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### Product Distinction:

Barrier One CSXtreme is a demonstrated & certified concrete enhancement technology certified as a Type "S" 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. CSXtreme is typically utilized in retaining walls and water retaining structures such as Water Treatment Plants (WTP) or Waste WTP projects as well as substantial civil / roadway / bridge related projects that require demonstrated integral waterproofing capabilities. CSXtreme 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 CSXtreme into your approved mix design provides show cause within 48 hrs. Integument H<sub>2</sub>O is not required to activate this product. Bonding agents are not necessarily required to achieve sufficient bond for cementitious overlays or resinous coatings.

CSXtreme compliments natural autogenous crack healing attributes present in many mix designs while improving other engineering qualities such as flexural / compressive strength gain, shrinkage reduction, freeze thaw resistance, corrosion resistance, chloride resistance and carbonation resistance. CSXtreme hydraulic conductivity pressure resistive capabilities have been certified through independent US Corp of Engineers CRD - 48 testing. CSXtreme has been NTPEP tested /AASHTO certified and approved by many state DOTs.

### Technical Data:

Appearance: Translucent Pink	Toxicity/ Vapors / Odors: None
Dosage: 14 oz. / 100 lbs. total cwt	Flammability: None
Decanting: Not Required	Specific gravity: 1.24
Shelf Life: One Year from delivery	Ship Weight: 9.6 lbs./gal (net)
Freeze Temp: 32°F	NTPEP Tested & AASHTO Cert.
Rapid Strength Gain: Yes	VOCs: 0 g/l
Sodium Silicate : None	Chlorine Content Added: None
Capillary Break: Yes	NSF / ANSI 61 Compliant

### Dispensing:

- Utilized with Normal & LW mix designs. Mix review required.
- Compatible with well consolidated steel & composite fibers.
- Dosage CSXtreme: 14oz volume / 100 lb. total cementitious with 1:1 mix water replacement. W/Cm mix design ranges of 0.31 to 0.52
- Dose separately from other admixes & at the tail-end of the load. Separate withheld tail water addition is acceptable.
- For dosing accuracy & reporting, batch plant applications are recommended. Onsite dosing is acceptable with minimum 7+ minute drum rotation and documented delivery ticket.
- CSXtreme should not freeze at any point prior to application.
- Approved for ANSI A118.4, ANSI A118.11, ANSI A118.15 Mortars

### Concrete Performance:

- CSXtreme has no deleterious concrete effect & does not accelerate / retard mix set times per ASTM C494 testing. It facilitates finishing by reducing bleed-water; creating a creamier / richer undiluted paste.
- Early strength gains are to be expected.
- Water reducing admixes are acceptable to achieve slumps > +4".
- CSXtreme 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

### Curing & Chemical Resistance:

Approved CSXtreme mix design reviews offer an essential quality control component with regards to the project's long-term success. The Company agrees with ACI in that; utilization of the "best" curing / material application practices are critical. One of the most effective means of improving the durability and service life of concrete is to prevent intrusion of deleterious substances into the concrete substrate. The less permeable the concrete; the more sustainable it becomes. Unlike resinous coatings that deteriorate over time, a CSXtreme application cannot delaminate, be punctured or damaged during back-filling. Expect reduction in ongoing concrete maintenance needs.

Aggressive deterioration substances such as chloride ions, air borne carbon dioxide and soil sulfates can diffuse into untreated concrete via surface micro cracks as well as pore and capillary tracts found in the substrate. Carbon dioxide intrusion can initiate steel reinforcement corrosion – contributing to an overall concrete pH reduction in the 9 - 9.5 range. CSXtreme significantly reduces concrete porosity integrally by creating a non-soluble structure which further aides in the concrete's ability to naturally heal. This capillary block further reduces the diffusion rates of both gasses and liquids.

All chloride & sulfite chemical intrusions must be in the form of a liquid to attack concrete. This is a common problem for marine structures, roadway abutments & bridges. Independent permeability and chemical resistance studies attest to CSXtreme's 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.

### Typical Industry / Specification Considerations:

Curing compounds have no deleterious effect on CSXtreme performance. **However**, if a curing compound or form release agent is utilized, resinous coating manufacturer guidelines regarding surface prep must be followed.

The CSXtreme material shall not be allowed to freeze any time before dosing. The CSXtreme admix is dosed separately at the tail end of a Ready Mix truck directly into the concrete and mixed for a minimum of 7+ minutes. CSXtreme is not surface applied. This technology is compatible with plasticizers, & both high / low range water reducers. It is fully compatible with fly ash & slag replacement. CSXtreme is not compatible with the addition of crystallines or shrinkage reduction admixtures. CSXtreme will not accelerate nor retard your mix set. As described by finishers; CSXtreme reduces bleed water - which in turn leads to a smoother / creamier paste.

The environmental impact of any concrete placement can have effect both now and in the future. CSXtreme offers extended service life and reduced maintenance - minimizing the full impact that the structure may have over its planned life cycle

Upon meeting all relevant ACI & NTPEP guidelines, engineering material design applications and installation instruction requirements; the CSXtreme admixture greatly compliments and enhances porosity reduction & waterproofing capabilities of all types of concrete. Failure to follow current ACI & NTPEP concreting "best" placement, finishing and curing practices or failure to follow adequate concrete design standards and guideline specifications, including form retention practices could affect long-term performance. When applicable, consult exclusive and separate "Owner" Warranty for further detail.