





PRODUCT DESCRIPTION

DUSTEX is a uniquely formulated lignosulphonate-based binder and gravel preserver. As natural polymers, lignosulphonates possess strong binding abilities making the product Dustex suitable for binding coarse, low or non-plastic materials starting at application rates of between 0.5 - 1% by weight.

The application of Dustex to the wearing course layer of a road will significantly improve the treated layers resistance to abrasion and assist in reducing the material loss from the surface and associated dust. The application of Dustex will also further retard the formation of other associated gravel road defects such as corrugations, potholes, mud etc.





Being a true dust palliative Dustex can be applied directly to the surface of an already constructed road or any other area for short term dust suppression.



The application Dustex will require periodic rejuvenations to the surface of the road to maintain reduced dust levels with rejuvenation periods being determined by traffic volumes, rainfall, etc.

The product Dustex is not sensitive to over or under spraying and does not require specialised machinery or equipment for application, a standard water bowser with spray bar can be used.

No specialised procedures are needed should the maintenance be required and, provided the surface is wet, it can be bladed.

PRODUCT APPLICATIONS

- Mine and construction haul roads
- Construction sites
- Temporary bypasses
- Road shoulders
- Mine dumps and workings
- Quarries
- Streets and roads in rural and residential areas
- Roads in game reserves
- Dust sensitive agricultural and forestry roads
- Parking areas
- Sports fields



DUSTEX ADVANTAGES

- Improved road standards dust-free road surfaces ensure safer and more comfortable driving
- Cost-effectiveness requires the minimum construction and road preparation efforts to create a positive life cycle/cost ratio
- **Easy application** spray with standard spray equipment, without the necessity of specialised equipment
- Easy and affordable maintenance normal maintenance to the surface can be achieved with the minimum expertise and standard equipment. Rejuvenation can be done as and when required
- Quick drying penetrates rapidly and the road can be opened to traffic immediately
- Improved quality of life less dust

ENVIRONMENTAL

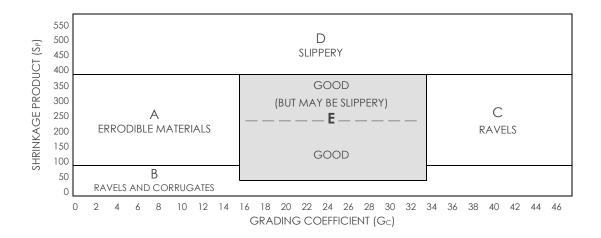
Dustex is environment friendly and poses no threat to flora or fauna at recommended application rates. According to OECD method No. 203, Dustex is classified as not fish toxic. Dustex is also classified as inherently biodegradable according to OECD method No. 302B. Dustex is not classified as an eye or skin irritant. Detailed environmental reports including Material Safety Data Sheets etc. are available.

SUITABLE SOILS

Dustex can be used on a variety of materials of differing compositions and characteristics. The following parameters have been adapted to serve as guidelines.

Characteristic	Rural	Urban	Haul
Maximum size	37.5mm	37.5mm	75 - 100mm
Oversize index	<5%	0	<10%
Shrinkage product	50 - 400	50 – 400	50 - 400
Grading coefficient	16 – 34	16 – 34	16 - 34
Soaked CBR at 95% MOD AASHTO	>15	>15	>40
Hardness (Treton Impact Value)	20 – 65	20 – 65	20 - 65

Dustex improves the performance and limits dust on a variety of material types offering a larger envelope of suitable materials due to its strong binding abilities. The formation of typical defects related to the use of inappropriate materials will be retarded with the use of Dustex and their predicted performance is illustrated as follows:



DUSTEX APPLICATION RATES

Mix-in application (150 mm)			
Vehicles per day	Climate	Dustex (kg solids/m²) Shrinkage product < 50 > 50	
< 150	Dry	1.2	1.0
	Wet	1.2	1.2
> 150	Dry	1.5	1.2
	Wet	1.5	1.5
Haul road	_	3.0	3.0
Surface application (spray on)			
Rural / residential road 0.35 - 0.80 kg solids/m ²			
Haul road		0.05 - 0.1 kg as part of routine v until requi	vatering program

DUSTEX METHOD STATEMENT



Purpose

The purpose of this document is to give the team responsible for working with DUSTEX an overall guideline with regards to the use of the product.

The objective of this Method Statement is to;

- Define the procedures to be applied for use of the product.
- Define the procedures for the mixing of the powder product with water.
- Define the procedures for adding the product to the water truck.
- Define the procedures for application of the product to the road.
- Define the procedures for maintenance of the treated road surface.
- Identify the responsibilities of the persons performing the activities.

Scope

The scope of this document is to enable the personnel responsible for working with DUSTEX to clearly understand the procedures, requirements and individual responsibilities and tasks in order successfully complete the work and ensure maximum performance of the product applied to the surface of unsurfaced roads to suppress dust.

RESPONSIBILITIES

Team Leader - Responsible person - Site Supervisor

- Ensuring the consistent application of the requirements of this procedure across all activities under their control.
- Ensuring adequate resources are available to implement the requirements of this MS.
- Ensuring all employees are aware of and trained in the requirements of this procedure and the hazards associated.
- If procedures are seen to be impracticable or ineffective in achieving safety objectives, deficiencies, are raised and alternative adequate measures are taken promptly.
- Co-ordinate all activities and employees related to this MS.
- Investigating incidents and accidents in accordance with relevant procedures.
- Keep records of product used and applied per water tanker load and quantity of loads applied per day.

Mixing of Product - Responsible person - Site Supervisor

- Adhere to all appropriate procedures relating to this MS.
- All hazards identified at the place of work and controls put in place before start of work.
- Assess PPE requirements, ensure adequate training is available when necessary and provide a safe place of work for all employees, contractors, consultants and visitors.
- Co-ordinate and monitor the compliance of this procedure in their area of responsibility and in any area that may affect their area of responsibility.
- Act in a safe and responsible manner at all times.

Product Application - Responsible person - Site Supervisor

- Adhere to all appropriate procedures relating to this MS
- All hazards identified at the place of work and controls put in place before start of work.
- Assess PPE requirements, ensure adequate training is available when necessary and provide a safe place of work for all employees, contractors, consultants and visitors.
- Co-ordinate and monitor the compliance of this procedure in their area of responsibility and in any area that may affect their area of responsibility.
- Act in a safe and responsible manner at all times.

Supervision of General Labourers - Responsible person – Site Supervisor

- Adhere to all appropriate procedures relating to this MS.
- All hazards identified at the place of work and controls put in place before start of work.
- Assess PPE requirements, ensure adequate training is available when necessary and provide a safe place of work for all employees.
- Co-ordinate and monitor the compliance of this procedure in their area of responsibility and in any area that may affect their area of responsibility.
- Ensure that all labourers act in a safe and responsible manner at all times.

Water Truck Driver

- Adhere to all appropriate procedures relating to this MS.
- All hazards identified at the place of work and controls put in place before start of work.
- Assess PPE requirements, ensure adequate training is available when necessary and provide a safe place of work for all employees, contractors, consultants and visitors.
- Act in a safe and responsible manner at all times.

Grader Operator

- Adhere to all appropriate procedures relating to this MS.
- All hazards identified at the place of work and controls put in place before start of work.
- Assess PPE requirements, ensure adequate training is available when necessary and provide a safe place of work for all employees, contractors, consultants and visitors.
- Act in a safe and responsible manner at all times.

Roller Operator

- Adhere to all appropriate procedures relating to this MS.
- All hazards identified at the place of work and controls put in place before start of work.
- Assess PPE requirements, ensure adequate training is available when necessary and provide a safe place of work for all employees, contractors, consultants and visitors.
- Act in a safe and responsible manner at all times.

DEFINITIONS

TERM	DEFINITION
DUSTEX LIQUID	Product supplied bulk tanker loads for the suppression of Dust on unpaved roadways.
DUSTEX POWDER	Product supplied in 25/625 Kg bulk bags for the suppression of Dust on unpaved roadways.
DUSTEX SOLUTION	Dustex liquid/powder mixed or blended with water to a required dilution ration either for storage (powder) or for application.
STORAGE TANK	Tank or vessel used for the storage of the Dustex liquid
MIXING TANK (powder product)	Tank or Vessel used for the mixing / blending of powder product with water
DOSING TANK	Tank or Vessel used for the volumetric control of quantity of product to be used.
TRANSFER PUMP	Electric or Diesel driven pump used for the mixing or blending of the Dustex powder in the mixing tank.
MIXING PUMP (powder product)	Electric or Diesel driven pump used for the mixing or blending of the Dustex powder in the mixing tank.
DOSING METER	Meter used to record the quantity of Dustex solution added to the water bowser.



HAZARDS AND CONTROL MEASURES

Before commencing this task check that no abnormal conditions exist.



CONSIDER ALL POTENTIA	L HAZARDS		
Environmental change (weather, spillage)	Change to work practice	Other activities/personnel	Changes to equipment

Hazard	Event	Control Measure
Incompetence: Operator and Crew	Could lead to Property Damage/ Production Loss.	Competence assessments, training (formal), has been done. Supervision is also required.
Lack of appropriate PPE.	Could lead to injury.	Use the minimum Personal Protective Equipment as per Health and Safety Standard Procedures.
Working Area	Could lead to injury and equipment damage.	Ensure work area is clear and clean prior to commencing work. Erect appropriate barriers around work area(s) where necessary.
Product spillage	Could lead to environmental damage	Ensure that all precautions are taken to minimise product spillage. Contain and clean all occurrence in accordance with specified procedures
Operating around suspended loads	Could lead to injury if suspended load should fall	Ensure workers operating around the where suspended loads are present are aware and remain clear of the suspended load and any area where the load may fall.
operating at height	Could lead to injury.	Use safety harness at all times when operating at height.
Diesel driven pumps	Could lead fire or burns.	Ensure adequate measures are in place to deal with any potential fire and that workers are aware of and remain clear of any hot surfaces on and around the motors.
Lack of communication	Could lead to injury and equipment damage	Ensure proper communication and communication between all parties involved in the task.
Closing of roads to traffic.	Could lead to injury and equipment damage	Ensure proper signage, traffic cones and spotters are in place and have clear communication between themselves and all equipment.
Wet roads	Could lead to injury and equipment damage	Ensure that the road is not over saturated so as to lead to slippery or hazardous conditions. If the road is overwatered and becomes hazardous reduce traffic speed until the surface has dried sufficiently.

Permits	Could lead to injury and equipment damage	Ensure permits, approvals, warnings, isolations have been arranged and communicated to all relevant work areas. (e.g. exclusive zones)
Other Potential Hazards	Slippery surfaces due to rainfall or pit water.	Stop work until hazard is eliminated.
	Potential slips and falls that could cause personal injuries.	Use adequate PPE.
	High temperatures that can lead to heat stroke. Personnel working around your working area.	Drink a lot of water and make sure you have water with you at all times during the survey.
	Exposure to dust from machinery working around the area. Inclement weather.	Wait till working area is safe before entering to do the survey. Consult the supervisor and equipment operator of the area to let him know you are working in the area.
	Empty product bags	Ensure that empty product bags are disposed of in accordance with specified procedures.

ENVIRONMENTAL REQUIREMENTS

Environmental permits if/when required.



PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS

- Head Protection Hard Hat.
- Foot Protection Safety Boots.
- Hand Protection i.e. Suitable gloves.
- Overall with reflective stripes (Legs and Upper body).
- Eye Protection Safety Glasses.
- Ear Protection Ear Plugs.



ROCEDURE / WORK METHOD - DUSTEX - MIXING AND APPLICATION

ROAD MAINTENANCE WITH DUSTEX

EQUIPMENT AND SUPPLIES

Item	ТҮРЕ
1.	Dustex liquid / powder
2.	Water source
3.	Storage tank
4.	Mixing tank (powder)
5.	Dosing tank
6.	Diesel / electric pumps, pipes and fittings
7.	Water tanker
8.	Motor grader
9.	Vibratory soil compactor

MIXING DUSTEX LIQUID FOR USE

STEP	description
1.	Dustex liquid is delivered ready for use and requires no additional actions

OR

MIXING DUSTEX POWDER FOR USE

STEP	description
1.	Inspect the storage tank for damage and ensure that the pump and pipes are fitted and in working order.
2.	Fill the mixing tank to 50% of its volume with water.
3.	Ensure all valves are in the correct position to circulate the water for mixing.
4.	Turn on the mixing pump – DO NOT RUN THE PUMP FOR EXTENDED PERIOD DRY
5.	Add the required amount of Dustex powder slowly to the mixing tank to achieve a 1:1 mixture of Dustex Powder to water (50% solution) or the required solution as needed.
6.	Mix the solution thoroughly until all lumps or agglomerations are dissolved.
7.	Turn off the pump and ensure that all valves are back to the correct position.

ADDING THE DUSTEX LIQUID SOLUTION TO THE WATER TANKER

STEP	description
1.	Inspect the storage tanks for damage and ensure that the pump and pipes are fitted and in working order
	Calculate the required quantity of Dustex liquid to be added to the water tanker;
2.	First application or New roads – 15% solution with water in the tanker. Treated roads or Maintenance applications – 2.5 – 5% solution with water in the tanker.
3.	Fill the water tanker to 50% of capacity with water.
4.	Ensure the water tanker is correctly placed to receive the required quantity of pumped Dustex solution from the storage tank.
5.	Fill the dosing tank or ensure that the dosing tank is filled to the correct capcity
6.	Turn on the pump and ensure all valves are in the correct position to start the flow of Dustex from the dosing tank to the water tanker.
7.	Once the required quantity of Dustex solution has been transferred from the dosing tank to the water tanker stop the transfer pump and close the required valves.
8.	Make a note of the quantities used or transfered
9.	Fill the water tanker to capacity with water.

APPLICATION OF THE DUSTEX SOLUTION TO THE ROAD SURFACE

STEP	description
1.	For roads not previously treated with Dustex ensure the surface quality is as required and that any remedial work required is completed prior to the start of application.
2.	Put all required signage, safety cones and spotters in place.
3.	Apply the required Dustex solution to the road surface as prescribed; New or roads not previously treated with Dustex will use the 15% of the stored Dustex solution with water in the water tanker using 8 – 12 passes of the water tanker per section of road or until the section of road is the required standard and dust levels are at an acceptable standard. Roads previously treated with Dustex or maintenance applications will use the 2.5 – 5% solution of stored Dustex product with water in the water tanker using two passes of the water tanker per section of road.
4.	Application of the Dustex solution in the water tanker to the road surface should take place to ensure that the road surface is adequately wet but not to the point where the solution applied begins to poole or run off the road surface.
5.	For new or roads not previously treated with Dustex the application should be done over one or two days or as required so as not to oversaturate the road surface.
6.	Once the application is completed remove the required signage, safety cones and spotters and open the road to traffic.

GRADER MAINTENANCE OF THE DUSTEX TREATED SURFACE

STEP	description
1.	Roads treated with Dustex can be graded should surface or riding quality necessitate this action.
2.	Apply moisture to the road surface to be graded using a 2.5% solution of the stored Dustex with water.
3.	Blade or skim the road surface lightly to the minimum depth required to correct surface irregularities and windrow the material on the side but do not remove this material from the road reserve.
4.	Change direction of the motor grader and spread the windrow material back over the road surface.
5.	Continue this blading procedure until the require camber or cross fall is achieved and the road surface is to the required standard.
6.	Should the material being bladed by the motor grader dry out and require additional moisture apply the 2.5% solution as required to maintain sufficient moisture in the material to enable it to bind to the road surface.
7.	If desired a roller can be used to complete the work and improve surface density prior to opening the section to traffic – do not use vibration
8.	Once the bladed section is completed allow to dry sufficiently and apply a maintenance application of the 2.5% solution of stored Dustex with water in the water tanker. Should moisture levels in the road dictate this maintenance application can be done the following day.

TRAINING

Full training in all procedures will be provided by the supplier



TECHNICAL DATA SHEET

ROADMATE

PO Box 84513 Greenside 2034 Johannesburg Gauteng Republic of South Africa 27 (0)11 390 3499 Tel

27 (0)11 390 3284 Fax E-mail info@roadmaterial.co.za

Website www.roadmaterial.co.za

DUSTEX

DATE: 02/005/2004 REVISED: 19/01/2019

DESCRIPTION:

Dustex is a uniquely formulated lignosulphonatebased binder and gravel preserver suitable for binding both fine and coarse particles. Dustex is also suitable for spray-on applications to the surface of areas requiring short or medium term dust suppression.

APPLICATION RATES:

Mix-in Liquid 1-2%

Powder 0.5-1%

Spray-on Liquid 1.0-1.5 kg/m²

Powder 0.5-0.8 kg/m²

BENEFITS:

- Reduced gravel loss and dust levels and road maintenance
- Suitable for use with a variety of materials with compositions and characteristics
- Easy to apply, no specialised equipment required, Roads can be trafficked immediately
- Dustex is suitable for application in dry regions and areas with low relative humidity
- Roads can be trafficked immediately
- Environmentally friendly, non-toxic and non-hazardous

PREPARATION:

Liquid Dilute the required Dustex with the water in the water bowser

Powder Fill the bowser with one-third water; then add the required Dustex. Circulate the water during

this process if possible. Once mixed, fill the bowser with water

APPLICATION:

Mix-in

- Rip the road to 150 mm and break large clods to maximum 50 mm
- Calculate the approximate volume of water required to reach OMC and add 85% of the required product application rate to this quantity of water
- Apply the solution onto the prepared surface in 2 to 4 applications, mixing thoroughly between
- Shape to required camber and compact with pneumatic or vibratory roller to required density
- Apply remaining 15% product to the road surface while still damp

Spray-on

- For spray-on applications, the road surface should be well compacted, density >93%, firm and free of excess loose material and with sufficient camber to allow for proper drainage
- Apply the product in multiple applications using a 10-15% solution of product with water
- Avoid run-off and pooling

CHARACTERISTICS:

Product form Liquid Powder Brown viscous liquid Brown water-soluble powder Appearance Specific gravity Liquid -1300kg/m³ Powder - 500kg/m³

pH (10% solution) 3.3 ± 1 3.3 ± 1

Solids % m/m 50 ±1 95% dry matter

HAZARDS :			PRECAUTIONS
Fire	-	non-	_

flammable

Explosion: - non-explosive 3:

FIRST AID:

- Safety gloves are recommended

Rinse with water

Skin - non-irritant Ingestion - nonhazardous

- Do not ingest Eye goggles are recommended

Drink water - Flush with water

STORAGE:

Eyes

The product is stable for several years under dry cool storage conditions

- non-irritant

PACKAGING:

Liquid: - bulk 34 ton loads

Powder: - 30 kg and 600 kg bulk bags

MATERIAL SAFETY DATA SHEET

1. PRODUCT IDENTIFICATION

1.1 Product Trade Name **Dustex Powder** 1.2 Product Type **Dust Control Agent**

Road Material Stabilisers (Pty) Ltd Unit 11 Elandsfontein Rail Complex

Hattingh Street, Isando, Gauteng, South Africa Tel: 27 (0)11 390 3499 Fax: 27(0)11 390 3284

ROADMATERIAL

2. COMPOSITION

1.3 Supplier

2.1 Product Description Calcium lignosulphonate

2.2 CAS Number 8061 52 7 (Calcium Lignosulphonate) 23 25 064 (Calcium Lignosulphonate) 2.3 EINECS Number

2.4 Dangerous Ingredients None

3. HAZARDS IDENTIFICATION

3.1 Important Hazards None

4. FIRST AID MEASURES

4.1 First aid - inhalation Move subject to fresh air.

Flush with large amounts of water or wash with soap and water. 4.2 First aid – skin contact

4.3 First aid – eye contact Flush eyes with flowing water.

4.4 First aid – ingestion Give water to drink.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Medium Water, Foam, Carbon dioxide, etc.

5.2 Protection of Firefighters No special precautions but respiratory masks are recommended

5.3 Hazardous Decomposition Products Sulphur oxides, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

6.1 Environmental Precautions Avoid infiltration or larger quantities into drains, surface water,

underground and soil.

6.2 Personal Precautions Respiratory protection and safety goggles are recommended. Sweep without creating dust into another suitable container for 6.3 Destruction and clean up

disposal and wash area with water.

7. HANDLING AND STORAGE

7.1 Handling Ensure adequate ventilation when handling. Respiratory protection is

recommended.

Must be stored under dry cool conditions. 7.2 Storage

7.3 Incompatible materials None

8. EXPOSURE CONTROLS / PERSONAL PROTECTION MEASURES

8.1 TVL (8 Hours) 5 mg/m3 (inert organic dust)

8.2 Technical measures/precautions Adequate ventilation

8.3 Respiratory protection Respiratory protection is recommended.

8.4 Hand protection This product is not a skin irritant.

8.5 Eye protection This product is not an eye irritant, but safety goggles are recommended.

8.6 Skin and Body protection This product is not a skin irritant.

Page 1. Dustex Powder Revision Date: March 2019 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Physical State Dry powder 9.2 Colour Brown

9.3 Odour Very slight odour.

9.4 pH (10% Solution) 7.3 + / - 1.09.5 Dry matter 95 +/- 1% 9.6 Density 500kg/m3

9.7 Partition coefficient

(N-octanol/water) Method for determination is not applicable for this product.

9.8 Vapour Pressure Not applicable 9.9 Boiling point/range Not applicable >130°C 9.10 Melting point/range

Not applicable 9.11 Flash point 9.12 Explosion Properties Not explosive >150°C 9.13 Autoignition temp

10. STABILITY / REACTIVITY

This product is stable for several years under dry cool storage conditions.

10.1 Hazardous Decomposition Prod Not known 10.2 Materials to Avoid Not known

10.3 Conditions to Avoid In common with many other organic chemicals, the product may in

certain circumstances form flammable dust clouds in air. The products

According to OECD method No. 302B, this product is classified as

treated to minimize dust formation.

11. TOXICOLOGICAL INFO

11.1 LD50 >50 g/kg. 11.2 Local effects None

According to the OECD Guidelines No. 404, 1981, this product is not 11.3 Skin Irritant

classified as a skin irritant.

According to the OECD Guidelines No. 405, 1981, this product is not 11.4 Eye Irritant

classified an an eye irritant.

12 ECOLOGICAL INFORMATION

12.1 Fish toxicity According to OECD method No. 203 this product is classified as not fish

toxic

12.2 Biodegradability

biodegradable.

inherently

13. WASTE DISPOSAL CONSIDERATIONS

Both residues of this product and packaging may be incinerated unless local disposal regulations state otherwise.

14. TRANSPORT INFORMATION

No transport regulations for this product.

Marpol, Annex II, Appendix III

15. REGULATORY INFORMATION

Not classified as dangerous for supply or conveyance.

16. OTHER INFORMATION

16.1 ABBREVIATIONS AND SYMBOLS

N.D. - Not Determined N.A. - Not Applicable N.T. - Not Tested

< - Less Than > - More Than

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Page 2. Dustex Powder Revision Date: March 2019