



# DustChek

## MINING & INDUSTRIAL

- Road surface stabilisation
- Remediation of Dispersive Soils
- Wear Course Improvement
- Sediment and Erosion Control
- Improvements to Clays, Silts, Sands, Gravels and Crushed Rock
- Dust Control to surface and underground soil surfaces

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## General Information **DustChek**

### Description and Ingredients:

**DustChek** is a potent powdered blend comprising acrylamide, surfactants, and binders that, upon mixing with water, transforms into a robust liquid co-polymer, functioning as a versatile soil stabilizer. This cutting-edge product is engineered to enhance the strength of the base material, whether in dry or wet conditions. When integrated with effective maintenance methods, **DustChek** facilitates achieving superior density levels in various materials. Additionally, it offers remarkable water resistance and heightened flexibility to the treated surface, thanks to its hydrophobic properties. This hydrophobic action plays a pivotal role in preserving the enhanced strength of dry pavements even during wet weather cycles.

**DustChek** comprises a concentrated blend of acrylamide, surfactants, and binders, meticulously formulated to yield optimal results. Upon mixing with water, these components synergize to create a potent liquid co-polymer, effectively stabilizing the soil. This unique composition ensures efficient particle lubrication and augments the viscosity of the water-**DustChek** mixture. Consequently, it promotes substantial densification and enhances internal friction within the host material. As a result, the treated layer exhibits a significant increase in modulus, indicating enhanced stiffness, once it dries back, ultimately leading to superior pavement strength (improved CBR).

**What DustChek delivers:** **DustChek** delivers a range of benefits, including enhanced wear course strength, increased flexibility, and an exceptionally high level of water resistance. It effectively minimizes dust emissions from the treated layer, leading to a significant reduction. The treated area exhibits resistance against block cracking, fatigue, and shrinkage cracking, ensuring longevity and stability.

**Applications:** **DustChek** finds versatile applications in various contexts:

**Wear Course Improvement:**- Enhancing natural ground and unsealed gravel roads, reinforcing their durability and longevity.

**Sub-grade Stabilization:**- Strengthening sub-grades to prevent water softening, enhancing structural integrity.

**Capping During Construction:**- Capping sub-grade layers to prevent traffic damage, water softening, and excessive dust emissions, ensuring a stable foundation.

Dust and sediment control for open areas, batters and drains.

Weather proofing and dust control of road materials and stockpiles

**Sodic Soil Remediation:**- Preventing piping (tunneling) in sodic soils, ensuring the integrity of the ground.

**Haul road and hardstand dust control:**- Effectively controlling dust on haul roads and hardstands, maintaining clear pathways and work areas.

**Installation:** **DustChek** can be seamlessly installed through various methods, including stabilising machines, grader mixing, or a carefully planned watering program. The installation process mirrors that of neat water application, involving essential steps such as scarification, wet mixing, and re-compaction, or a structured watering regimen.

For installations involving stabilizing machines, the process aligns with standard neat water application procedures, ensuring a streamlined and efficient process. Notably, the utilization of **DustChek** does not necessitate additional time or specialized equipment for competent installation.

**Stabilization Depth Requirements:** The depth of stabilization required varies from one job to another, contingent upon specific project needs. **DustChek** accommodates these diverse requirements, allowing for flexible application depths tailored to individual projects. This adaptability ensures optimal results, addressing the unique demands of each job.

# DustChek

## Technical Specifications



### Technical classification

**DustChek** falls under the category of Water-Soluble Polyacrylamide, serving as a highly effective liquid soil stabilizer.

### Benefits of use

**DustChek** offers a multitude of advantages, including superior soil stability, leading to efficient dust control and substantial water conservation. Areas treated with **DustChek** remain consistently re-workable, and the stabilized material can be stockpiled for extended durations without compromising its efficacy. Environmental Approval and Recognition: **DustChek** holds approval for application in water catchment areas, attesting to its environmental compatibility and safety. Furthermore, **DustChek** is environmentally inert and holds prestigious recognition, being listed with Eco-Buy Victorian Centre for Environmental Purchasing and NSW Local Government Sustainable Choice. These endorsements underline **DustChek's** commitment to eco-friendly practices and its reliability in sustainable procurement initiatives.

### Plant requirements

**DustChek** simplifies the installation process by not requiring any specialized equipment or machinery. It can be efficiently applied by standard grader crews, stabilisation machines, or through a well-organized watering program. This flexibility ensures that competent installation can be accomplished using existing resources and without the need for additional plant investments.

### Hazard Classification

NON-HAZARDOUS SUBSTANCE.

Hazard classification according to the criteria of NOHSC.

NON-DANGEROUS GOODS.

Dangerous goods classification according to the Australia Dangerous Goods Code. (Infosafe No/. LPWGT)

### Physical Appearance

Orange Crystalline Powder  
recyclable plastic bottles

### Handling and Safety

For safe handling and usage guidelines, please refer to the Material Safety Data Sheet (MSDS) provided. **DustChek** ensures that proper safety protocols are followed during its application, prioritizing the well-being of users and the environment.

### Packaging

Two Kilogram recyclable plastic bottles

### Typical Water Savings

**DustChek** offers remarkable water conservation, with site-specific savings ranging from 70% to 90%.

### Benefits imparted to treated soil

**DustChek** enhances the treated soil in several ways, including increased strength (higher CBR), heightened flexibility, and an exceptionally high level of water resistance. Additionally, it remediates dispersive soils and reactive clays, fortifying the soil structure.

### Testing

National testing protocol available upon request

### Carbon Footprint comparison

**Traditional stabilisation product** - 1,500 Kg of CO<sub>2</sub> is produced to manufacture sufficient product to stabilise 100 ton of pavement material at a standard 2% rate.

**DustChek product** - 5 Kg of CO<sub>2</sub> is produced to manufacture sufficient product to stabilise 100 ton of pavement material at the equivalent rate.

Note: **DustChek** has undergone a full and independent Australian government approved audit with case study examples having been independently assessed

### Supply and Technical Assistance

Distribution of the **DustChek** products in Australia is managed by the groups local members. For specific , technical assistance and major client arrangements area information please contact - [info@totalenviro.net.au](mailto:info@totalenviro.net.au)



## **DustChek – Installation**

### **Non-traffic areas-**

Application of **DustChek** in non-traffic areas is affected by several variables as are the previous application methods regarding general roads and haul roads. There are three main categories of material to take into consideration when installing the product.

#### **Exposed topsoil –**

**DustChek** mix ratio – 3500:1

Application rate – 1 litre per square metre

#### **General construction -**

Where topsoil has been removed exposing loose and or fine and grainy material.

**DustChek** mix ratio - 3000:1

Application rate - 1 litre per square metre

#### **Sand or Low clay silt areas –**

**DustChek** mix ratio – 2500:1

Application rate – 2.0 litres per square metre

**Note 1:** In all three of the above scenarios the selected treatment area should be pre-wet to ensure complete coverage and dissipation of the **DustChek**. The above application rates should ensure a high level of dust/erosion control for three to six months. A maintenance application of **DustChek** at a mix ratio of 10,000:1 at 1 litre per square metre may be applied on a monthly basis to extend the products longevity.

**Note 2:** Indicator dye may be added to **DustChek** if required.

**Note 3:** If the area is exposed to traffic there will be a considerable reduction in the products effectiveness and a different mix and installation method should be used.

Please contact a **Total Environmental Concepts representative** for further information if the area is to be trafficked.

# DustChek

## MINING & INDUSTRIAL

Better results achieved with less water carts



Purpose made product, developed and manufactured in South Australia by BioCentral Laboratories for mine site and civil applications.

## HAUL ROAD DUST SUPPRESSION - WATER SAVING TREATMENT

- **Increased efficiency in continuous watering programs**
- **1 Bottle DustChek mixes with 10,000 litres Water.**

DustChek can be used in a low dosage application in every water cart load to double the efficiency of the sprayed untreated water.

At low dosage rates DustChek increases the surface tension of the treated dust suppression water which in turn reduces the evaporation rate at which means your road stays damp for longer . Historically, feedback from our clients confirm that the use of DustChek can halve water consumption on mine sites at very low doses.

One example of this would be a goldfields nickel mine where the substitution of a liquid emulsion product with DustChek realised a saving of 1.9 Megalitres per day. This in turn allowed the mine site to stand down 2 No CAT 785 Water Carts, obviously saving them a significant amount of money and allowing the two operators to be reassigned ore hauling duties. The financial saving are significant with this application reducing the sites budgeted spend by approximately 80%.

## ROAD, FLOODWAY OR AIRSTRIP STABILISATION USING DUSTCHEK

DustChek is applied and mixed through the pavement material at a recommended dosage rate of 1 Kg DustChek to 25 Cu M of compacted soil using conventional rip and re-compact methods which fits in with most mine site application as all you need is a Grader, Water Cart and Roller which in most cases can be substituted for haul traffic. A 4 to 6 fold reduction in maintenance and the potential to use poor quality in situ material rather than re-sheeting is a typical outcome.

Our polymer treated dirt road pavements typically exhibit a higher degree of stiffness and resistance to both mechanical damage and damage due to adverse weather conditions. Continued monitoring of treated roads over the past 16 years has lead to the realisation that our polymer treated road typically stays serviceable for between four to six times longer than previously observed prior to treatment.





## TYPICAL RESULTS - DIRT AIRSTRIPS

Remote and regional dirt airstrips have been successfully stabilised with our polymer and have subsequently exhibited a reduced need for ongoing maintenance works. Post treatment the asset owners have reported that these airstrips have been able to stay open longer and be reopened sooner during and after significant rainfall events. A significant number of airstrips throughout Western Australia and interstate have been treated with our polymer to improve their performance with remote mine site airstrips being treated to accommodate the landing of larger, more efficient BAe146 Jet Aircraft in all but the worst of weather.



## TYPICAL RESULTS - RAIL YARDS / LAY-DOWN AREAS

Rail yards, Lay-down areas, construction pads etc. can be stabilised with our polymer in order to achieve higher load bearing capacity at minimal cost. After treatment these areas will need less maintenance and perform better through wet weather allowing these sites to remain operational through all but the worst of weather conditions.



## PRODUCT APPLICATION - DRY SPREAD METHOD

This method is particularly useful when materials residual moisture content is high, either close to or in extreme cases above their OMC. Basically the same as Rip and Re-compact however the product is spread over a previously scarified area, allowed to activate and then mixed by conventional means such as blade mixing with a grader

### EQUIPMENT REQUIREMENTS

Grader with rear mounted scarifiers

Compaction - Appropriate compaction equipment

Water cart (Water cart should have pumped dribble bars and/or fan sprays)

Powder Spreader (supplied by Betta Roads)

DustChek water soluble polymer (supplied by Betta Roads)



Scarify the designated treatment area to you predetermined depth.

Use pump spray to mist spray over the ripped area to be treated

Dry spread the DustChek powder using a suitable spreader (supplied by Betta Roads). Scarify again and add another pass with the water cart. Set material up in a windrow / mix adequately whilst adding water to bring the material to modified OMC. Lay out in 50mm lifts, rolling with appropriate compaction equipment in the conventional manner to achieve adequate compaction. Whenever possible finish with a slurry seal. Once the pavement has dried back sufficiently the surface can be watered to form a thin slurry of fines on the pavement surface. Rolled appropriately with a multi tired roller a tight, uniform finish to the pavement surface can be achieved and will assist in the longevity of a dirt road and in the case of a pavement that is to be sealed achieve a dense, uniform surface.

## PRODUCT APPLICATION - PRE-MIX IN WATER

### CART METHOD

Historically, this method has been used by construction crews across Australia for the past decade or so. DustChek is mixed into the crews water cart by use of an Educator which enables quick and efficient mixing of the PolyCom powder and water to form a resultant co-polymer, which is sprayed onto and mixed through the road material in the conventional time honoured fashion.



### EQUIPMENT REQUIREMENTS

Grader with rear mounted scarifiers

Compaction appropriate compaction equipment

Water cart (Water cart should have pumped dribble bars and or fan sprays)

Mixing Educator (for application of DustChek into the water cart)

DustChek water soluble polymer (supplied by Distributor)

Powder is mixed into a water cart at a predetermined concentration using a Educator. This is done as the water cart is being filled and once set up should not impede on the length of time taken to fill the water cart. *Once the powder has been mixed into the water to form a co-polymer then the product is used as if it were normal water and no deviation from common practice is required, basic Rip and Re-compact methodology applies.*

### STOCK PILE PRE-TREATMENT

Unlike many other stabilising products DustChek does not rely upon a chemical reaction and therefore is far easier to use and can improve the efficiency of a project as a whole. DustChek can be used to treat pavement materials at the borrow pit or quarry prior to delivery to site and the treated pavement material can be stockpiled until required on site. Stockpiled material can in effect “moisture condition” during storage which can further enhancing the performance of the DustChek / soil blend. Delivering the pre-treated pavement material to the job site reduces traffic delays, inconvenience to road users and project costs.







For further information or technical and testing data:

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## **DustChek**

**Delivers CO2 reductions**  
**Stockpiles and pre-load areas**

**OH&S compliant**

**Use in clays through to gravels**

**Environmentally sound**

**No transport costs**

**Cost negative**

**70%-90% water savings**

**2 Kg treats**

**100 ton - stabilisation**

**Competent dust control to most soil types**

**No shrinkage cracking**

**Non corrosive**

**Non-leeching**

**Not slippery when wet**

**Competent dust control to most soil types**



***Total  
Environmental  
Concepts***

*Stabilizing Your Environment*