Chembase Treatment System (CTS)

Application and treatment of sub-base layers, adding shredded plastic

Product: Chembase® C-SSSB1 | Research and development

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

The plastic waste problem

It accumulates

Plastic objects build up in the environment, harming wildlife, habitat and people.

It lasts

Plastic fragments easily, but its polymer chains only break down at very high temperatures.

It adds to warming

Almost all plastics are made from chemicals that come from fossil fuel production.

It enters the food chain

Plastic breaks into ever smaller particles that are ingested by wildlife on land and at sea.

Plastic and wildlife in numbers

100 million

marine animals die each year from plastic waste

100,000

marine animals die each year from entanglement in plastic

1 in 3

marine mammal species are found entangled in litter

1 million+

birds die from plastic pollution every year

North Pacific fish ingest an estimated 12,000 to 14,000 tons of plastic every year.

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

The six types of plastic

PETE

Polyethylene terephthalate.

HDPE

High-density polyethylene.

PVC-U

Polyvinyl chloride.

PP

Polypropylene.

PS

Polystyrene, or Styrofoam.

Other

All other plastics.

The application rate

32 tonnes

of shredded plastic per kilometre of CTS-treated sub-base, approximately

8,000 m²

Treated area in one kilometre of road

8 m

Road width: one lane each way

200 mm

Depth for standard traffic loading

Chembase has developed a Plastic Road Base System (PRBS) using shredded plastic of any type. Mixing it into the CTS-treated soil increases the CBR.

CTS quantities per kilometre

Road-base depth	Stabiliser	Activator
200 mm (standard traffic)	10,000 kg	5,000 L
300 mm (heavy traffic)	15,000 kg	7,500 L

Estimated quantities per kilometre of road (8,000 m²). Hydrated lime is added, at extra cost to the customer. Quantities are based on soil test results.

Soil must be tested before application. Quantities may vary by 5% to 10%, depending on soil density.

Packaging and shelf life

1,000 kg

One IBC. Gross package weight 1,065 kg

205 kg

One drum. Gross package weight 211 kg

24 months

Shelf life in unopened packaging

Packed and delivered in plastic drums or IBCs, on a pallet for export, and wrapped.

Beyond 24 months the effect on soil treatment may be reduced.

One product, supplied in two parts

PART A

Polymer-Stabiliser

+

PART B

Activator

Chembase®
C-SSSB1

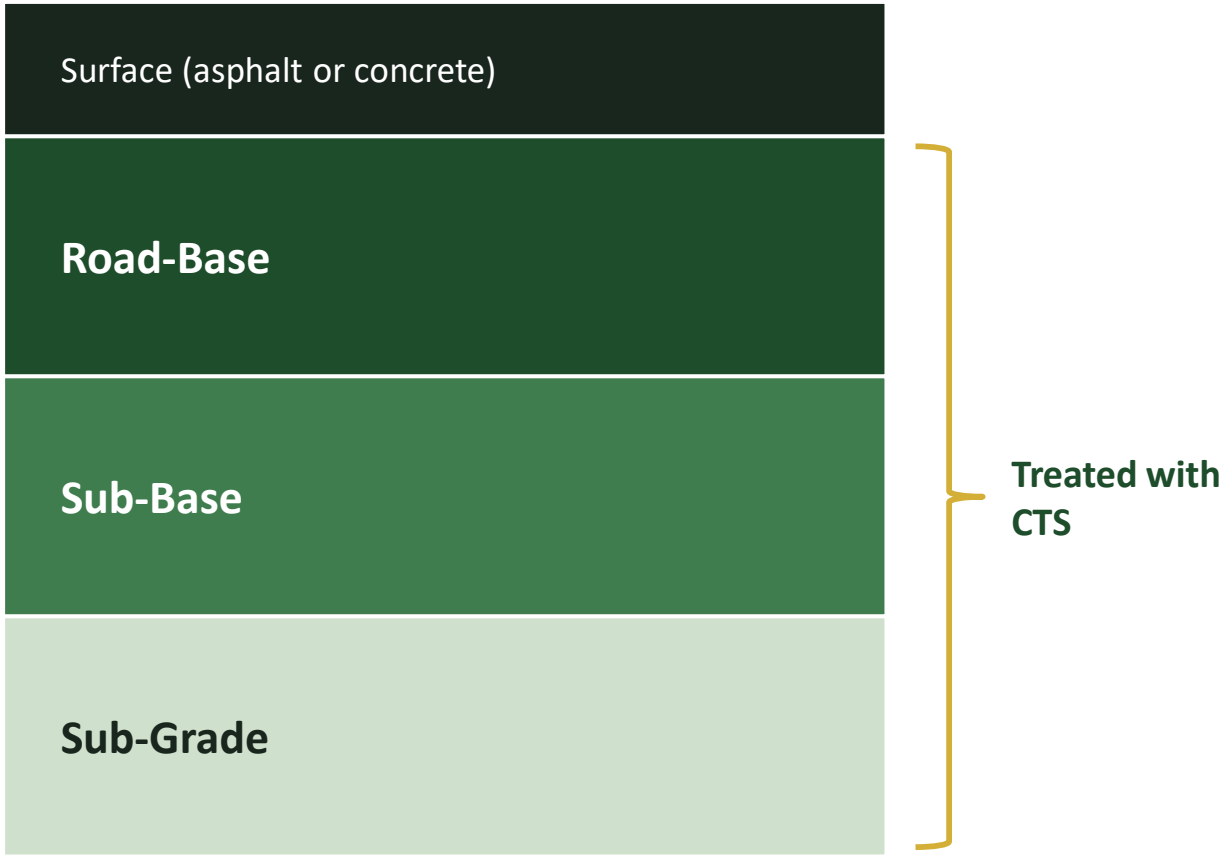
Five characteristics
combined in one product

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 road surface



Indicative cross-section

Shredded plastic is mixed with the CTS-treated soil of the sub-base layers, which increases the CBR.

- **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.

What CTS does with shredded plastic

Reuses waste plastic

Chembase has a strong environmental focus. Reusing waste plastic reduces its impact on the environment.

Higher CBR

Shredded plastic mixed with the CTS-treated soil increases the CBR.

A pavement substitute

The development team has developed waste plastics with the Chembase stabilising system as a pavement substitute.

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

Talk to Chembase about putting waste plastic to work in your sub-base 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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