



Biological dust control

Turn dust into solid roads.

**USE 10X LESS WATER ON YOUR HAUL ROADS WITH BIOLOGICAL DUST CONTROL –
A NEW, PROVEN WAY TO CONTROL DUST AND STABILISE ROADS.**





ABOUT US

We're making mining cleaner with biological dust control

OUR MISSION

Mining companies are under pressure to use less water and operate more sustainably. Our new, proven biological dust control technology slashes water consumption and improves road quality to boost mine productivity.

100% natural – How biological dust control works



Our biological dust control method uses a natural biological process to turn dirt into stone. This process includes the principle of biocementation and mimics the way nature creates e.g. limestone.

Biocementation is a natural chemical process in which calcium carbonate (CaCO_3) crystallises and deposits from a solution. As calcite grows, it forms mineral “bridges” that connect adjacent grains, thereby cementing them together and creating a solid structure. This process, when applied to road stabilisation and dust control, ensures long-term reliable results.



Limestone formations in the Pinnacles Desert, Australia

Biological dust control for more Responsible Mining

Bind-X industrialised and patented a biogeochemical process to create better quality roads and control dust. This innovation helps mines cut water usage by turning dirt on roads into a rock-hard surface. Our biological dust control method is already effective and is used on more than 30 mine sites in Africa, Australia and Europe, supporting Responsible Mining practises.

Clean and safe for the environment

Biological dust control not only reduces airborne particles and improves air quality for nearby communities, it's also beneficial for the environment. With this new, proven dust control method, mining companies can safeguard ecosystems, keep waterways clean, and contribute to healthier living conditions for workers and local residents.

BIOLOGICAL DUST CONTROL WITH

TERRABIND™

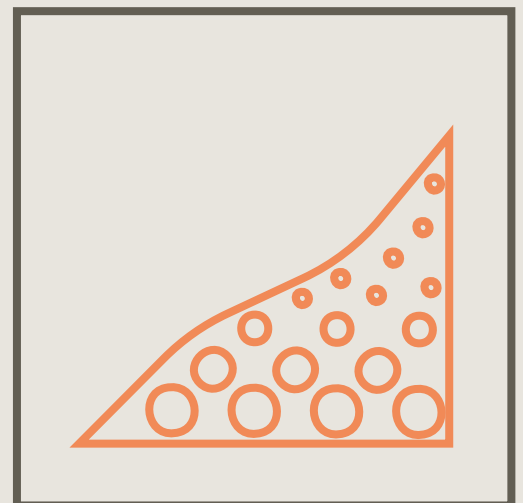
Formulated to suit your mine, objectives, and climate

Our range of Terrabind™ biological dust control products offers tailored solutions to effectively reduce fugitive dust and improve road quality. Terrabind™ can be applied for these use cases and beyond:



Road stabilisation + dust suppression

- Primary haul roads
- Secondary haul roads
- Main access roads
- Solar farms



Erosion control

- Tailings storage facilities
- Stockpiles
- Solar farms

TERRABIND™ CHARACTERISTICS

- High-strength solidification
- High abrasion resistance
- 100% non-toxic to people and nature
- Wet stable biological options available
- Applicable with existing equipment
- Beneficial for mine rehabilitation

10X
BETTER ROAD QUALITY

Tailored solutions to meet the diverse dust management needs in mining

TERRABIND
ULTIMATE

TERRABIND
MAX

TERRABIND
SELECT

TERRABIND
PRIME

TERRABIND
TSF



Rock solid haul roads, faster cycle time

With Terrabind™, mines can access long-term production and environmental benefits and massively reduce water usage. Terrabind™ creates a solid, smooth road surface layer for less dust and better road stability. It's applied less frequently than water so you have less water trucks on the road, less maintenance and better cycle speeds.

Wet stable alternative to bitumen

The Terrabind™ product portfolio includes formulations that are effective in both wet and dry climates, providing consistent performance for dust suppression and road stabilisation throughout the year. Terrabind™ is the only wet stable biological dust control product on the market and the natural alternative to bitumen, polymers, lignonsulfonates and salts.

Reliable erosion control on tailings storage facilities and stockpiles

Terrabind™ is an innovative solution for erosion control on tailings storage facilities (TSF) or stockpiles. It forms a solid crust that reduces tailings dust, ensuring a safer and cleaner environment. This toxin-free method is ideal for easy mine rehabilitation.

Terrabind™ outperforms conventional dust control methods – also in wet climates

As strong as bitumen blends, with none of the downsides

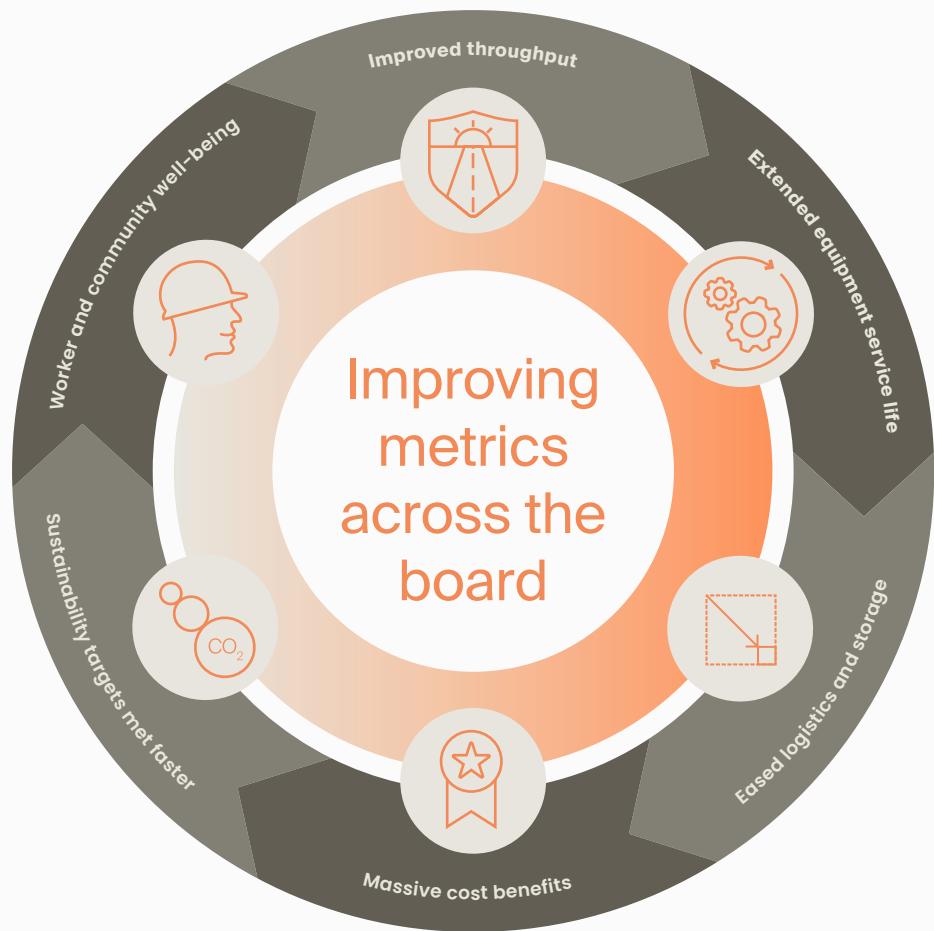
Terrabind™ biological dust control stabilises the surface wearing course layer to reduce wear and tear on roads. It creates a smooth, low friction layer that massively reduces road and equipment maintenance, saving time and resources on road repairs.

Terrabind's™ performance compared to traditional dust suppression methods:
There is no rational alternative to Terrabind. All the positives, without the negatives.

Criterion	TERRABIND™	Water	Salts	Bitumen	Ligno-sulfonates	Polymers
Application durability	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>
Ease of operation	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>
Road stability	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>
Equipment Longevity	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>
Environmental safety	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>	<div><div></div><div></div><div></div><div></div><div></div></div>

4 points or above is considered excellent

Terrabind™: Enhancing productivity in mining operations



Improved throughput

Terrabind™ creates solid roads with smooth surfaces that are stable in wet conditions allowing you to **optimise Tonne Kilometres Per Hour (TKPH) for your operations.**

Extended equipment service life

Unlike polymers, salts or bitumen, Terrabind™ does not stick, is easy to clean, and does not corrode equipment. You will experience **less wear & tear.**

Eased logistics and storage

Most Terrabind™ products are **powders**, reducing shipping costs and loads. They have a **shelf-life of over two years** and can be stored in heat.

Massive cost benefits

Terrabind™ lowers fuel use, maintenance, and labor costs. It's biodegradable and soil-friendly, **cutting mine rehabilitation expenses.**

Sustainability targets met faster

Terrabind™ serves as an essential component of your water management strategy, also assisting in the reduction of both **Scope 1 and Scope 3 emissions.**

Worker and community well-being

Terrabind™ **binds** the smallest **particulate matters (PM 2.5)** reducing the risk for respiratory diseases such as silicosis and **improving overall quality of life.**

HOW IT WORKS

Our biological dust control process

After assessing your current challenges related to dust control and identifying the areas that require attention, we will recommend an appropriate Terrabind™ product from our portfolio. Based on the specific use case, such as primary roads, secondary roads, or tailings storage facilities, we will also suggest the suitable application method for our Terrabind™ biological dust control products.

These products can either be sprayed on or incorporated into the soil for constructing new and durable roads. You can apply Terrabind™ using your existing equipment, which allows you to change the method without altering your operational process.

Road constructed with Terrabind™ Ultimate



3 easy steps to dust-free roads

1

Step 1: Soil analysis

We run a soil analysis in our lab and make recommendations based on your mine's conditions.



2

Step 2: Site trial

Our dedicated team runs a site trial with Terrabind™ to also make your team familiar with the easy application.



3

Step 3: Better roads, no dust.

In less than 6 hours your road's surface will harden into a smooth rock-solid layer.



OUR SERVICE

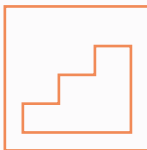
There for you at every step



Customised product development



Support

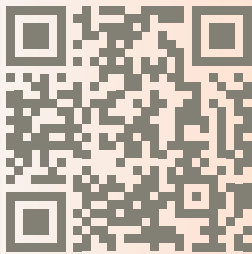


Staff training



Network of environmental service partners

➤ **Request a call** and start improving your roads and TSF



GCO Senegal reduces water usage by 85%

KEY RESULTS

85%

less water used

90%

less diesel consumed

95%

less CO₂ emissions

The problem

Eramet's GCO mine in Senegal has more than 20 km of high-traffic primary haul roads. Their operations team was under pressure to reduce water consumption and keep dust levels low but their plain water approach to dust control used more than 240,000 litres of water a day. Frequent watering reduced road stability, creating endless road maintenance problems.

Finding a solution

They tested alternative dust control methods. Bitumen emulsion was promising, but it was difficult to ship and store on site and had water and soil contamination downsides. Then they trialled Bind-X's biological dust control approach on a dusty 3 km section of haul road.

The result

With this new method, they cut water truck usage from 3 times per day to once every 3 days. This reduced water consumption by 85% and they saw a 3x reduction in dust.

”

“We are reaping the rewards of implementing Bind-X's biological dust control on our mine. It improves health and safety, operational efficiency and our environmental footprint.”

MINING SERVICES MANAGER
ERAMET GCO MINE



Before



See the before
and after video



Terrabind™ is sprayed on
the dusty road.

After



A solid crust has formed on
the road.

**Bind-X was winner of the Responsible Mining
Innovation Challenge 2021**

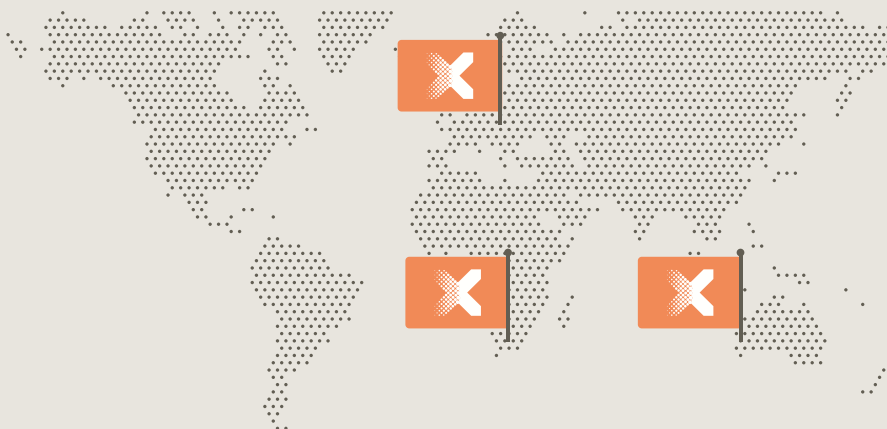


The Eramet Open Innovation challenges organized by Eramet Ideas and EIT RawMaterials invite start-ups and SMEs from all over the world to propose innovative solutions to help face the challenges of the mining industry. It's a way to source companies that support Eramet's role within a sustainable mining and metallurgical industry.

The theme for the 2021 edition was "Responsible Mining", which includes five key issues: environmentally-friendly exploration, mine rehabilitation and biodiversity, water and waste management, traceability of raw materials, and safety on mining sites.



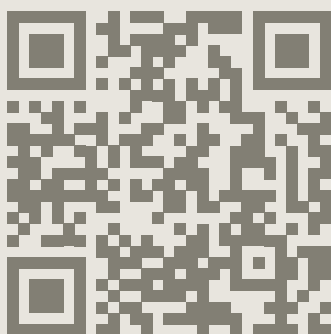
TURN DUST INTO SOLID ROADS.



Want to find out if biological dust control could work for your site?

Get in touch

Book a call and get all your questions answered



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