiff, preventing individual particle movement and the subsequent generation of nuisance dust. The treated surface is smooth and hard with excellent traction in both wet and dry conditions.

PRODUCT APPLICATIONS

Dustex can be applied as a spray-on/surface application or as a mix-in treatment. Surface applications can be divided into two groups:

- 1) Non trafficable broad acre applications
- 2) Municipal and mine haul road applications

Broad acre applications

Dustex is applied to treat mineral dumps, construction sites, quarries, race tracks, open fields and virtually any area where the incidence of nuisance dust inhibits safe and efficient operations.

This simple surface application is the easiest and most cost effective way to achieve a dust-free environment and it is more effective than multiple applications of water, which is a scarce commodity in many areas.

Dustex is best applied as an aqueous solution under pressure through spray nozzles, although it may also be applied under gravity with equipment as simple as a hose. A water cart equipped with a pump and spray bar is ideal.

For protection against wind erosion the minimum recommended thickness of the treated surface layer is 3-5 mm and for protection against wind erosion and moderate dynamic loads, 10-15 mm. Compaction further improves performance.

The application method is simple. Water the surface of the target area and apply the Dustex solution at the recommended rate of 1–1.5 litre per square meter. A Dustex application of 80–120 grams per square meter will consolidate most types of mineral and humus material for up to six months. There are many variables, which may influence this procedure and the rate of application and strength of the Dustex mixture should be adjusted to suit. The treatment should be repeated when the surface starts to dust again.

Municipal and Mining Haul Roads

To apply Dustex to roads, blade the road, ensuring an adequate camber and side drainage. Next, dampen the road with water to assist penetration. The application rate will depend on the moisture content of the road. Apply Dustex in a minimum of six applications over a period of three weeks and make sure to avoid puddling and runoff. On mining haul roads, deviations and construction sites, Dustex should be applied at a rate of 0.1kg/m² as part of the normal watering program until dust reduction is evident. The intervals between spraying will increase as the Dustex takes effect, but will be site-specific depending on drainage, traffic volumes and ambient dust levels.



ROAD STABILISATION - «MIX-IN» TREATMENTS

The Dustex «mix-in» method is used to bind and stabilise a layer with a thickness between 50 and 200 mm. The lignosulphonate glues the particles together, eliminating the individual particle movement, which results in surface deterioration and dust. The product is incorporated into the road material during the water binding process using conventional road making equipment or a high-capacity road stabiliser.

The quantity of Dustex required is between one and three percent of the weight of the material to be bound (calculated as dry matter on dry aggregate). The material to be bound should have a good particle size distribution and contain a minimum of eight percent of fines. The maximum aggregate size should be 20 percent of the target stabilisation depth.

To apply Dustex:

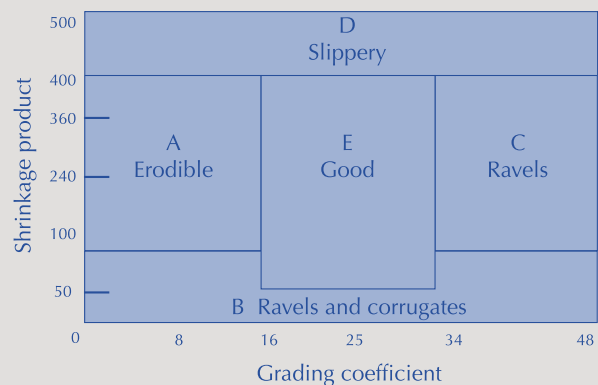
1. Rip the road to a depth and break down lumps with a rotivator. If regravelling, it is important to thoroughly mix the in situ material and the imported gravel before dumping into a windrow.
2. Spray the recommended concentration of Dustex solution and mix it thoroughly with a windrow. It is important the Dustex is evenly distributed.
3. Lay back material and compact using a roller.
4. Shape the road with a camber to ensure adequate drainage.
5. A slurry coat of a diluted Dustex solution may be applied as a surface seal. It is important to apply this surface application while the road is still damp.

MAINTENANCE AND REJUVENATION

- The type and frequency of maintenance will depend on the material characteristics, climate, application method and traffic, and should be carried out before significant deterioration has occurred.
- In cases of isolated deformation, Dustex can be mixed with aggregates and compacted into the effected area.
- If grader maintenance is required, the road must be sprayed with water, and then bladed according to accepted techniques. Do not dry blade as it will damage the road surface and lower the riding quality.
- Deleterious material on the sides of the road must not be bladed onto the road as this will result in potholing, dustiness and slippery conditions after rainfall.
- «Dustex-treated» roads will require periodic maintenance. The frequency of the treatments will depend on the material characteristics, application method, climatic conditions and traffic.
- Yearly maintenance applications are recommended. Dustex should be sprayed onto a dampened road surface after the road has been shaped and graded.
- Mining haul roads require more frequent maintenance treatments. An application of 40 grams per square meter of a dilute Dustex solution is recommended.

Material Selection

Dustex will perform effectively on a wide range of materials and is not material type specific. However, the formation of typical defects (e.g. erosion, corrugation, raveling, potholes, slipperiness) related to the use of inappropriate materials or poor construction and maintenance practices may be retarded but will probably not be prevented. The predicted performance of non-conforming materials is illustrated in the adjacent figure.





Borregaard LignoTech is the world's leading producer of lignin-based products. Our products are environmentally friendly and utilise a natural and renewable source of raw material. We offer an extensive network of production plants and sales offices, ensuring optimal service to global and local customers.

Our highly skilled & dedicated research and development teams have extensive technical expertise in lignin technology. We strive for continuous improvement of our existing product lines, as well as the development of new solutions to meet our customers' needs.

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