# GLOBAL DUST SHIELD

## Innovating Environmental Protection

**Global Dust Shield (GDS), an Australian-owned company at the forefront of innovative environmental protection technologies.**
**GDS is the pioneer behind Sand Shield, Coal Shield, Dust Shield, and Salt Shield technologies.**

Global Dust Shield

# 1 About Global Dust Shield (GDS)

# GLOBAL DUST SHIELD

Innovating Environmental Protection

## Company Overview

- Company — Global Dust Shield (GDS)
- Origns — Proudly Australian-Owned
- Founding Year — 2013
- Mission — GDS is committed to revolutionising dust control to ensure sustainable and cleaner surroundings.

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## Introduction

GDS innovations  stands as the pioneering force behind groundbreaking technologies: SandShield, CoalShield, and SaltShield. Our suite of dust control solutions is meticulously crafted to empower nations, governments, agriculture, and industries in breaking free from the cycle of fugitive dust migration, spanning coal, sand, asbestos, salt, and other airborne particulates.

Engineered to cater to the mining, agricultural, and land reclamation sectors, our products serve to solidify sand, soil, coal dust, and salt, effectively curtailing uncontrolled dispersion. Through our signature formulations – SandShield™, SaltShield™, and CoalShield™ – coupled with our strategic application methodologies, we arrest the movement of sands while fostering native ecosystems, ushering in a conducive habitat for flora and fauna to flourish.

# 2 Global Dust Shield Uses

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## The Sand Problem

In the 21st century, sandstorms and dust haze stand as a trio of significant hurdles confronting humanity, exerting their impact on the environment, societies, and commercial enterprises.

Sandstorms: Give rise to respiratory ailments by introducing sand particles into the respiratory system; Diminish visibility, impairing both air and ground transportation; Erode soil, stripping away organic substances and the most delicate, nutrient-laden particles, consequently curtailing agricultural output.

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## The Sand Problem

Amidst the trio of substantial obstacles that humanity confronts in the 21st century, the presence of sandstorms and dust haze looms large, casting formidable shadows over not only the natural environment but also the well-being of communities and the vitality of businesses.

The inhalation of sand particles presents a significant health concern brought about by sandstorms.

The diminished visibility stemming from sandstorms adversely impacts both aerial and terrestrial transportation networks.

Moreover, the pernicious effects of sandstorms extend to the realm of soil, instigating loss in arid landscapes. Even more concerning is their selective depletion of organic matter and the lighter, nutrient-rich particles from the soil, leading to a reduction in agricultural productivity.

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## The Sand Solution

Tackling the challenge
posed by sand-related issues

Sand Shield boasts a proven efficacy that lasts for a minimum of two year. This minimum period helps with the cost viability of SandShield. This recommendation holds true under natural weather conditions, devoid of interference from human activities and sizable animal presence.

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## The Sand Solution



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## The Sand Solution

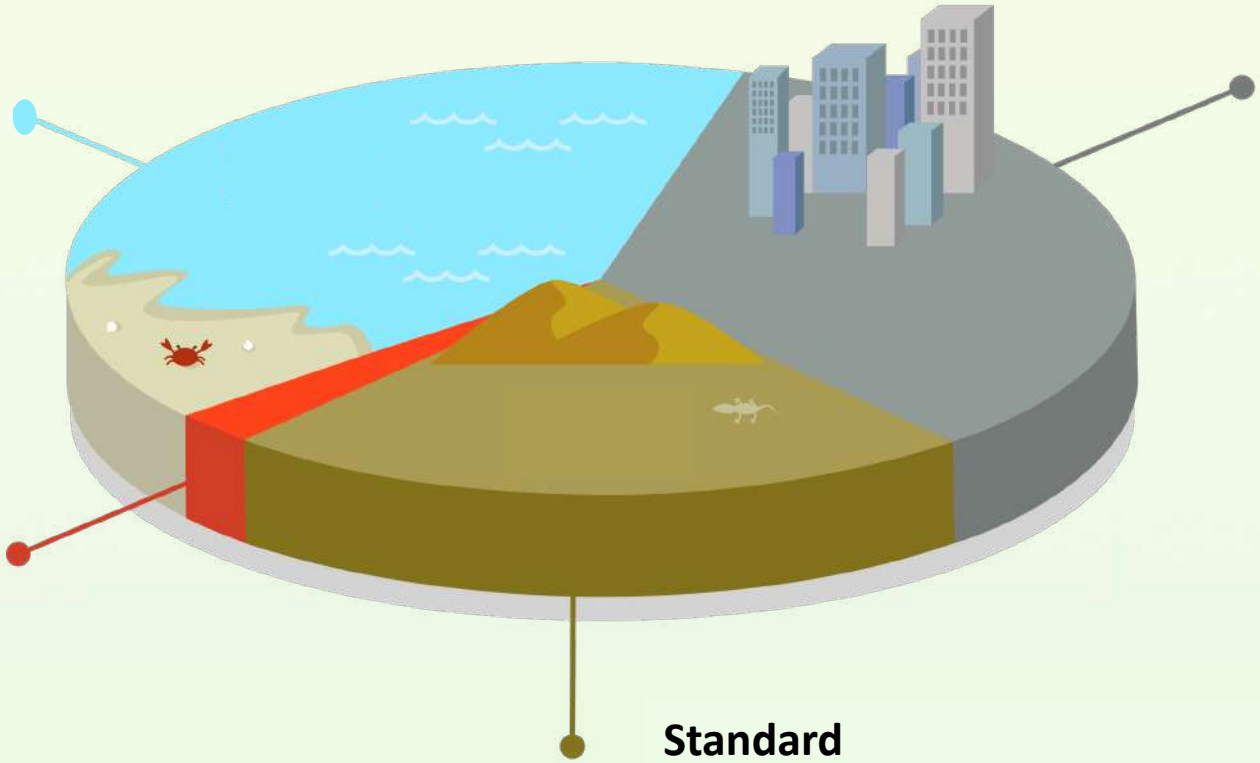
The offerings by GDS manifest in liquid composition, making them amenable to dispersal through a spectrum of application avenues, encompassing aerial, mechanical, vehicular, and manual spraying techniques.

## VERSATILE IN APPLICATION TECHNIQUES

# 3 Site Coverage

# Site Coverage

**Coast**
High Winds
Recommendation:
3 spray
Average 3lt per m $^2$



**Inner Urban**
Recommendation:
2 spray
Average 2lt per m $^2$

**Extreme**
Recommendation:
3 spray
Average 4lt per m $^2$

**Standard**
Recommendation:
1 spray
Average 1lt per m $^2$

# 3 Environmentally Sound Choice

# Environmentally Sound Choice

Harmless to the eco-system

Extensive independent testing has shown that although Sand Shield prevents the sand from drifting, it allows water to seep through and plants to thrive and grow penetrating the protective surface.  Sand Shield has been specifically formulated for harsh conditions.

# 4 Global Dust Shield: Independent Test Results

# Sand and Coal Shield

Independent Tests

## CSIRO Approved Test Facility

GDS had independent test carried out by a CSIRO approved Test Facility
Commonwealth Scientific and Industrial Research Organisation
Description:
The Commonwealth Scientific and Industrial Research Organization or CSIRO is Australia's government agency for scientific research. It was founded in 1916 under the original title of Advisory Council of Science and Industry. Wikipedia
Subsidiaries: C.S.I.R.O., PLUS
Headquarters: Canberra, Australia

# Sand Shield

## Independent Tests

| Test Details | | | |
|---|---|---|---|
| **Test Report Number** | C11189-7 | **Test Performed by** | Tim Sallai |
| **Test Date** | 17 April 2012 | **Report Checked by** | Don Zhao |
| **Type of Test** | Client Product Evaluation | **Reference Instruction** | WT-021 |

| Reference Equipment Used | | | | |
|---|---|---|---|---|
| **Instrument** | **Ecotech ID** | **Serial Number** | **Cal. Report No.** | **Cal. Due Date** |
| Pitot-static Tube | TE-0486 | 2007B | | 1/05/2017 |
| Pressure Transducer | TE-0438 | 4804763 | APL115407 | 26/08/2012 |
| RH/Temperature Transducer | TE-0393 | Y43400020 | 33884N | 16/08/2012 |
| Barometer | TE-0396 | T4440005 | APL115405 | 26/08/2012 |

| Test Sample Details | | | |
|---|---|---|---|
| **Sample ID** | S2 | **Description** | Sample board with cone-shaped coated mound |
| **Dimensions** | Board: 390 mm x 430 mm x 12 mm | | Mound: diameter 310 mm x height 95 mm |

| Client Details | | | |
|---|---|---|---|
| **Report Client** | Alphalast Pty Ltd | **Phone** | (03) 9416 9866 |
| **Client Address** | 110 Bell Street, Preston VIC 3072 | | |

| Test Environmental Conditions | | Test Results | | | |
|---|---|---|---|---|---|
| **Ambient Temperature (°C)** | 22.5 | **Stable Wind Speeds Attained (kph)** | 44.5<br>76.3<br>107.8 | **Remark** | Sample remained intact for duration of test |
| **Relative Humidity (%)** | 58.5 | | | | |
| **Barometric Pressure (hPa)** | 1017.6 | | | | |

**Notes:**

The uncertainty is ±2% of reported wind speed readings. The reported measurement uncertainty is the expanded uncertainty at 95% confidence level, and a K coverage factor of 2 unless otherwise stated.

The results of the test, calibration and/or measurements included in this document are traceable to Australian national or international standards.

**Tested:**

**Checked:**

**Date:** 19/04/2012

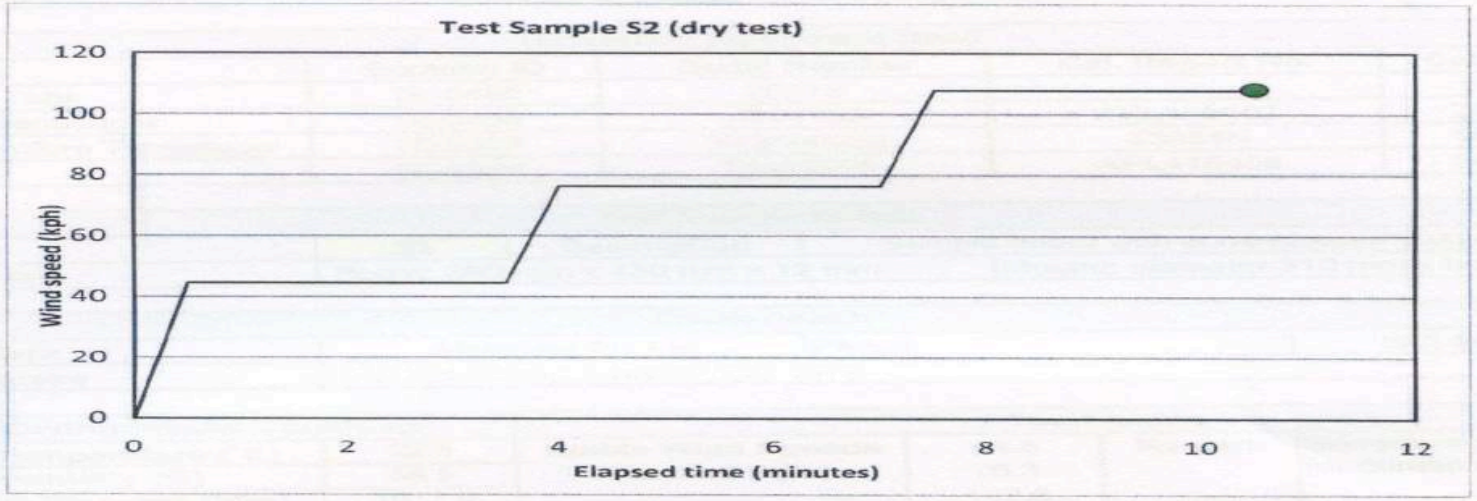
**Company Seal:** Ecotech Pty Ltd THE COMMON SEAL OF ACN: 005 752 081

# Sand Shield

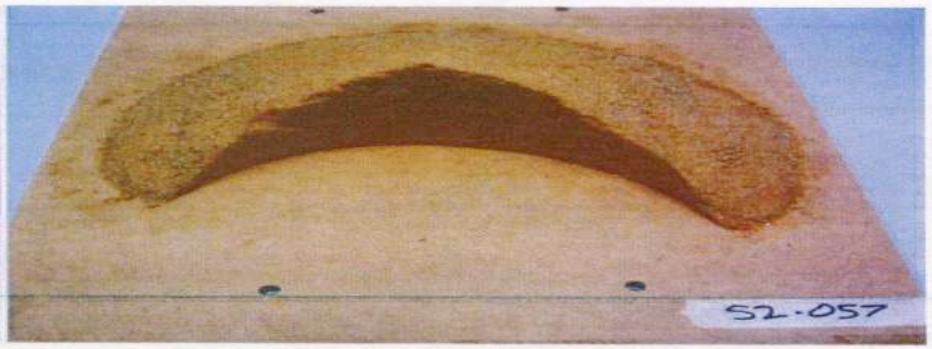
## Independent Tests

**Test Graph**

| Test Report Number | C11189-7 | Sample ID | S2 |
|---|---|---|---|




**Sample Photographs**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# Sand and Coal Shield

Independent Tests

## Wind Test

- The sand sample, shaped conically, underwent a preparation process involving the removal of a specific section. This excised portion was then coated with 50ml of a meticulously formulated, atomized, and non-toxic dust suppression fluid. Following the coating application, the sample underwent a drying period of up to 3 hours within a cool ambient environment of 20° Celsius. Subsequently, the treated sample was subjected to testing within a wind tunnel.

- The removal of the aforementioned section was purposeful, intended to gauge the thickness of the applied sand coating (ranging from 2mm to 3mm) under direct exposure to wind force. In this scenario, the laminar airflow interacted with the vertical surface before passing over it. In a regular scenario without the coating, the exposed edges of the removed sector would erode within seconds, analogous to the rapid erosion of a sand dune.

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## The Coal Problem

The process of coal mining, particularly when conducted on the surface, engenders transient upheavals across extensive land expanses. Prominent activities such as drilling, crushing, and transporting coal invariably bequeath a residue of coal dust on flat surfaces, subsequently susceptible to wind-borne dispersion throughout the vicinity.

The repercussions of this coal dust reverberate through the surrounding ecosystem and give rise to substantial health concerns for coal workers. Legal mandates necessitate coal mining enterprises to establish robust coal dust management and monitoring mechanisms.

Coal mining, inherently a limited-term land utilization endeavor, necessitates a subsequent phase of land rehabilitation to facilitate reclamation and restoration of the mined terrain.

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## The Coal Problem

**Traditionally, water spray emerges as the predominant avenue for managing coal dust. However, this method consumes substantial volumes of water, necessitating spraying at intervals of 3-4 hours to counteract potential evaporation. Not only does this approach impose a considerable, ongoing burden on water resources, but it also amplifies storage and transportation expenses due to augmented weight.**

# The Coal Solution

Coal Shield, fortified with its capability to endure wind speeds of up to 180 km/h, is purposefully crafted to mitigate the repercussions stemming from airborne coal dust on the environment and the consequent product loss.

Incorporating Coal Shield during these operational phases has the potential to generate savings of approximately A$10 per cart, all the while effectively mitigating the considerable environmental impact induced by coal dust.

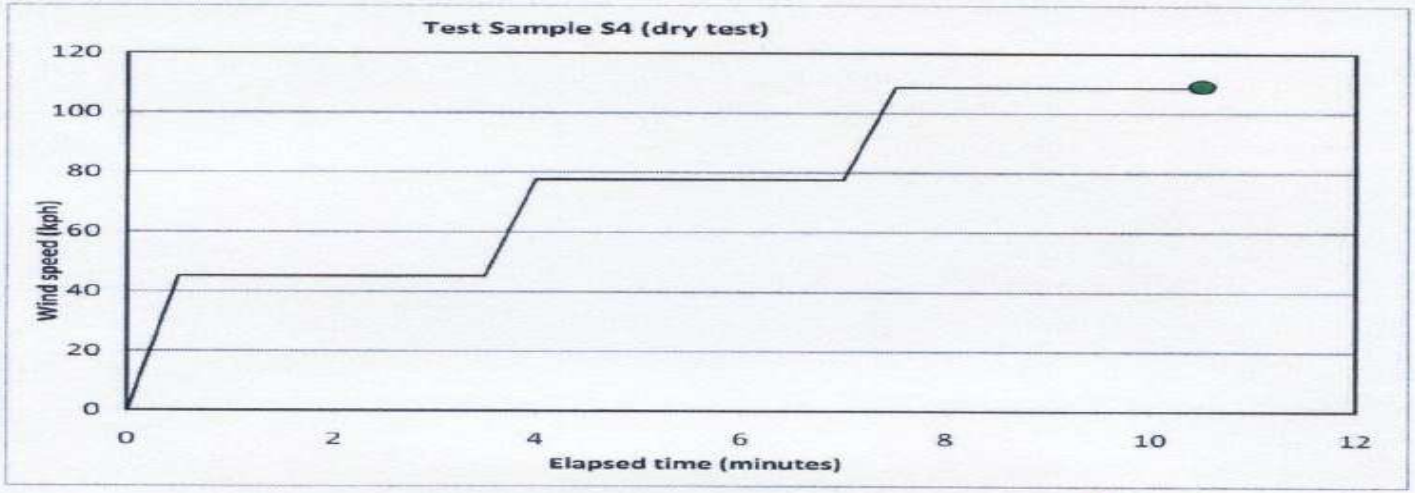
The strategic application of Coal Shield presents a viable solution to this challenge.

# Coal Shield

## Independent Tests

**Test Graph**

| Test Report Number | C11189-9 | Sample ID | S4 |
|---|---|---|---|




**Sample Photographs**

# Coal Shield

## Independent Tests

| Test Details | | | |
|---|---|---|---|
| **Test Report Number** | C11189-9 | **Test Performed by** | Tim Sallai |
| **Test Date** | 17 April 2012 | **Report Checked by** | Don Zhao |
| **Type of Test** | Client Product Evaluation | **Reference Instruction** | WT-021 |

| Reference Equipment Used | | | | |
|---|---|---|---|---|
| **Instrument** | **Ecotech ID** | **Serial Number** | **Cal. Report No.** | **Cal. Due Date** |
| Pitot-static Tube | TE-0486 | 2007B | | 1/05/2017 |
| Pressure Transducer | TE-0438 | 4804763 | APL115407 | 26/08/2012 |
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| Barometer | TE-0396 | T4440005 | APL115405 | 26/08/2012 |

| Test Sample Details | | | |
|---|---|---|---|
| **Sample ID** | S4 | **Description** | Sample board with cone-shaped coated mound |
| **Dimensions** | Board: 390 mm x 430 mm x 12 mm | | Mound: diameter 310 mm x height 95 mm |

| Client Details | | | |
|---|---|---|---|
| **Report Client** | Alphalast Pty Ltd | **Phone** | (03) 9416 9866 |
| **Client Address** | 110 Bell Street, Preston VIC 3072 | | |

| Test Environmental Conditions | | Test Results | | | |
|---|---|---|---|---|---|
| **Ambient Temperature (°C)** | 22.1 | **Stable Wind Speeds Attained (kph)** | 45.2<br>77.5<br>108.6 | **Remark** | Sample remained intact for duration of test |
| **Relative Humidity (%)** | 41.7 | | | | |
| **Barometric Pressure (hPa)** | 1015.7 | | | | |

**Notes:**

The uncertainty is ±2% of reported wind speed readings. The reported measurement uncertainty is the expanded uncertainty at 95% confidence level, and a K coverage factor of 2 unless otherwise stated.

The results of the test, calibration and/or measurements included in this document are traceable to Australian national or international standards.

**Tested:**

**Checked:**

**Date:** 19/04/2012

**Company Seal:** Ecotech Pty Ltd THE COMMON SEAL OF ACN: 005 752 081

# 5 Global Dust Shield: Conclusion

# Conclusion

Billions of dollars will be saved in sand related maintenance

- GDS Shield's, allows water tension to break enabling the liquid to be soaked up.
- GDS Shield's, when applied, forms a crust on the surface which can be mechanically granulated back to small particles.
- GDS Shield's, when applied, does NOT stop or prevent the growth of plantation EVEN on coastal areas.
- GDS Shield's, when applied, ALLOWS reptiles, insects and other animals to borrow through the sand surface and seek shelter in their natural habitat and environment.

We envisage that the ongoing use of the GDS spray will lead to a clean and usable environment if used correctly over the next 8 years.

# Conclusion

Billions of dollars will be saved in sand related maintenance

# Conclusion

Billions of dollars will be saved in sand related maintenance