

Water Resistant Soil Bases



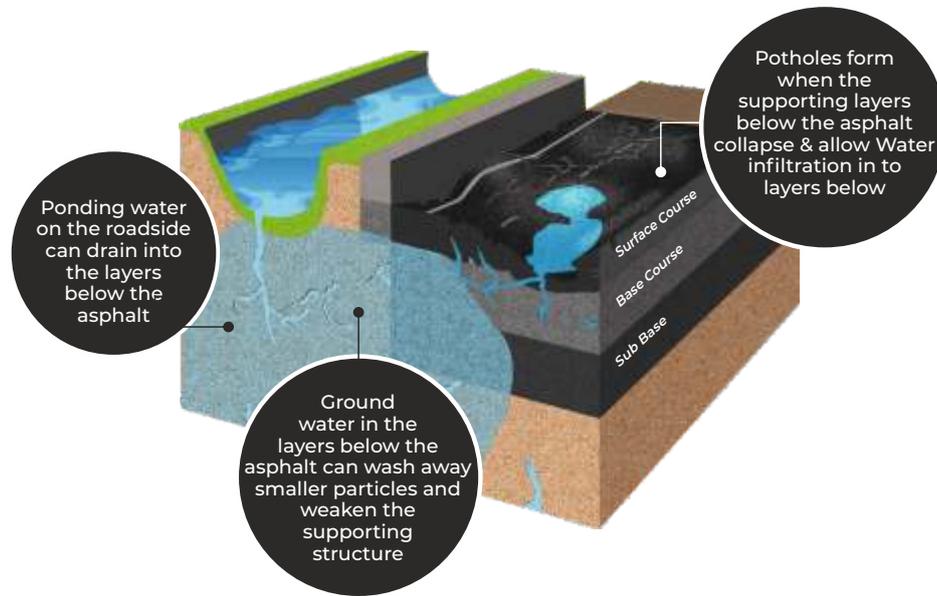
Moisture damage is the leading cause of failure for soil sub layers and dirt/gravel roads. Infiltration of water can cause the soil to expand and lose cohesion, leading to ruts, corrugations, cracks and ravelling. TerraSil is an easy to apply soil modifier that permanently eliminates infiltration of water into soils. Making soil bases/dirt roads impervious to water has a significant impact on overall life cycle costs.

BENEFITS

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

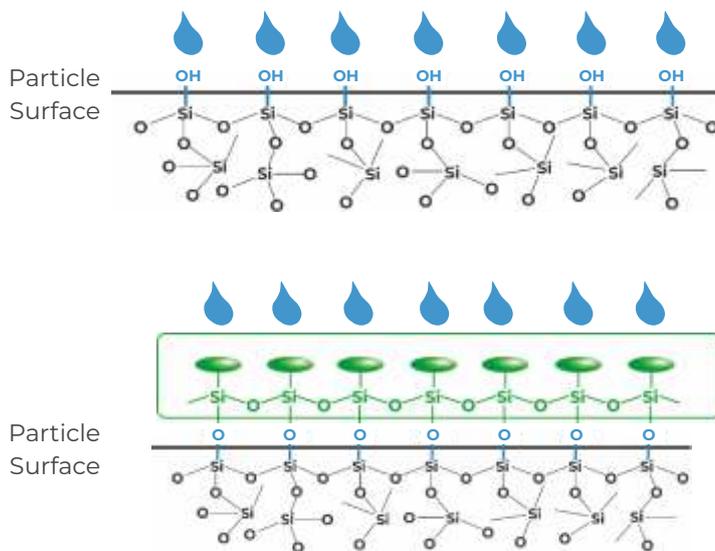
CHALLENGES

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 structure.



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.



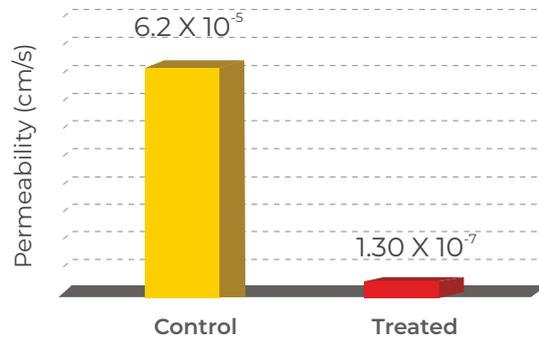
-OH groups make surface very hydrophilic (water loving):
High water permeability leads to capillary rise and shoulder ingress, leading to pavement damage.

Molecular level hydrophobic zone (water repellent):
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.

Terrasil is designed to be utilised with **ZycoBond** - a nanopolymer that chemically binds soil particles together into a flexible crosslinked network. The chemical binding and nano size of the polymer leads to improved load bearing capacity and flexibility of the soil base.

REDUCES WATER PERMEABILITY

A Terrasil solution (1:200 dilution) when spray applied and mixed can reduce water permeability by a factor of 500, 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.



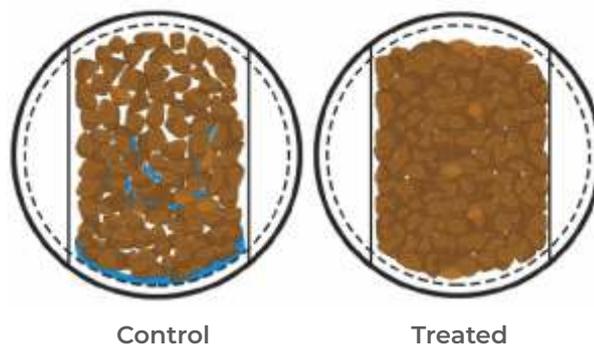
REDUCES EXPANSIVITY

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 ³ Terrasil + 1 Kg/ m ³ ZycoBond	28.10	0.5	0.31
Soil + Terrasil (1 kg/ m ³) + 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.



INCREASES COMPACTION

Store Terrasil between 5 – 45 °C (41-113 °F) in a shaded, dry area away from sunlight, heat, source of sparks, rain and standing water. Fasten the container lid securely after every use. Its shelf life is 48 months. In case the product freezes at low temperatures, allow it to thaw and unfreeze.

ABOUT ZYDEX

Established in 1997, Zydex is a specialty chemicals company with the purpose of innovating for sustainability.

Beyond pavement products, Zydex offers a diverse set of chemical technologies for the textile, agriculture and civil construction industries. We were recently recognised as one of the 25 Most Innovative Companies in India by the Confederation of Indian Industries (CII).

Sustainable Green Chemistry

Zydex is deeply committed to sustainable chemistries that 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 chemical innovations that would mean a greener, purer and more resource renewable world is our passion. Our technologies have been recognized by the International Road Federation (IRF), and have been globally adopted.

GLOBAL PRESENCE

