Cristex's Crystalline Catalytic Reaction

Crystalline waterproofing has consistently grown in demand due to the high quality, and the long term benefits that are obtainable at very reasonable costs. The increase in demand has led to an increase in companies attempting to enter the crystalline waterproofing products market. However common crystalline seems to be becoming it is still a technology that few companies possess. Many of the catalytic crystalline technologies that companies claim to possess on the market today are in reality reactive silicate based technologies, with no catalytic abilities and are wrapped in crystalline marketing propaganda (please see Cristex Technical Advisory 10002 – Crystalline Technology vs Silicate Technology). The market place is becoming more and more saturated with unclear information in which all products sound like they possess the same miraculous abilities, and with it the explanations to understanding how true hydrophilic, catalytic crystalline functions have become foggy and unclear resulting in continual questions as to how the technology works.

Basic Definitions

Catalysis – "**Catalysis** is the process in which the rate of a chemical reaction is either increased or decreased by means of a chemical substance known as a **catalyst**. Unlike other reagents that participate in the chemical reaction, a catalyst is not consumed by the reaction itself. The catalyst may participate in multiple chemical transformations.

Definiton provded by Wikipedia

Adsorption – "**Adsorption"** is the adhesion of molecules of gas, liquid, or dissolved solids to a surface. This process creates a film of the **adsorbate** (the molecules or atoms being accumulated) on the surface of the **adsorbent**.

Definiton provded by Wikipedia

The Main Function of Crystalline Technology

The main function of Crystalline Technology is to further enhance the hydration of concrete until it reaches a point in which it is waterproof.

The Basics of Crystalline Technology

To explain the catalytic nature of true crystalline technology we must first understand a few concrete basics. The following is a very simplified version focussing only on how it relates to crystalline growth. As is common knowledge the binders in concrete are primarily as follows:

Tricalcium silicate	50 %
Dicalcium silicate	25 %
Tricalcium aluminate	10 %
Tetracalcium aluminoferrite	10 %
Gypsum	5 %

When water is added to cement, each of the compounds undergoes hydration and contributes to the final concrete product. The tri-calcium silicate (which contributes to initial strength) and dicalcium silicate (which reacts more slowly than the tricalcium silicate and contributes only to the strength at later times) begins a reaction when water is added to concrete eventually leading to the formation of calcium silicate hydrate crystals within the concrete.

Cristex Crystalline Catalytic Reaction

Cristex crystalline is drawn into the concrete via the initial catalytic reaction within the slurry application and then assists unhydrated tricalcium silicate and dicalcium silicate to form millions of thicker and longer calcium silicate hydrate crystals to fill the pores and capillaries. Cristex technology uses adsorption (not to be confused with absorption) and attaches itself to the calcium silicate hydrates temporarily while the reaction between water and tricalcium silicate and dicalcium silicate occurs. As the calcium silicate hydrate grows and moves deeper into the concrete, the crystalline attached to the calcium silicate hydrate also moves further into the concrete. Since the product is catalytic in nature it is never used up and will always be present.

Factors To Consider

- There is always an abundance of unhydrated tricalcium silicate and dicalium silicate particles in concrete.
- There is always an abundance of calcium silicate hydrate in concrete that can be further hydrated.
- The only material necessary for continued activation is water.
- The reaction will continue as long as water and calcium silicate hydrate, tricalcium silicate and dicalcium silicate are present.
- As crystalline induced calcium silicate hydrate becomes enhanced and penetrates further through the concrete, Cristex crystalline is transferred through the concrete.
- Since Cristex crystalline technology enhances the hydration process, it also enhances concrete´s natural abilities such as increased compressive strength and self healing capabilities.
- The catalytic nature of the technology insures that the technology is always present to reactivate in the presence of water
- Through adsorption the catalytic process is transferred further and further into the concrete as crystalline induced calcium silicate hydrate crystals penetrate further and further into the concrete.

Conclusions

Cristex Crystalline Technology systems are penetrating, permanent waterproofing systems that are always present in the concrete. The systems will reactivate in the presence of moisture and enhance concrete´s natural abilities to self-heal micro-cracking within the concrete matrix.