



TECHNICAL DATA & PRODUCT DESCRIPTION

SECTION 1: PRODUCT NAME

CEMENT HYDRATION CATALYST (CHC)

SECTION 2: PRODUCT DESCRIPTION

CEMENT HYDRATION CATALYST (CHC) is a cloudy-white, odorless, non-toxic, zero VOC / VOS, user friendly, environmentally neutral colloidal silicate liquid.

SECTION 3 : BASIC USE

CEMENT HYDRATION CATALYST (CHC) added to portland cement concrete's mix water will convert conventional mix designs to high-performance mix designs, generating production of concrete that is extraordinarily hard, dense and impermeable. **CEMENT HYDRATION CATALYST (CHC)** causes concrete's enhancement in several ways, beginning with improvement of hydrolysis' actions and reactions, by significantly favorably enhancing hydration's by product quality, i.e., calcium hydroxide, while also, significantly increasing already-included Portland cement utilization. The resultant concrete permeability / durability values become tremendously improved while **CEMENT HYDRATION CATALYST (CHC)** causes the production of very fine-textured, extremely homogenous, aggregate zone paste, and bulk paste, finally creating smaller more uniform capillary and gel pore sizes, with virtually no plastic particle separation. **CEMENT HYDRATION CATALYST (CHC)** utilization in batching portland cement concrete significantly reduces concrete's total air-void content as it greatly improves its workability, and significantly lowers excess bleed water volumes. **CEMENT HYDRATION CATALYST (CHC)**, in a concrete mix provides the mix with ability to initially introduce portland cement to mix water without the usual abruptly violent actions and reactions which creates a cement potency loss, normally ascribable to water dilution and hydrolysis, which will create poor quality early produced cement paste, paste which initially coats concrete's aggregates. **CEMENT HYDRATION CATALYST (CHC)** utilization works to ensure early, initially-produced cement paste (aggregate zone paste), immediately coating the concrete's aggregates, is of the utmost attainable quality, ultimately and significantly improving concrete's paste-aggregate zone and paste-to-aggregate bond quality, virtually eliminating potential for micro cracks. Also, ultimately increasing concrete's PSI and flexural strength. **CEMENT HYDRATION CATALYST (CHC)** enhanced, hydration by-products', i.e., calcium hydroxide quality, also sets the stage for concrete to receive a significantly greater, more efficient, calcium lamination of C-S-H's silicate polymer particles, strands, and/or chains, an action also causing reduction in ultimate volume of unutilized calcium hydroxide, left in concrete, which may later interfere with concrete's ability to retain its integrity, due to potential detrimental internal chemical reactions, such as, delayed ettringite formation. **CEMENT HYDRATION CATALYST (CHC)**'s ingredients prompt prolific formation, extension, and branching of silicate polymer particles, strands, and/or chains, vital constituents in C-S-H's tobermorite gel component, concrete's main strength component. Utilization of **CEMENT HYDRATION CATALYST (CHC)**, in a concrete mix results in production of significantly less permeable, more durable concrete, which are major factors that are normally associated with the extension of concrete's useful lifespan. Also, **CEMENT HYDRATION CATALYST (CHC)** utilization will create, to some varying degree (6-12%), an increased utilization of each portland cement particle, in the mix, this attribute in turn causes a significantly greater reduction in the sizes of left-over particle cores of each portland cement particle, ultimately left in the concrete, to act as aggregates. The various, smaller than normal, particle core sizes, make these unique particles an extremely valuable filler aggregate, sized somewhere between sand and normal cement particle sizes. Which ultimately and integrally provide's excellent filler benefits. Benefits similar to those of silica fume, resulting in denser, more impermeable, and significantly more durable concrete, that has greater resistance to pollutant / contaminate ingress, freeze-thaw cycle damage, steel corrosion, etc. **CEMENT HYDRATION CATALYST (CHC)** requires no special safety gear, handling,

SECTION 4: INSTALLATION SUGGESTIONS

Dry Mix Batching : As a temporarily measure, CEMENT HYDRATION CATALYST can be poured directly into a empty rinsed out transit mixer (If transit mixer is not clean, add 90% of mix water volume prior to adding CEMENT HYDRATION CATALYST, prior to pulling truck under batch plant for loading.) Under batching plant, with mixer turning in its mixing mode, load a minimum of 90% of the total planned mix water volume then begin loading cement, aggregate (in any order) and then follow with the remaining balance of mix water. CEMENT HYDRATION CATALYST, in this scenario, is used at 10 fluid ounces per 100 pounds of cement (1 ounce per 10 lbs. of cement) mixed. Slump may be increased later, if desired, using plain water, followed by 5 minutes of additional mixing by transit mixer.

Central Mixing Operations : Determine volume needed at 10 ounces of CEMENT HYDRATION CATALYST per 100 pounds of portland cement. Pour or pump the calculated volume of CEMENT HYDRATION CATALYST into mix water pre-measure tank as you add mix water. Then batch concrete as usual. After concrete is batched, extra mixing time will be needed. For best results, a minimum of 50% more mixing time is required. Slump may be increased later, if desired, using plain water, followed by 5 minutes of additional mixing by transit mixer.

Continuous Mixing Operations: Determining dosage of CEMENT HYDRATION CATALYST : Calculate volume needed at 10 ounces of CEMENT HYDRATION CATALYST per 100 pounds of portland cement. Calculate amount of mix water needed per 100 pounds of portland cement. This will provide your ratio of CEMENT HYDRATION CATALYST to mix water. (For example, if calculations show that 5 gallons of mix water are required per 100 pounds of cement, then the water in the tank should be treated at the rate of 10 ounces of CEMENT HYDRATION CATALYST per 5 gallons of water.)

SECTION 5: PRECAUTIONS

1. NEVER ADD CEMENT HYDRATION CATALYST TO READY-MIX, ONLY ADD TO THE MIX WATER.
2. CEMENT HYDRATION CATALYST may etch glass or dull shiny aluminum and can be difficult to remove from other surfaces once it dries.
3. For more information read Material Safety Data Sheet.

SECTION 6: TECHNICAL DATA

Physical: Liquid	Color: Cloudy white	Odor: None
Specific Gravity: 1.10	pH: +/- 11.5	Flash Point: None
Flammability: None	Toxicity: None	Pollants: None
Hazardous Vapors: None	VOC / VOS Content: none	Spill Clean-up: Water Flush
Environmental Impact: None / Neutral	Status: Friendly	(Sewer Safe)User

SECTION 7: SOME ADVANTAGES

1. Converts regular mix designs to high performance mix designs
2. Quicker and Easier Concrete Placement
3. Adds Workability by Increased Lubricity
4. Stronger Bond of Concrete to Steel
5. Decrease Cementitious Material Waste
6. Greater Density and Less Permeability
7. Reduces Bleed Water Volume
8. Reduced Shrinkage and Cracking
9. Reduced Honeycombing and Laitance
10. Reduced Leaching and Efflorescence
11. Reduced Slab Curl Potential
12. Reduced Internal/External Dusting Potential
13. Reduced Rate of Absorption
15. Increased Flexural Strength
14. Greater Freeze-Thaw Resistance
17. Increased Acid / Chemical Resistance
16. Increased Compressive Strength
19. Lowers Chloride Induced Corrosion Potential
18. Lower Internal Chemical Reaction Potential
21. Improves Surface Abrasion Resistance
20. Greatly Improves Durability