



TECHNONICOL CA 110

CRYSTALLINE WATERPROOFING ADMIXTURE

PRODUCT DESCRIPTION:

- TECHNONONICOL CA 110 a reactive crystalline type waterproofing material which is formulated by proprietary blends of chemicals (mainly organic and inorganic salts), quartz, sand and cement.
- TECHNONICOL CA 110 is an environmentally friendly and low VOC material. It is an integral waterproofing system that is being added to batches of concrete during mixing process. The active chemicals which react with moisture in fresh concrete and with by-product of cement hydration in the concrete or cement-based materials will cause a catalytic reaction that creates a non-soluble crystalline formation which crystallizes in the pores and capillary tracks.
- In the long run, under a supersaturation environment inside concrete, TECHNONICOL CA 110 initiates crystallization process. When this process takes place, millions of needle-like crystals are formed and fill the capillary tracks, pores and microscopic voids within the concrete. Paths for harmful moisture and aggressive chemicals are blocked permanently.
- TECHNONICOL CA 110 is added to batches of concrete during the mixing process for new construction projects. The high-growth organic component of the product reacts with water and unhydrated particles in concrete to form millions of needle-like crystals. These crystals grow and migrate through the concrete to fill in hair-thin pores and microscopic voids up to 0.5mm that would otherwise serve as passages for harmful moisture.
- TECHNONICOL CA 110 technology enhances the natural hydration process in concrete, increasing compressive strength over time and dramatically reducing cracks caused by shrinkage.

ADVANTAGES:

- LOW VOC - TECHNONICOL CA 110 powder product contains low volatile organic compounds and are safe for use both outdoor and in confined indoor spaces.
- Environmentally friendly.
- Easy to use - only mix with concrete.
- It provides significant cost saving because it eliminates labour cost in the long run. □ Integral protection for the entire concrete.
- Permanent protection even if the surface is damaged.
- Can seal the capillaries and minor shrinkage cracks up to 0.5mm through crystal formation.
- Resists extreme hydrostatic pressure from either positive or negative surface of the concrete slab.
- Timesaving.
- Improves durability of the concrete.
- Non-toxic.
- Permeability Reducing admixture for Hydrostatic condition (PRAH)
- Exceeds requirement of ASTM C494-S (Specific performance admixture)

DOSAGE RATE:

0.8% to 1.0% by weight of cement. Consult with TECHNONICOL technical department for assistance in verifying appropriate dosage rate and further information regarding enhanced chemical resistance and optimum concrete performance for your project.

AREA OF APPLICATION:

TECHNONICOL CA 110 is used to waterproof areas as indicated below:

- Basement floors and retaining walls.
- Concrete flat roofs.
- Water retaining structures.
- Lift pits.
- Swimming pools.
- Reservoirs.
- Secondary contamination structures.
- Tunnels and subway systems.
- Precast, cast- in- place and shotcrete application.

MAIN CHARACTERISTICS. TECHNICAL AND PHYSICAL DATA:

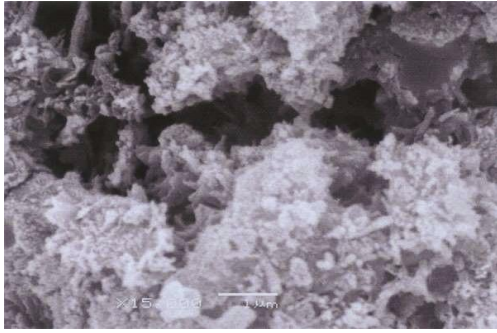
Properties	Performance
Form	Cement powder (Grey)
Chloride Contents BS 507S	Nil
Potable Condition BS 6920 Part 1:2000	Complied
Coefficient of Water Permeability (m/s) ADM/CE/017:2013	1.13×10^{-13}
Can Seal Hairline Cracks	Up to 0.5mm
Shelf life	1 year when unopened and undamaged
Packaging	25kg/pail

GREEN LABEL TEST DATA:

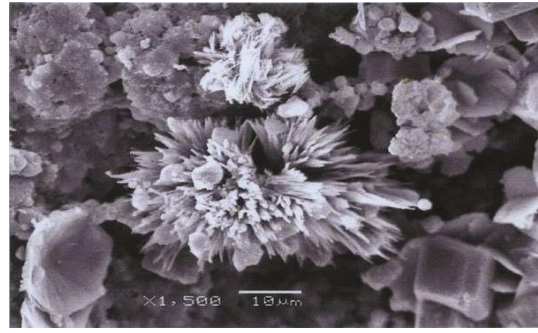
Heavy Metals: (EPA 3025 / EPA 6010B : ICP)	
a. Cadmium (Cd)	
b. Lead (Pd)	Not Detected
c. Total Chromium (Cr)	
d. Mercury (Hg)	
Volatile Organic Compounds (ISO 11890-2) (g/L)	1.21
Total Halogenated Organic Solvent (ISO 11890-2) (%)	Not Detected
Total Aromatic Organic Solvent (ISO 11890-2) (%)	Not Detected
Epichlorohydrin (ISO 11890-2) (%)	Not Detected
N-Methyl Pyrrolidinone (ISO 11890-2) (%)	Not Detected
Formaldehyde (High Performance Liquid Chromatography) (%)	Not Detected
Alkyl Phenol Ethoxylate (LCMS-MS) (%)	Not Detected
Flash Point (ASTM D3828-07a) (°C)	>61

CRYSTALLIZATION GROWTH:

- The crystallization process consists of two events: nucleation and crystal growth. Nucleation is the step where the solute molecules dispersed in the solvent start to gather to create clusters in the nanometre scale (elevating solute concrete in a small region) and become stable under the current operating conditions.
- These stable clusters constitute the nuclei. The clusters need to reach a critical size in order to become stable nuclei. Such critical size in order to become stable nuclei. Such critical size is dictated by the operating conditions (temperature, super saturation, irregularities, etc.). It is at this stage of nucleation that the atoms arrange in a defined and periodic manner to define the crystal structure - note that "crystal" structure is a special term that refers to the internal arrangement of the atoms.
- The crystal growth is the subsequent growth of the crystal growth is the subsequent growth of the nuclei to achieve critical cluster size. Subsequently, nucleation and crystal growth continue to occur simultaneously in the presence supersaturation. Supersaturation is the driving force of the crystallization; hence the rate of nucleation and growth is driven by the existing supersaturation in the solution.



Micro Structure Analysis - Untreated Concrete



Micro Structure Analysis - Treated Concrete

INSTRUCTION FOR USE

Trial mix shall be conducted for concrete intended to utilise TECHNOMICOL CA 110 to waterproof a particular concrete structure.

On project site, mix TECHNOMICOL CA 110 with water to form a very thin slurry mixture (e.g.: 25kg of powder mixed with 31.5 liters of water). Pour the required amount of material into the drum of the ready-mix truck. The cement and water should be batched and mixed in the plant in accordance with standard practices (taking into account the quantity of water that has already been placed in the ready-mix truck). Mix for at least 5 minutes to ensure even distribution of the TECHNOMICOL CA 110 throughout the concrete.

NOTE:

It is important to obtain a homogeneous mixture of TECHNOMICOL CA 110 with the concrete. Therefore, do not add dry TECHNOMICOL CA 110 powder directly to the wet concrete as this may cause clumping and thorough dispersion will not occur.

The targeted compressive strength of a particular grade of concrete shall comply with BS 328:1991 or its latest revisions. The use of TECHNOMICOL CA 110 shall be under adequate supervision.

For further sequence of procedure for addition will vary according to the type of batch plant operation and equipment. Please contact TECHNOMICOL technical representative.

STORAGE:

Product must be stored dry at a minimum temperature of 45°F (7°C). Shelf life is one year when stored under proper conditions.

HEALTH AND SAFETY

These safety recommendations for handling are necessary for the implementation process as well as in the pre and post, on exposure to the loading machinery.

- TECHNOMICOL CA 110 is alkaline. As a cementitious powder or mixture may cause significant skin and eye irritation.
- As with all construction chemicals products caution should always be exercised.
- Protective clothing such as gloves and goggles shall be worn.
- Treat any splashes to the skin or eyes immediately with fresh water.
- Should any of the products be accidentally swallowed, do not induce vomiting, but call for medical assistance immediately.
- Keep out of reach of children