

# Strong Water Resistant and Flexible Soil Bases



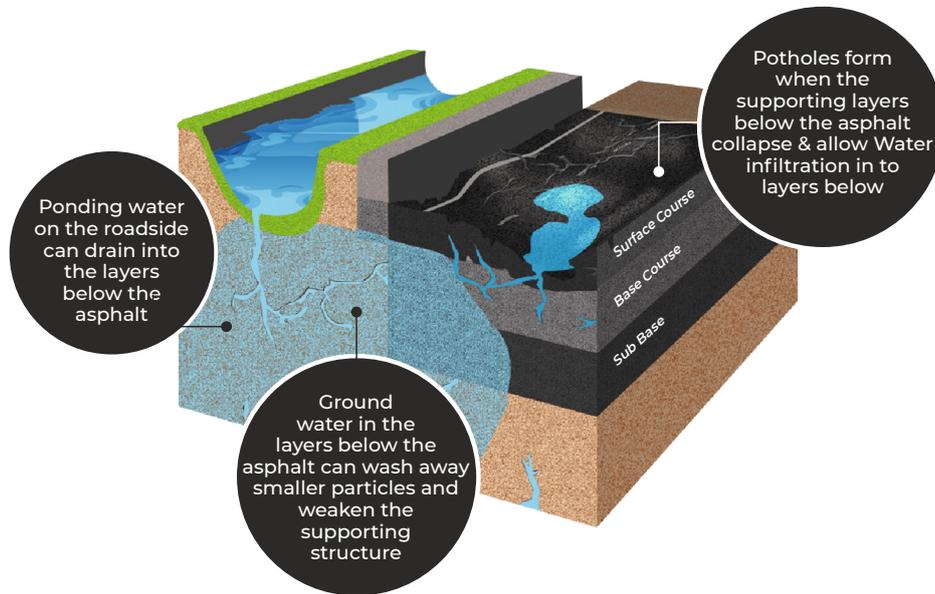
Moisture damage is the leading cause of failure for soil sub layers and dirt / gravel roads. Infiltration of water can cause the soil to expand and lose cohesion & expand, leading to ruts, corrugations, cracks and raveling. TerraSil is an easy to apply soil modifier that permanently reduces. Swelling potential and infiltration of water in to soils. Soil bases impervious to water has a significant impact on overall life cycle extantion.

## BENEFITS

- ✓ Permanent Water Resistance
- ✓ Eliminates Capillary Rise
- ✓ Prevents Freeze Thaw
- ✓ Reduces Expansivity
- ✓ Improves Compaction Density
- ✓ Improves Load Bearing Capacity
- ✓ Water Dilutable & Easy to Apply
- ✓ Non Leaching
- ✓ Environmentally Friendly

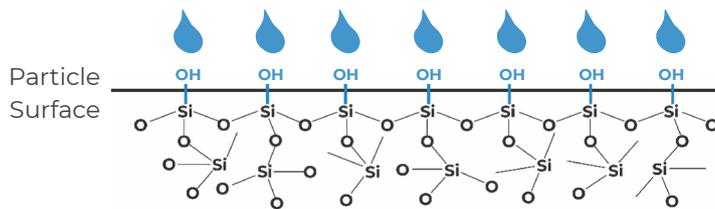
## CHALLENGES

Moisture damage is the leading cause of failure for soil sub-layers and dirt / gravel roads. Infiltration of water can cause the soil to expand and lose cohesion, leading to ruts, corrugations, cracks and raveling. Ultimately water damage drastically increases the life cycle cost of a pavement.



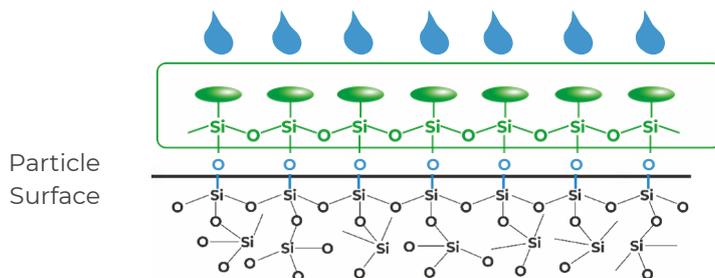
## CHEMICAL ACTION OF TERRASIL

TerraSil is a reactive soil modifier that permanently modifies the soil surface, making it hydrophobic. It chemically converts water absorbing hydroxyl groups to water resistant alkyl groups. TerraSil is a non-leachable and safe chemistry, and works with all soil types.



**Hydrophilic (water loving) Surface:**

High water permeability leads to capillary rise and shoulder ingress, leading to pavement damage.

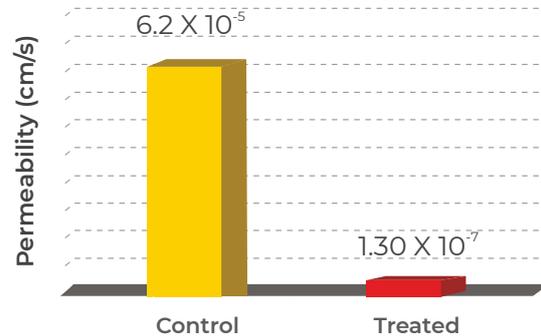


**Hydrophobic (water repellent) Surface:**

TerraSil reacts upon contact with soil, and creates a permanently water repellent layer on its surface. The soil is subsequently rendered impermeable to water ingress.

## REDUCES WATER PERMEABILITY

TerraSil solution (1 : 200 dilution) when spray applied and mixed can reduce water permeability by a factor of 1000, thereby significantly decreasing the rate of water infiltration and capillary rise into the soil layer. As a result, TerraSil treated soil bases remain significantly dry throughout periods of rain. Additionally, TerraSil treated soil is breathable and allows for the escape of any trapped water in the soil base in the form of vapour. The penetration is between 10 - 25 mm in top compacted soil bases.



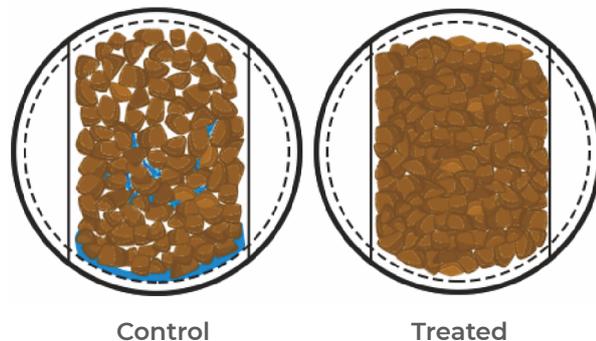
## REDUCES EXPANSIVITY

Hydrated soil expands horizontally and vertically creating swelling pressure in the soil bases due to water absorption. This causes undulation and can also lead to cracking of pavement layers. TerraSil reduces expansiveness by up to 90% at dosages of 0.5 to 1 kg per cubic meter of soils (Plasticity Index of 5 to 25). Cement addition ensures additional quick wet strength and addition of ZycoBond improves soil cohesion and flexibility.

Sample	CBR 5 mm (4 days soak)	% Water Absorption	Expansion (inches)
Control Soil	10.50	3.5	1.83
Soil + 1 kg/ m <sup>3</sup> TerraSil + 1 kg/ m <sup>3</sup> ZycoBond	28.10	0.5	0.31
Soil + TerraSil (1 kg/ m <sup>3</sup> ) + Cement (3%)	57.10	0.8	0.08

## INCREASES COMPACTION

In addition to making soil bases waterproof, TerraSil improves the ease of compaction such that field proctor densities of 100 – 105 are easily achieved. The net result of making soils water resistant and improving soil compaction is the attainment of dry CBR values even under wet conditions. The improved compaction is a result of chemically bonded alkyl chains that provide lubricity and charge shielding to the soil particles during the compaction process.



## ABOUT ZYDEX

Established in 1997, Zydex is a specialty chemicals company with the purpose of innovating for sustainability. We are committed to creating a sustainable world through innovative, environment friendly and patented technologies in the areas of **AGRICULTURE, TEXTILES, PAINTS & WATERPROOFING and ROADS**. Our product portfolio encompasses 200+ innovative solutions with presence in over 40 countries across the globe.

### Sustainable Green Chemistry

Zydex is deeply committed to sustainable chemistries that will ensure a greener future for everyone. Our commitment has made us a pioneer in introducing non-polluting and non-hazardous technologies that conserve, protect and enhance the environment. Pursuing innovations that would mean a greener, safer and more resource renewable world is our passion. Our technologies have been recognized for their contribution to sustainability and are accepted globally.

## GLOBAL PRESENCE



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