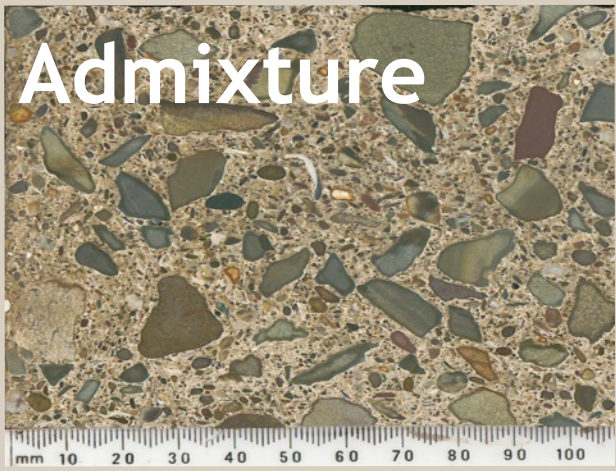
BROCHURE

CWPA 800

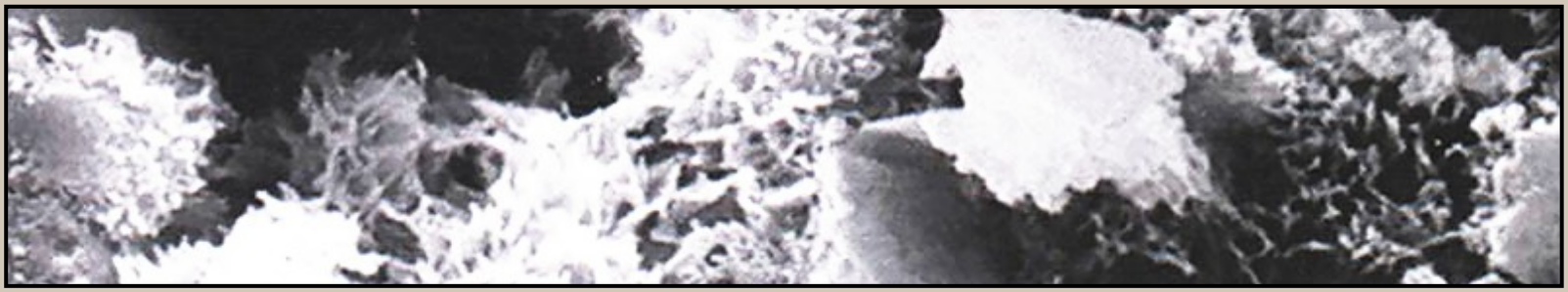
Concrete Water Proofing Admixture

ISE LOGIK'S CWPA 800
LIQUID SILICATE/CRYSTALLINE GROWTH
SECONDARY HYDRATION TECHNOLOGY
The Whole Story...



The Whole Story…
Learning Objectives: The Science

ISE LOGIK'S CWPA 800



CWPA 800 ~ Liquid silicates and hydroxides

CWPA 800 is a **liquid** admixture dosed off of cement & supplemental cementitous materials; i.e. fly ash and slag. CWPA 800 reacts with the calcium hydroxide (present in itself) and from the natural mechanics of cement hydration to provide additional c-s-h product - considered a "Densifier" and PRA.

Why liquid? Because it's better - Liquid admixtures have always been the norm when it comes to consistent, effective introduction into ready mix/transit mixed concrete. Your low range water reducers, your mid-range plasticizers, accelerators….retarders….all liquid. Why would your durability admixtures be any different. Powders can stick, ball, compact and not mix properly. CWPA 800 liquid is added by metered dosing equipment at the plant; taking guesswork out of the equation.

What is calcium-silicate-hydrate (c-s-h)?? All the "good stuff" in portland cement-based concrete. The glue that holds all the graded aggregate in the perfect matrix, creating a minimal, permanent, disrupted capillary system in concrete; each and every time!

CWPA 800 has the greatest operating/effectiveness range; 0.34 to 0.56 water:cementitous mix ratio concrete design. Cement hydration is made more effective by increasing the amount of cement particles that can be "hydrated" and used.

Designed for large mat/raft slabs,
and significant, highly engineered projects.

What will greater, more efficient cement hydration get you…a quick, permanent, reduced concrete capillary system, and:

- ► Ultra Low Permeability concrete,
- ► Moisture/Vapor Reduced for flooring, roofing and architectural coating installation,
- ► Lower overall concrete shrinkage; both chemical (autogenous) and drying shrinkage,
- ► Reduced slab curling and warping,
- ► Corrosion Inhibiting Admixture; all types of Corrosion,
- ► Tougher, Sealed, Densified concrete surface,
- ► Perfect admixture for Structural Shotcrete,
- ► Lower overall 'Heat of Hydration',
- ► Superior alternative to fly ash & slag.

ISE LOGIK'S CWPA 800

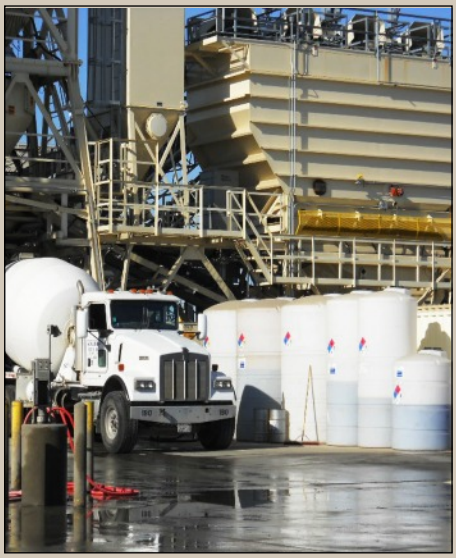
Automatic pozzolanic, siliceous admixture...that acts as high-quality fly ash & slag

It's often said, if you could place a 0.38 w/cm ratio concrete mix every time....life would be perfect. Super low shrinkage, minimal cracking, built-in corrosion protection. Unfortunately, a 0.38 requires a significant dose of Super-P and is not very practical in most circumstances. CWPA 800 allows you to achieve those same characteristics while utilizing upwards of a 0.52+ w/cm ratio mix design.

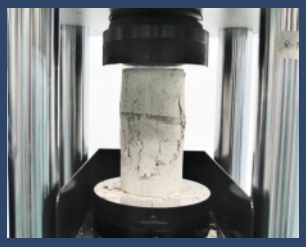
Since the 1950s, there have been studies on the benefits of a disruptive capillary system (Powers, Copeland and Mann) - Capillary Continuity Or Discontinuity in Cement Pastes. The concept of a "…dense, compacted concrete…" and the strong correlation to a "durable" concrete is born. From here numerous studies on both the permeability and durability characteristics of concrete have branched off from this primary starting point - **a *Disrupted Capillary System*.**

A key component to this technology has been significant time spent with organizations including ASTM Technical Committees, ACI National Committees, numerous ASCE, AASHTO and RILEM committees, and various engineering groups, to seek out the most illustrative and 'real-world' testing protocols that properly and conservatively show the benefits of this type of technology. With the understanding there is no perfect "silver bullet" test, we put forth the following tests and protocols to illustrate the benefits of a Disrupted Capillary System in Concrete - ASTM D5084 -Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter, or Coefficient of Permeability test. If you have another test/procedure….we'd love to see it and even try it!

ASTM D5084 - Coefficient of Permeability protocol is borrowed from the soils folks and is encompassed in a 23-page protocol that uses varying head-pressure to move water through a concrete specimen with a centimeters per second result - movement over time. We multiply that movement over time by a constant and get a US Perm value; easily compared to other products and systems. Here in California and the West Coast, we have literally 1,000s of these tests performed. Logik CWPA 800 admixture as a general rule will never be higher than 0.174 US Perms per this protocol; and usually in the < 0.06 US Perm range.



Repeatable, quantifiable testing that not only shows CWPA 800 is working on your project, but can be used pre-project to clearly show the superior Permeability Reducing Admixture choice for your mix design in head-to-head testing. With testing at the lab, ready-mix plant or the jobsite.



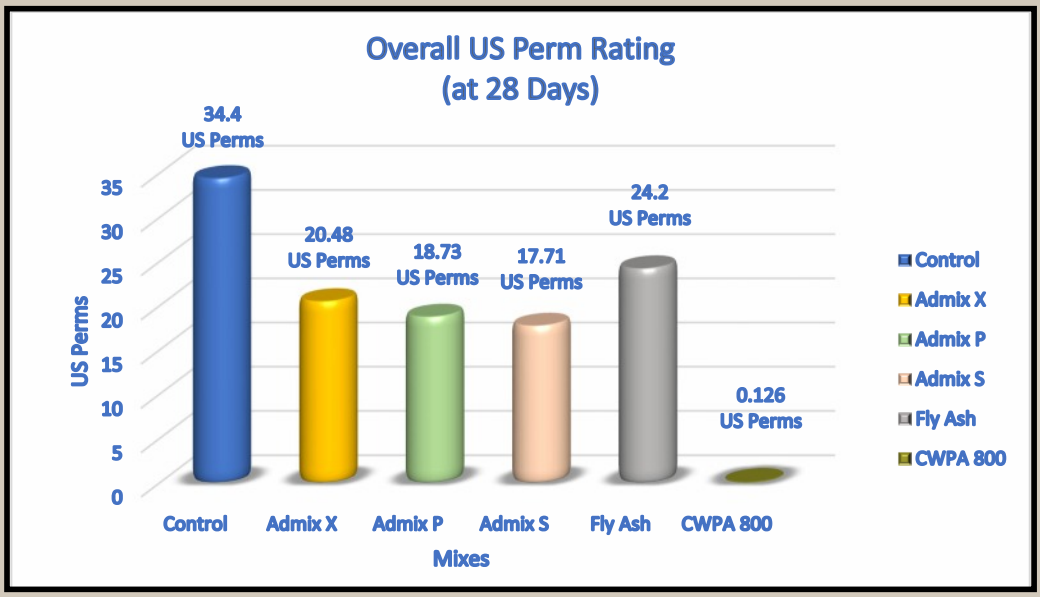
The Whole Story…
Learning Objectives: Testing

ISE LOGIK'S CWPA 800

The "crystalline growth" industry has made popular the two "Water Proofing" protocols; CRD C48 Standard Test Method for Water Permeability of Concrete. Initially created by the Army Corp. in the 1970s, with the most current issue from 1992. Next, DIN 1048, part 5 - Water Permeability Test. A German protocol last updated in 1991.

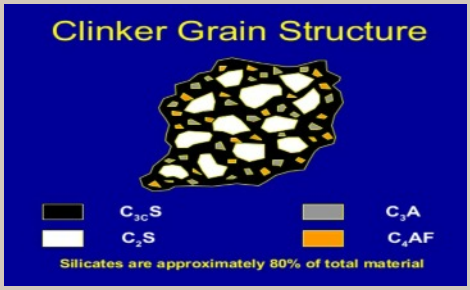
Both of these test/protocols rely on "visual observation" to make a final qualitative judgement. The ASTM D5084 is simply an attempt to put forth some quantitative, reproducible, comparative results.

A solid, 0.45 w/cm mix design; 4,000 psi mix. ASTM D5084 performed at Day 28. No fancy prep; just de-molded at Day 7 and set in the shade. Wrapped in plastic bags and sent to a lab back east. Plain/Control = exactly that…straight cement mix. A mix with (southern California) Type F Fly Ash mix. Three mixes with popular "crystalline growth" dry powder admixtures; X, P, and S. And a Logik CWPA 800 mix. Results are below:



*ASTM D5084 - Results are in centimeters per second; that value is multiplied by a constant and a US Perm is the result.
**These mixes are all Southern California mixes/Southern California material. Admixtures are imported by manufacturer. Mix designs, including gradations, are all available for review.

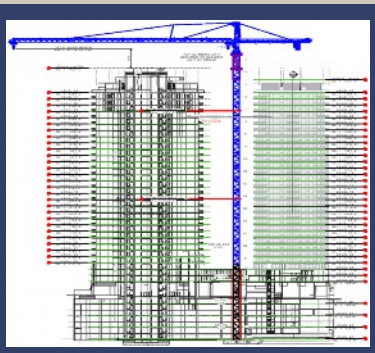
The above is a structured pore; paste capillary, cross section. Admix X, P, & S are adding product to that pore. CWPA is overwhelming that pore as to render it with **no structure.** We're talking about this process with 'pedestrian' 0.45 w/cm mixes with 550 pounds of cement…CONSISTENTLY.



Crystalline Growth has been around a long time. Typical ingredients below (from SDS) showing they are pulling their reactivity from cement, a little extra calcium hydroxide, and sand/quartz. This is a slow process. They advertise a range of between 50% to 70% reduction in permeability. Probably. But it takes upwards of 6-9 months. Can you wait that long? You need to start with a pretty good mix...and maybe "crystalline growth" will get you to where you need to be.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient name	Content (%)	CAS #	EINECS#	GHS Classification
Portland Cement	28-40	65997-15-1	266-043-4	Skin Irrt. 2 H315 Eye Dam. 1 H318 Skin Sens. 1 H317 STOT SE 3 H335
Silica, Quartz	30-40 (Respirable: <0.003)	14808-60-7	238-878-4	STOT SE 2 H373
Calcium Hydroxide	5-20	1305-62-0	215-137-3	Skin Irrt. 2 H315 Eye Dam. 1 H318 STOT SE 3 H33



Why not take that same technology that has been used for over 20 years warranting and providing flawless and on-time flooring, coatings, and roofing installations (mvra's) and use it everywhere. We have a long, documented list (proactive Q/C) that we can share ultra-low, documented permeability test results (ASTM D5084) ~ just ask!

CWPA 800 APPLICATIONS

Beyond project specific concrete mix design testing, the best *Proof*...is often examining Project Applications:

MVRA - MOISTURE/VAPOR REDUCING ADMIXTURE

Throughout the West Coast, we have literally millions of square feet, spanning almost 20 years of every kind of flooring imaginable utilizing mvra in the mix....with flooring, roofing and coatings in perfect service!

And for added protection, the manufacturer, ISE Logik, offers a dual 'Lifetime of Concrete' warranties; for adhesion and for moisture/vapor issues!

NSF Certified to NSF/ANSI 61

Makes sense for any "high traffic" or "critical" flooring project…

Hawaiian Gardens Casino

The "new" casino opened in **May of 2016** in Hawaiian Gardens; off the 605 Freeway at Carson Street. 200,000 square feet over two levels; non-stop service with a dozen different flooring systems all in perfect service to date...and even waterproofed the entry-way fountain.

DEL ORO HIGH SCHOOL

August, 2022 opening for of the state-of-the-art campus in the Bakersfield, California. 231,000 square feet of numerous kinds of high school flooring; from anti-septic flooring in the cafeteria to sports floor in the MPR. 13 buildings over 78-acres. Designed by HMC Architects.

VIASAT EAST CAMPUS

December of 2018 Viasat opened their East Campus in Carlsbad, Calfornia. 1.1 Million square feet over 27 acres and 6 separate buildings- too many kinds of flooring and coatings to list. Whiting-Turner Contracting and SCA partnered with what can only be described as a fantastic project.

CWPA 800 APPLICATIONS

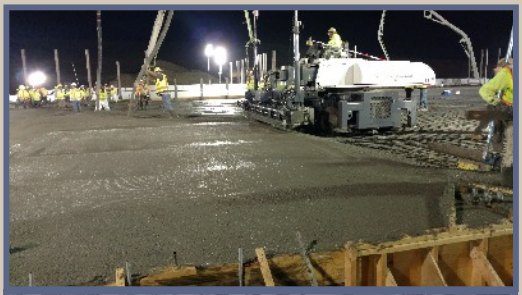
SLABS….WALLS….VERTICAL….HORIZONTAL….
ALL IMPROVED WITH THE STATE-OF-THE-ART
PERMEABILITY REDUCING ADMIXTURE

We want to be very careful here - Typical admixture salesmen say "...and the finishers love it!" Usually, a tell-tale sign, they've never been to a jobsite. Most finishers don't love any thing....not even themselves! But that's another, long conversation for another time. In a moment of honesty, if you sat a seasoned shotcrete nozzleman down and asked him to design a "perfect admixture" he'd tell you one that will "...flash off the extra mix water....and provide additional fines/cream for finishing". That's exactly what CWPA 800 does! This admixture uses most of the "extra mix water" or water of convenience in it's reaction of producing additional c-s-h. The additional c-s-h is visible and present almost immediately; as seen by the absence of 'bleed water' once you screed and float. With shotcrete....just more cream/paste to seal into your wall!

Mat/raft slabs....usually the top 10-12 inches are dosed with CWPA 800. Helps keep the heat of hydration down to a minimum, and replaces expensive and awkward HDPE liners.

Exposed sections of podium decks. CWPA 800 imparts lower permeability and acts as a replacement to 'hot applied' systems; for "membrane free" waterproofing throughout your deck.

Complete, 3-D Densifier. CWPA 800 imparts severely disrupted capillary systems, surface densified & ultra-low permeance concrete throughout; 24/7 Heavy duty trash reclamation facilities.



ISE LOGIK'S CWPA 800

We want to be clear with our CWPA 800 concrete admixture; we do not make crappy concrete good….we make good concrete better! Seems silly to have to say something like this; but it isn't. We are NOT performing magic. We are taking well designed mixes and imparting the characteristics of a 0.38 w/cm mix; superior shrinkage, densification, ultra-low permeance, less bleed water, and built-in corrosion inhibition. A relatively quick, permanent, disrupted capillary system. Keeping all the good stuff (water/moisture, primary & secondary cement hydration, etc.) in….and all the bad stuff out!!!

Terminal 2 Parking Plaza - San Diego International Airport

Both Swinerton and Watry Design met a 0.036% Shrinkage Spec (at 35 Days) in over 25,000 cu. yards achieving a maximum 0.1 US Perm rating on the 2nd and 3rd levels, and all the ramps.

CWPA 800 TESTING SUMMARY

ASTM D5084 - Coefficient of Permeability - Depending on the w/cm ratio of the mix, you can expect between a **60% - 99% reduction in Permeance** of your concrete (i.e. a 0.52 w/c ratio mix will go from roughly 200 US Perms down to a maximum 0.174 US Perms).

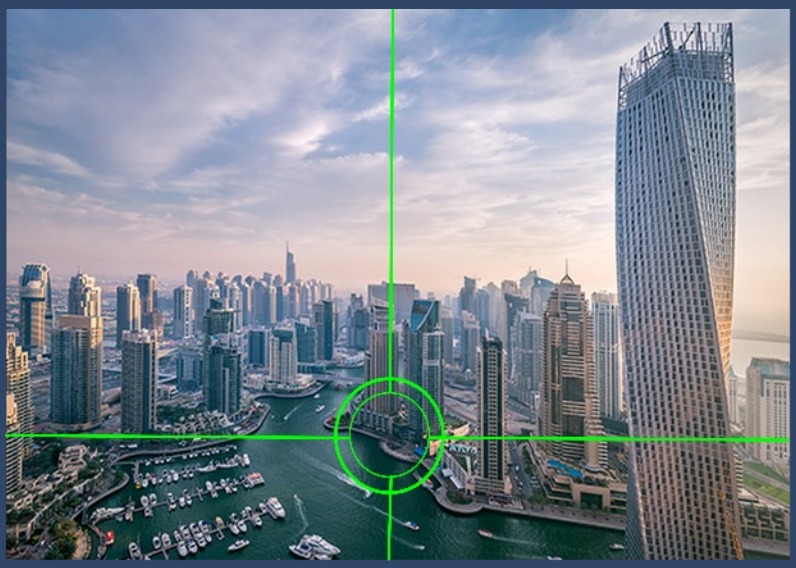
Modified ASTM C1152 - Nano X-Ray Fluorescence Depth of Saturation Testing for Acid-Soluble Chloride in Mortar and Concrete - CWPA 800 enhanced specimens showed a **30% reduction in depth of penetration** versus a control, plain samples.

ASTM C441 - Test Method for Effectiveness of Pozzolans or Ground Blast-Furnace Slag in Preventing Excessive Expansion of Concrete Due to the Alkali-Silica Reaction - Conservatively **60% reduction in Alkali-Silica reaction** versus control; greatly inhibiting negative reactions at the Interfacial (aggregate/paste) zones.

ASTM C1202 - Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration or Rapid Chloride Permeability Test - You can expect about a **50% reduction in coulombs** at all ages; keeping your results in the ***Low* to *Very Low* categories**.

ASTM C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete - On average, you can expect a **10 - 25% decrease in shrinkage** over a plain control.

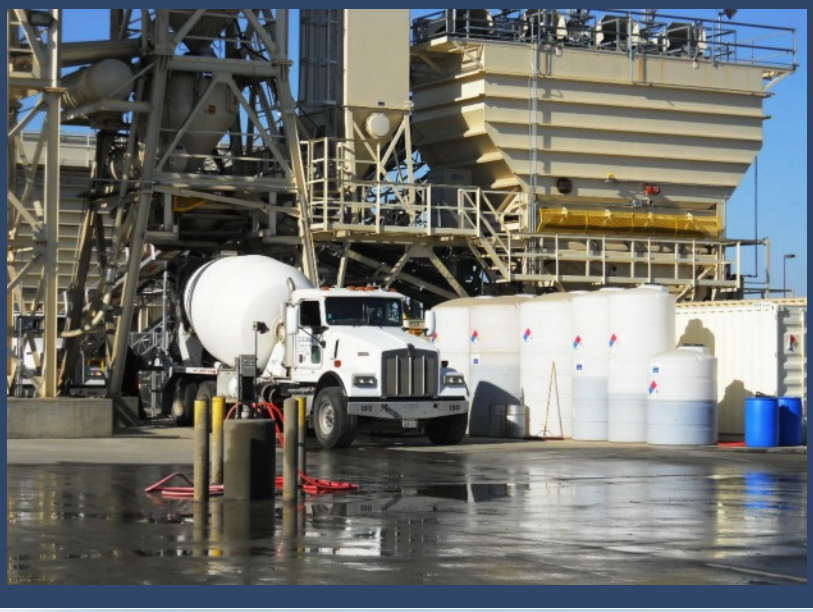
ASTM C876 – Standard Test Method for Corrosion Potentials of Uncoated Reinforcing Steel in Concrete - In common 4,500 psi structural mixes, you can expect **between 30% to 40% lower Half Cell (mVolts) results.**



Short of completely removing the steel reinforcement in your concrete, CWPA 800 is simply the best, fastest, cheapest way to quickly and permanently provide a disrupted capillary system in normal portland-cement based concrete with simple, secondary cement hydration; i.e. more c-s-h.

CWPA 800

CWPA 800 is only available through your commercial ready-mix producer. Pricing is based off of your cementitious content of your mix; so it varies, but *should usually be under a $1 a square foot, installed, budget range.* If you're still not sure, let's do some testing on your exact mix design!



DURABILITY CONSULTANTS
ENHANCING THE CAPABILITIES FOR THOSE THAT BUILD WITH CONCRETE....

ISE LOGIK

Jim Kaylor
310.6504263
jim@DurabilityConsultants.com
www.DurabilityConsultants.com

PDH

Roundtable LEARNING