

# Intresoil™

## Combining Soil into an Integrated Whole for Road Stabilization and Construction

### Background

Moisture absorption is problematic in clay soils used in construction due a decrease in strength and an increase in swelling. Moisture absorption and shrink/swell properties are strongly dependent on the clay's ionic exchange capacity. Clays attract water due to their negative charge. Water molecules have a polarized positive and negative side. The positive side attaches to the clay resulting in the clay particle being pushed apart which is known as swelling. As clay dries out it shrinks, forming cracks in the surface. This continuous cycle results in heaving and settling which weakens the foundation of the road.

### How Intresoil™ Works

Intresoil™ works by altering the ion exchange capacity of the clay which reduces the negative charge of the clay. The outcome is a reduction in shrink/swell capabilities. Intresoil™ assists and increases compaction of clays by removing the absorbed water to achieve maximum density with less compactive effort. Intresoil™ then prevents the re-absorption of the water creating a long-term stabilized subgrade. The hydrophilic head in present in Intresoil™ active ingredient chemical bonds to the surface of the clay particles and repels water away from being absorbed into clay particles. This process allows the free movement of water throughout the clay instead of attaching to the clay particles making evaporation and draining of the clay much easier. It is important to maintain proper drainage to divert moisture from the subgrade and ensure the highest level of performance and longevity.

By reducing the water absorption, internal particle friction is increased resulting in stronger bearing and shear strength. Combined with the higher degree of density achieved, the stabilized subgrade layer can effectively reduce the thickness of the overlying pavement layers required. The chemical bonding that occurs with the soil ensures that this treatment is permanent and will not leach out of the soil.

### Benefits

- Reduces the required volume of gravel by up to 50%
- Decreases installation costs, resources and time
- Simple Installation with common equipment (Grader, Spray Truck & Compactor)
- Provides long-term stabilization
- Stabilizes the subgrade to increase bearing and shear strength
- Decreases the moisture absorption and shrink/swell properties of clay
- Maintains bearing strength of subgrade during wet periods
- Reduces failures from poor subgrade material such as rutting
- Reduces maintenance costs
- Increased compaction with less effort and time

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