Chembase Treatment System (CTS)

Application and treatment of sub-base layers, adding crushed stained glass

Product: Chembase® C-SSSB1 | Research and development

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

What is crushed stained glass?

Mixed coloured glass

Recycled crushed stained glass is a mixture of different coloured glass pieces.

A very pure form of sand

Sand is crystalline silicon dioxide (quartz). Glass is the non-crystalline form of the same material.

Not sharp to handle

Glass aggregate is not sharp to handle.

Endlessly recyclable

Glass never wears out as a raw material, and has been recycled for almost 3,000 years.

Glass recycling in numbers

63%

of glass was recycled as of 2019

37%

was not recycled and went to landfill

3,000 years

Glass has been recycled for almost this long

2.8–3.0%

Energy saved in melting for every 10% increase in cullet

Kerbside-collected glass is often highly contaminated, so recyclers do not usually want it.

Figures as quoted in the Chembase R&D brochure. Original sources are not named. Cullet is recycled broken glass.

Uses for crushed glass

Roadway projects

Processed recycled crushed glass is ready for use in road projects.

Concrete

Glass aggregate can replace part or all of the sand and gravel.

Decorative finishes

From colourful terrazzo to granite-like or marble-like finishes.

Less landfill

Crushing glass that is not recycled reduces waste sent to landfill.

The application rate

32 tonnes

of crushed stained glass 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 crushed stained glass road base system using any type of glass. 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

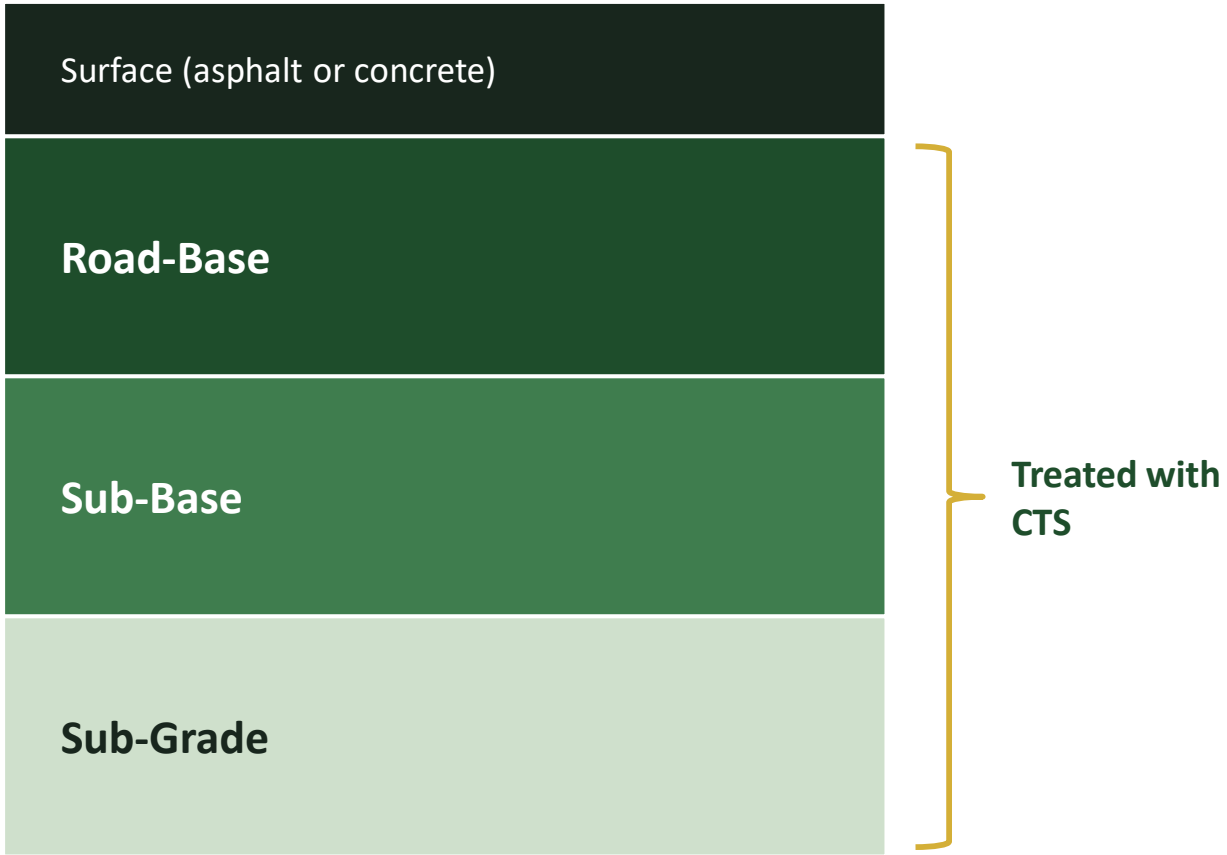
Five characteristics
combined in one product

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

Crushed stained glass 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 crushed glass

Reduces glass waste

Adding crushed stained glass to the treated sub-base layers reduces glass waste.

Higher CBR

Crushed stained glass mixed with the CTS-treated soil increases the CBR.

Corrects unsuitable soil

Adding crushed stained glass to the soil corrects unsuitable soil parameters.

A pavement substitute

The development team is using glass 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 glass 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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