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Technical Datasheet

BETOCRETE-CP365-CI

Crystalline Waterproofing Admixtures with Hydrophobic and Corrosion Inhibiting Effects for Concrete

CSI Div. 03
03 31 23 High Performance Structural Concrete

LEED Points
MR Credit 5.1, Regional Materials.....Up to 2 Points
IEQ Credit 4.2, Low-Emitting Materials Paints and Coatings...1 Point
Using this AQUAFIN product can help contribute to LEED certification of projects in the categories shown above.

Product Description:
BETOCRETE-CP365-CI is a state-of-the-art, crystalline waterproofing and permeability reducing admixture with 3-in-1 technology. Initially, it functions as a hydrophobic, Permeability Reducing Admixture Non-hydrostatic (PRAN) and secondly it functions as a hydrophilic Permeability Reducing Admixture Hydrostatic (PRAH) reacting with the calcium hydroxide to create millions of nanocrystals that grow throughout the concrete matrix. Finally, steel reinforcement is protected by an active migrating corrosion inhibitor by forming a protective molecular layer. This enhances concrete durability and extends the life of the structure.

BETOCRETE-CP365-CI can be added to the concrete mix at the time of batching or at the job site to a ready mix truck with full mixing capabilities.

Working Principle:
- During concrete hardening BETOCRETE-CP365-CI forms millions of fine crystalline fibers inside the capillary pores.
- Crystalline fibers reduce the pore diameter, thus blocking the flow of water through the capillary voids.
- The treated concrete is permanently watertight.
- The hydrophobic reaction reduces water absorption into the concrete matrix.

The BETOCRETE-CP365-CI chemicals remain an integral part of the concrete for the life of the structure, always re-activating whenever exposed to moisture. BETOCRETE-CP365-CI can seal static cracks up to 0.5 mm (0.02 in), which occur months or years after the concrete has cured and hardened. BETOCRETE-CP365-CI waterproofing chemicals start reacting immediately. However, it may require up to several weeks to reach its maximum waterproofing capability. Environmental factors such as ambient temperature, density of concrete, moisture and weather conditions all can affect the timing of the sealing process. Concrete treated with BETOCRETE-CP365-CI protects against rebar corrosion, spalling, freeze/thaw cycles and weather-related damage.

Typical Applications:
Any concrete mix requiring waterproofing (water impermeable) capabilities, such as:
- Tunnels and subway systems
- Foundations
- Precast structures
- Parking structures
- Water and waste water treatments plants
- Reservoirs and underground vaults
- Secondary containment structures
- Bridges, dams and highway structures
- Water Features, aquariums, theme parks, water parks and marinas.

Advantages:
- Reduction in water penetration
- Resists extreme hydrostatic pressure, positive (active) or negative (passive) water pressure side
- Self-healing concrete: Can self-seal static hairline cracks up to 0.5 mm (0.02 in)
- Permanent: becomes an integral part of the concrete
- Not a vapor barrier: allows concrete to breathe
- Negligible interference with water reducers & plasticizers
- Negligible effect/influence on slump and air entrainment
- Impervious to physical damage and deterioration
- Non toxic, inorganic, zero VOC (0%)
- Contains no chlorides
- Less costly than traditional methods of waterproofing such as coatings and sheet applied goods.
- Extends concrete longevity by providing enhanced protection for reinforcement steel.

Packaging:
BETOCRETE-CP365-CI: 40-lb. (18.1 kg) bags and pails.

Dosage Rates:
BETOCRETE-CP365-CI - 0.75% - 0.95% by weight of portland cement content.
Consult Aquafin Technical Department for guidance in determining appropriate dosage rates and any specific project requirements which may need to be met.

Batching:
BETOCRETE-CP365-CI can be added to the concrete mixture at any time prior to placement of the concrete. It is generally recommended to add admixture materials at the ready-mix concrete plant during batching; however, BETOCRETE-CP365-CI can be added at the job site. BETOCRETE-CP365-CI crystalline waterproofing admixtures must be mixed with concrete for a minimum of five (5) minutes at maximum mixing speed, depending on the mixer type, to ensure complete dispersion and uniformity.

The following mixing recommendations are guidelines only:
- The concrete mix should be minimum 40°F (4°C) when incorporating BETOCRETE-CP365-CI.
- Trial mixes under project conditions to determine setting time, slump, air content and compressive strength of concrete are highly recommended.
- Aggregates conforming to a well graded sieve curve are necessary to assure water tightness.

BETOCRETE-CP365-CI

- BETOCRETE-CP365-CI can accelerate the initial and final setting time of portland cement type III/V concrete mixes. Adjust or remove any accelerating admixtures accordingly.
- Depending on weather conditions, the use of water reducers, superplasticizers, retarders and/or accelerating admixtures may be necessary to maintain desired workability.
- Add other admixtures independently from BETOCRETE-CP365-CI addition.

A. Ready Mix Plant

1. Mix dry BETOCRETE-CP365-CI with clean, potable water to a thin slurry consistency, i.e., 40 lb. (18.1 kg) BETOCRETE-CP365-CI with 4 gallons (15 L) water.
2. Pour the required amount of mixed BETOCRETE-CP365-CI into the drum of the ready-mix truck.
3. Produce the cement, aggregate and additives as per concrete mix design in the batching plant. Take into account the amount of water already placed in the ready-mix truck (item A.1)
4. Drop the concrete mix into the ready-mix truck.
5. Mix at least 5 minutes to assure homogenous distribution of the BETOCRETE-CP365-CI in the concrete.

B. Ready Mix Truck - Job Site Mixing

1. Mix BETOCRETE-CP365-CI Powder with clean, potable water to a thin slurry consistency, i.e., 40 lb. (18.1 kg) BETOCRETE-CP365-CI with 4 gallons (15 L) water. Take into account the amount of water already placed in the ready-mix truck.
2. Pour the required amount of mixed BETOCRETE-CP365-CI into the drum of the ready-mix truck, containing the wet concrete mix.
3. Mix at least 5 minutes to assure homogenous distribution of the BETOCRETE-CP365-CI in the concrete.
4. Immediately place concrete.

NOTE: Do not add bulk (>40 lbs.) dry BETOCRETE-CP365-CI Powder to wet concrete mix. This may cause clumping and uniform dispersion cannot be guaranteed. Mix with water first, before adding to wet concrete.

Placing:
Concrete containing BETOCRETE-CP365-CI should be placed the same way as normal concrete.

Joints and Pipe Penetrations:
Cold joints and pipe penetrations must be designed using AQUAFIN-Waterstop. BETOCRETE-CP365-CI does not prevent defects in concrete. Consult Aquafin on particular applications. Through penetrations must be securely sealed to maintain watertightness. BETOCRETE-CP365-CI is designed to waterproof rigid concrete structures only and will not reliably seal cracks and joints which are subjected to variable loading or repeated movement. Contact the Aquafin Technical Department for project specific recommendations.

Curing:
Cure as per relevant ACI guidelines.

Durability:
Concrete treated with BETOCRETE-CP365-CI is more durable than equivalent plain concrete due to its reduced permeability.

Non-Chloride, Non-Corrosive:
BETOCRETE-CP365-CI will not initiate or promote corrosion of reinforcing steel embedded in concrete. Neither sodium chloride, calcium chloride nor any chloride-based ingredients are used in the manufacture of BETOCRETE-CP365-CI.

Finishes:
If coatings, paint or other treatments are to be used on the negative side of BETOCRETE-CP365-CI concrete, thorough surface preparation is required to remove waterproofing crystals from the surface (i.e., minimum 5000 psi high pressure water blasting).

Storage and Shelf Life:
BETOCRETE-CP365-CI-Powder: Store in a dry enclosed area off the ground. Shelf life is 12 months when stored under proper conditions.

Note: Proper application is the responsibility of the user. Field visits by AQUAFIN personnel are for the purpose of making technical recommendations and not for supervising or providing quality control on-site.

Safety:
Refer to SDS. KEEP OUT OF REACH OF CHILDREN. This product contains Portland cement and sand (crystalline silica) and is highly alkaline (corrosive) which may cause significant skin and eye irritation. Dust may cause respiratory tract irritation. Avoid breathing dust. Avoid contact with skin and eyes. Wear rubber gloves and safety goggles during mixing and application. After contact with skin, wash with plenty of water. In case of eye contact, rinse immediately with plenty of water for 15 minutes and seek medical advice.

LIMITED WARRANTY: AQUAFIN, INC. warranties this product for a period of one year from the date of installation to be manufactured free of defects and to be consistent with its technical properties as stated in our current Technical Data Sheet. This product must be used as directed and within its stated shelf life. AQUAFIN INC. will replace or at our discretion refund the purchase price of any product, excluding cost of labor, which is proven to be defective.
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