Chembase Treatment System (CTS)

Reservoirs, canals, farm dams and mine tailings dams: sub-base layers

Product: Chembase® C-SSSB1 | Research and development

“It costs you nothing to find out how much you can save.”

Where CTS is applied

Reservoirs

Artificial lakes where water is collected and stored for use.

Canals

Man-made waterways for shipping, travel and irrigation.

Farm dams

Water for irrigation and livestock.

Tailings dams

Earth-fill dams that store mining by-products.

Reservoirs: what they do

Store water

An artificial lake where water is collected and kept in quantity for use.

Control floods

Reservoirs hold water in high flows, then release it gradually when flows are lower.

Supply farms and towns

Released water lets farmers water crops and keeps homes and businesses running.

Power and recreation

Some dams generate electricity. Reservoirs are also used for boating and fishing.

The cost of building dams

$60.70 bn

Estimated total cost for non-federal dams, up from $53.69 billion

$18.71 bn

For non-federal, high-hazard-potential dams, up from $18.18 billion

$1.5 m+

Cost of a large farm earth dam of about 4 GL, even at a favourable site

Chembase Treatment System will substantially reduce the costs involved in constructing these foundations.

Figures as quoted in the Chembase R&D brochure. Original sources and currencies are not named.

Canals: man-made waterways

Navigation

A man-made waterway that lets boats and ships pass from one body of water to another.

Water supply

Canals also carry water for irrigation and other human uses.

Two types

Waterways are the navigable kind. Aqueducts carry water.

How they are built

The channel is dug, or its sides are raised as dykes or levees of earth, stone or concrete.

Farm dams for irrigation and livestock

- Provide essential water for stock, irrigation and gardens
- Give a secure annual supply that improves farm viability
- Offer wildlife habitat and water for fire protection
- Need a cut-off trench at least 600 mm into impervious soil
- Are expensive to build, and more expensive to build twice
- In NSW, can capture 10% of average regional run-off

Volume (m^3) = surface area (m^2) × maximum depth (m) × 0.4

Mine tailings dams

What tailings are

Ground rock and process effluents left after the mineral is extracted, usually discharged as slurry.

How they are stored

Mostly behind earth-fill embankment dams, where solids settle and the water is recycled.

Why management matters

Most past tailings incidents were influenced by poor day-to-day management.

There are estimated to be at least 3,500 tailings dams around the world.

One product, supplied in two parts

PART A

Polymer-Stabiliser

+

PART B

Activator

Chembase®
C-SSSB1

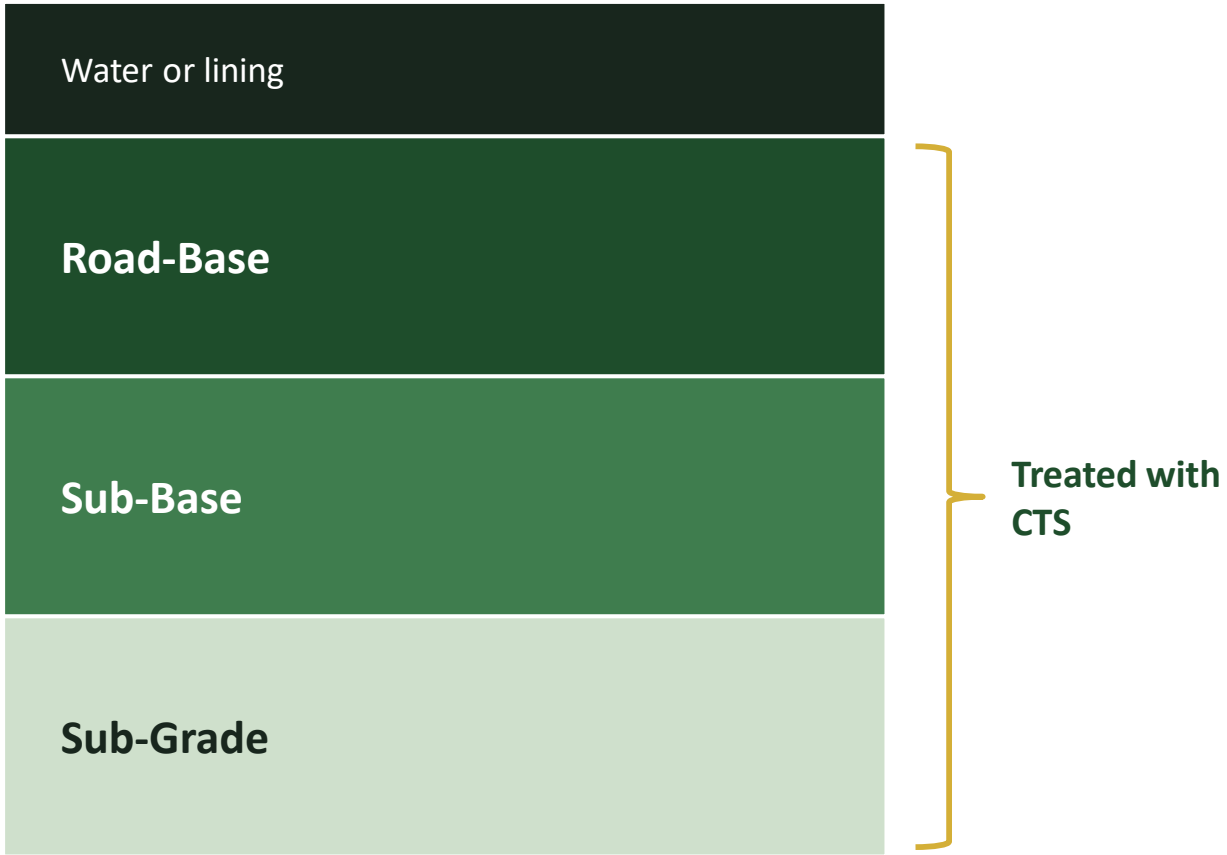
Five characteristics
combined in one product

A simplified range

- Five different chemistry characteristics are now combined into a single Chembase product.
- The application and treatment methods stay the same.
- The same characteristics, benefits and advantages are retained.

Naming: CTS stands for Chembase Treatment System. Chembase is also known as Chembase International and Chembase International Group.

Where CTS works: the base layers



Indicative cross-section

CTS modifies the properties of the existing soil to improve performance and durability.

- **Greater strength**
- **Higher load-bearing capacity**
- **Resistance to moisture-related issues**

Chembase and conventional road construction work together.

From stabilised layers to lower costs

1. **Stabilised base layers**
   CTS stabilises the road-base, sub-base and sub-grade.
2. **Less water, fewer potholes**
   Water leakage and potholes are reduced in the treated area.
3. **Less maintenance**
   The treated area needs less ongoing repair.
4. **Lower cost, longer life**
   Reduced costs and greater longevity for the treated area.

Performance benefits of treated layers

CBR increase

Raises the California Bearing Ratio (CBR), a standard measure of soil strength.

Water resistance

Treated layers resist water, limiting moisture-related damage.

Liquefaction resistant

Treated soil resists liquefaction, the loss of strength in saturated ground.

Freezing-condition tolerance

Tolerates freezing conditions.

Oil and petroleum barrier

Prevents oil and petroleum penetrating the treated soil.

Longevity

A long service life for the treated area.

Practical and environmental benefits

On site

Workable in any weather
Application is not held up by conditions.

Stable once diluted
The diluted product will not oxidise.

Re-compactable
Treated soil can be re-compacted (20 years).

Savings
Less maintenance and reduced costs.

Safety and sustainability

Safe to use
Product-safe and environmentally safe.

Waste plastic and glass
Shredded plastic or stained glass added to treated soil increases CBR.

Ash waste
Ash added to treated soil increases CBR.

Saltwater
Saltwater can replace fresh water, and increases CBR.

Brick pavements
Can be used in brick pavement manufacturing.

CTS for reservoirs, canals and dams

Waterproofing

Treated base layers improve strength and performance, especially waterproofing, for less leakage.

Higher CBR

A significant increase in the California Bearing Ratio.

Lower build and upkeep cost

Less cost to build, less maintenance and a longer-lasting surface.

It costs you nothing to find out how much you can save

Talk to Chembase about treating your road-base, sub-base and sub-grade layers.

INDEPENDENT UNIVERSITY REPORTS

Reports from The University of Sydney and UNSW (University of New South Wales) are available at www.chembase.com.au

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