Chembase Treatment System (CTS)

Application and treatment of airport, airstrip and road 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 at airports

Airport runways

The road-base, sub-base and sub-grade beneath the runway.

Airstrips

The base layers of airstrips.

Airport roads

Roads leading to and from the airport.

What is liquefaction?

Firm ground turns fluid

Water-saturated sediment temporarily loses strength and acts as a fluid, like wet sand at the beach.

Triggered by shaking

Earthquake shaking raises water pressure until soil grains lose contact with one another.

Usually temporary

The loss of strength is usually temporary and is most often caused by an earthquake.

MOST SUSCEPTIBLE

- **Reclaimed land**
- **Shallow water tables**
- **Near sea or rivers**
- **Loose sandy, silty soils**

Liquefaction: damage and defences

What it damages

Buildings and bridges
Liquefied ground cannot carry foundation loads, so structures sink, lean or collapse.

Highways and pipelines
Most damage comes from ground failure: permanent lateral and vertical movement.

Piled foundations
Moving soil can exert damaging pressure on piles, as at Niigata in 1964 and Kobe in 1995.

How it is assessed and reduced

In-situ tests
The cone penetration test (CPT) and standard penetration test (SPT) assess liquefaction potential.

Compaction
Vibro compaction, dynamic compaction and vibro stone columns densify the soil.

Replacement
Susceptible soil is replaced with the appropriate amount of gravel.

Surveys and insurance
Risk can be reduced through insurance and environmental surveys.

One product, supplied in two parts

PART A

Polymer-Stabiliser

+

PART B

Activator

Chembase®
C-SSSB1

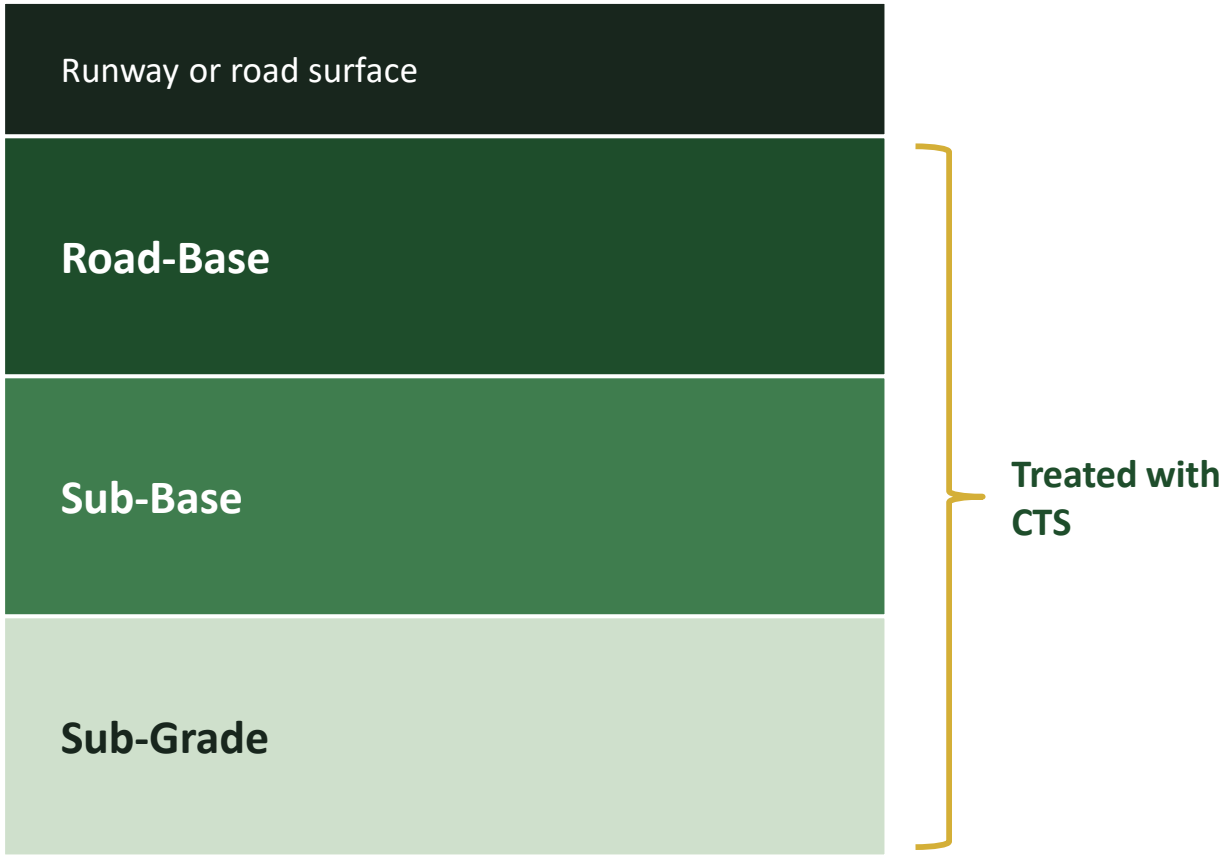
Five characteristics
combined in one product

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: beneath the runway



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.

How CTS resists liquefaction

Dewaters the soil

With its water-resistant and dewatering properties, CTS reduces the moisture bound up in the soil matrix.

Binds a denser mass

CTS binds soil particles into a denser mass that withstands the entry of outside water.

A barrier through the layers

Dense soil forms a barrier throughout the road-base, sub-base and sub-grade.

Tested performance

UNSW

CTS has been successfully tested by the University of New South Wales for liquefaction resistance

–62 °C

Freezing-condition tolerance, protecting the soil from damage

Higher CBR

The stability of the treated area substantially increases the California Bearing Ratio

Where building on liquefaction-susceptible soil cannot be avoided, CTS treats the area to resist or limit the impact.

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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