



THE NAME
SAYS IT ALL

Product Description and Technical Data

**Hydration Maximizer
for Extraordinarily
Impermeable,
High Performance
Concrete**

MIX WATER ENHANCER™

Mix Water Enhancer™ provides portland cement concrete mix water with unique ability to consistently reach its highest attainable degree of hydration, generating increased volumes of beneficial products of hydration (C-S-H), which eventually occupy concrete's capillary and gel porosity voids, providing greatly increased density that will significantly lower concrete's permeability factors. Plus, Mix Water Enhancer™ is safe to use, odourless, non-toxic, non-flammable, environmentally-safe, and user-friendly. Furthermore, Mix Water Enhancer™ is a unique one-of-a-kind product which changes ordinary concrete mixes to high-performance ones without the need for complex / special cure techniques, storage and / or handling procedures.

Mix Water Enhancer™ adds some extremely unique attributes to concrete including significantly-reduced permeability, greatly increased workability, noticeably reduced bleed-water production, natural shrinkage compensation, greatly reduced drying shrinkage, increased surface abrasion resistance, and etc.

Section 1 Description

Mix Water Enhancer™ is a cloudy-white, odourless, non-toxic, zero VOC / VOS, user friendly, environmentally neutral colloidal silicate liquid.

Section 2 Basic Use

Mix Water Enhancer™ added to portland cement concrete's mix water will convert conventional mix designs to high-performance ones, generating production of concrete that is extraordinarily hard, dense and impermeable. Mix Water Enhancer™ causes concrete's enhancement in several various ways, beginning with improvement of hydrolysis' actions and reactions, by significantly favourably 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 Mix Water Enhancer™ 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. Mix Water Enhancer™ 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, and etc. Mix Water Enhancer™, 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. Mix Water Enhancer™ 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 flexural strength, and etc. Mix Water Enhancer™ 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, and etc. Mix Water Enhancer™ 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 Mix Water Enhancer™, in a concrete mix results in production of significantly less permeable, more durable concrete, which are some major factors that are normally associated with the extension of concrete's useful life span. Also, importantly, Mix Water Enhancer™ utilization will create, to some varying degree (6-12% and more), 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 will provide 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, and etc. Mix Water Enhancer™ requires no special safety gear, handling, storage, finishing, or curing.

PRODUCT DESCRIPTION & TECHNICAL DATA

Section 3 Installation Suggestions

Dry Mix Batching:

As a temporary measure, Mix Water Enhancer™ can be poured directly into empty rinsed out transit mixer (If transit mixer is not clean, add 90% of potable mix water volume prior to adding Mix Water Enhancer™, 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 potable mix water volume then begin loading cement, aggregate (in any order) and then follow with the remaining balance of mix water. Mix Water Enhancer™, in this scenario, is used at 652 mls per 100 kilos of cement mixed.

Slump may be increased later, if desired, using potable water, followed by 5 minutes of additional mixing by transit mixer.

Central Mixing Operations:

Determine volume needed at 652 mls of Mix Water Enhancer™ per 100 kilos of portland cement. Pour or pump the calculated volume of Mix Water Enhancer™ into potable 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 potable water, followed by 5 minutes of additional mixing by transit mixer.

Continuous Mixing Operations:

Determining dosage of Mix Water Enhancer™: Calculate volume needed at 652 mls of Mix Water Enhancer™ per 100 Kilos of portland cement. Calculate amount of mix water needed per 100 kilos of portland cement. This will provide your ratio of Mix Water Enhancer™ to mix water. (For example, if calculations show that 50 litres of mix water are required per 100 kilos of cement, then the potable water in the tank should be treated at the rate of 652ml of Mix Water Enhancer™ per 50 litres of water.)

Section 4 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 (Sewer Safe)

Environmental Impact: None / Neutral

User Status: Friendly

Section 5 Precautions

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

Section 6 Some Advantages

Converts regular mix designs to high performance ones

Quicker and Easier Concrete Placement

Adds Workability by Increased Lubricity

Stronger Bond of Concrete to Steel

Decrease Cementitious Material Waste

Greater Density and Less Permeability

Reduces Bleed Water Volume

Reduced Shrinkage and Cracking

Reduced Honeycombing and Laitance

Reduced Leaching and Efflorescence

Reduced Slab Curl Potential

Reduced Internal/External Dusting Potential

Reduced Rate of Absorption

Greater Freeze-Thaw Resistance

Increased Flexural Strength

Increased Compressive Strength

Increased Acid / Chemical Resistance

Lower Internal Chemical Reaction Potential

Lowers Chloride Induced Corrosion Potential

Greatly Improves Durability

Improves Surface Abrasion Resistance

Ensure you contact your nearest
PROTECT CRETE office for full
technical bulletins and latest
application procedures.

