

Product Description:

Barrier One CSXtreme (“CSX”) is a ready to use liquid waterproofing admixture (per ASTM C494/C494M Table 1) that also meets AASHTO-M194 requirements. It is an integral waterproofing agent that produces low permeability concrete across a wide spectrum of mix designs without the potential of contributing to surface coating / paint delamination. CSX is typically utilized in retaining walls and water retaining structures as well as substantial civil / roadway / bridge related projects that require demonstrated integral waterproofing capabilities. CSX is classified as a PRAH by ACI 212.3 R and is a recommended admix in combatting hydrostatic head pressures found in both below / above grade water retaining structures. Dosing CSX into your approved mix design provides **waterproofing with 48 hours**. Water seepage or infiltration is not required to activate this product.

CSX increases compressive strength gain, shrinkage reduction, microbial induced corrosion resistance, chloride resistance and carbonation resistance. CSX hydraulic conductivity pressure resistive capabilities have been certified through independent US Corp of Engineers CRD-C 48 testing. Freeze Thaw: As per ASTM C-666; CSX can be used in below grade and in exterior applications without “Entrained Air”

Technical Data:

Appearance: Translucent Pink	Toxicity/Vapors / Odors: None
Ph: 11.3	Specific gravity: 1.24
Shelf Life: One Year from delivery	Weight: 9.6 lbs./gal (net)
Flammability: None	Freeze Temp: 32°F
HPD: Available	VOCs: 0 g/l
Sodium Silicates: None	Chlorine Content Added: None
Capillary Break: Yes	NSF / ANSI 61 Compliant

Dispensing:

- Compatible with normal & light weight mix designs. Mix design(s) must be approved prior to first concrete placement.
- Compatible with well consolidated steel & composite fibers.
- Dosage: 14oz volume / 100 lb. total cementitious with 1:1 mix water replacement.
- Water to Cementitious ratio design ranges of 0.31 to 0.52
- CSX should be dosed separately from other admixes & at the tail- end of the load. Adding CSX with withheld tail water is recommended. **Do not allow CSX to come in contact with dry cementitious materials.**
- For dosing accuracy & reporting, batch plant application is recommended. Allow a minimum of 7 minutes of rapid drum rotation before discharge.
- Do not let the CSX material freeze at any point prior to application.

Concrete Performance:

- CSX has no deleterious concrete effect & does not accelerate or retard mix set times per ASTM C494 testing. It facilitates finishing by reducing bleed-water; creating a creamier / richer undiluted paste.
- Water reducing admixes are acceptable to achieve slumps > +4”.
- CSX has minimal impact on slump. (≤ 0.5” slump loss)
- Added shrinkage reduction admixtures (SRA) or crystalline product utilization are not recommended.
- 3” minimum slab depth for warranty consideration per ASTM 302.1R

Chemical Resistance & Curing:

CSX significantly reduces concrete porosity integrally by creating a non-soluble structure- This capillary block further reduces the diffusion rates of both gasses and liquids. Independent permeability and chemical resistance studies attest to CSX ability to extend the service life of concrete by as much as 50 percent when compared to an untreated control mix in the most difficult circumstances. Curing compounds have no deleterious effect on CSX performance. **However**, if a curing compound or form release agent is utilized, the applied surface coating / sealer / primer / etc. manufacturer guidelines regarding surface prep must be followed.

ACI 212.3R	Permeability Reducing Admix for Hydrostatic Conditions (PRAH)	Yes
ASTM C-666 (No Air)	Freeze Thaw Resistance (Reduction in Mass Change) (60% Is Passing)	99%
ASTM C-666 (No Air)	Freeze Thaw Resistance (Relative Dynamic Modulus) (60% is Passing)	89%
ASTM C-157	Drying Shrinkage (Average Reduction in Shrinkage) (86% Better Than "0.04" Standard)	86%
MIP Testing	Mercury Intrusion & Porosimetry (Reduction of Pore Structure) (Normal Mix)	15.00%
MIP Testing	Mercury Intrusion & Porosimetry (Reduction of Pore Structure) (Self Consolidating-SCC Mix)	36.00%
CRD C48-92	Standard Test Method for Water Permeability of Concrete	Pass
ASTM D-5084	Hydraulic Conductivity of Saturated Porous Materials	<1.0 x 10⁻⁹
ASTM C-39	Type (1L Cement) (Average Strength Increase)	22%
ASTM C-1543 & AASHTO T-259	Reduction in Corrosion (Ponding)	80%
ASTM C-1202 & AASHTO T-277	Reduction in Chloride Ion Penetration (Coulombs) (Chloride Permeability Rating)	Very Low
ASTM C-672	Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals	No Scaling
ASTM G-109	Corrosion of Embedded Steel Reinforcement in Concrete Exposed to Chloride Environments	No Notable Corrosion
ASTM C-1152	Acid Soluble Chloride in Mortar and Concrete	Pass
ASTM C-1260	Potential Alkali Reactivity of Aggregates (Mortar Bond Method) (Average Reduction in ASR Expansion %)	Pass
ASTM C-1567	Potential Alkali Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar Bond Method)	Pass
W/CM Ratio	Water To Cementitious Ratio Range	0.31 - 0.52
ASTM C232	Bleed Water in Concrete (Reduction)	19.20%
ASTM C-494	Type S Admixture	Pass