



MOONCRETE - CI™

Corrosion Inhibiting Admixture

Description

MOONCRETE - CI™ is a Nitrite based corrosion-inhibiting admixture for protection of steel in reinforced cement concrete structures.

Uses

- RCC structures exposed to marine environment and chloride contaminated ground water.
- All RCC structures including precast/prestressed and post tensioned applications to improve durability.
- RCC structures exposed to corrosive industrial environment.

Advantages

- Provides effective corrosion protection for steel reinforcement rods against chlorides in concrete.
- Extends the service life of reinforced concrete structures.
- Improves the workability of concrete at the same water-cement ratio.

Protection Mechanism

In the alkaline environment of the concrete, a natural passive ferric oxide layer forms on the surface of the embedded reinforcement rods and protects the steel from corrosion. This passive layer may break down in the presence of chlorides and moisture resulting in corrosion of the steel reinforcement.

MOONCRETE - CI™ admixture delays corrosion by repassivating defects on the steel surface. These defects are ferrous oxide ions that are susceptible chloride attack. When chloride ions attack the ferrous ions, they combine to create a ferrous chloride complex (rust) and initiate pitting corrosion on the reinforcement rods.

If untreated, chloride ions continue to attack newly exposed ferrous ions and form additional expansive corrosion products leading to staining, cracking and spalling of the concrete.

Nitrite ions contained in **MOONCRETE - CI™** are effective in converting the ferrous oxide ions in to more stable ferric oxide ions before chloride ions react with them. This oxidation reaction repassivate the reinforcing steel and re-establish the barrier between the steel and chlorides that initiate corrosion. Moreover, **MOONCRETE - CI™** admixture repels the entering chloride ions due to charge similarity and thereby increase the threshold chloride content required to initiate corrosion. **MOONCRETE - CI™** admixed concrete specimens exposed to severe chloride environment for two years and tested as per ASTM G109 - 07 also reveals up to 50% reduction in chloride level near rebar surface as compared to control concrete specimens.

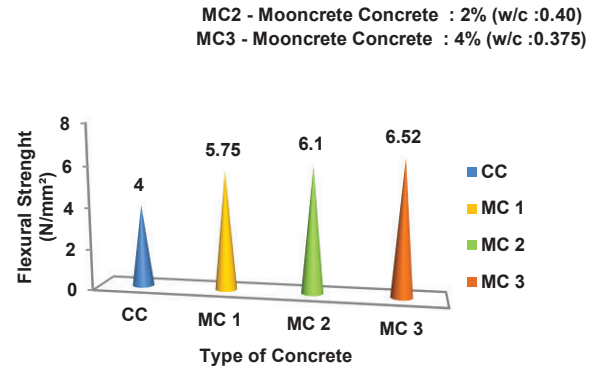
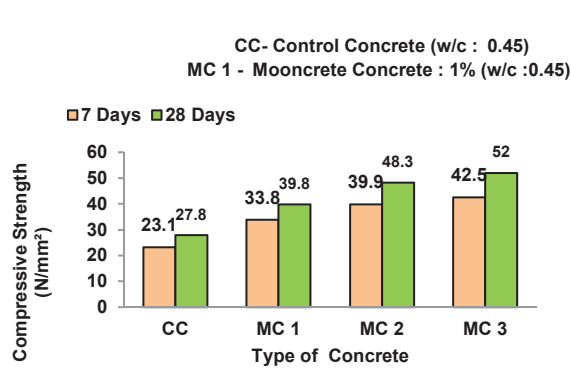
Typical Properties

Colour	:	Dark brown free flowing liquid
Relative Density	:	1.16 at 25°C
Solids by weight	:	> 25%
pH	:	11.10

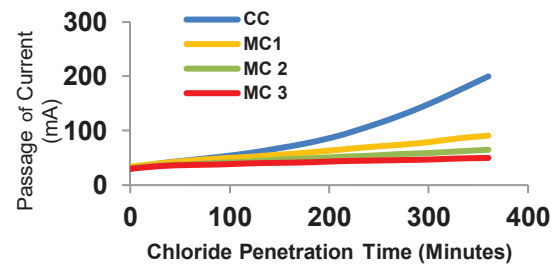
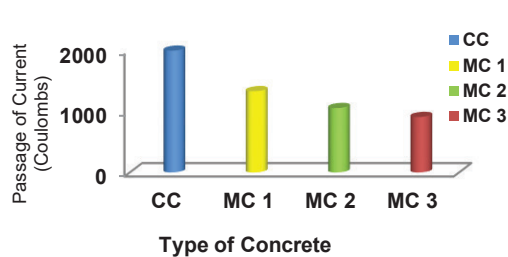
Compatibility

MOONCRETE - CI™ admixture may used with Portland cements and mineral admixtures approved under BIS, ASTM and AASHTO specifications. In general it is compatible with other chemical admixtures, including water reducers, superplasticizers, retards and air entrainers. It is advisable to add chemical admixtures separately to concrete to ensure desired results. It is recommended to conduct trail test to confirm compatibility if more than one admixture is added to the concrete in the real site conditions.

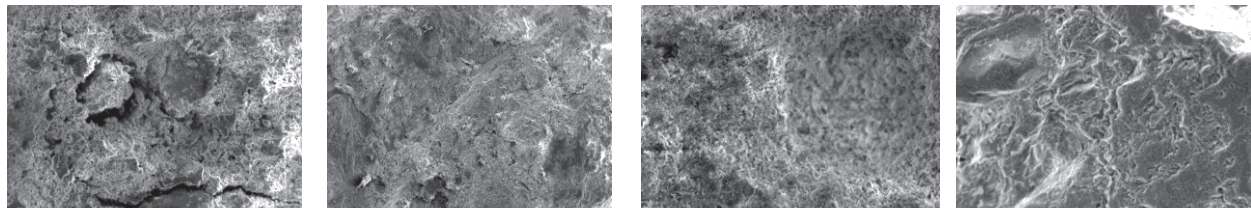
Strength and Durability Performance



Compressive Strength and Flexural Strength Properties of Mooncrete-CI admixed concrete



Performance of Mooncrete-CI admixed concrete in Rapid Chloride Penetration Test (RCPT)



Control Concrete Mooncrete (1%) Mooncrete (2%) Mooncrete (4%)
SEM pictures showing Improved Micro Structure of MOONCRETE Concrete

Dosage

MOONCRETE - CI™ is recommended to add at a rate of 1-2 liter per bag of cement depending upon the severity of corrosion environment and the anticipated chloride loading on the structure.

Packaging & Shelf Life

MOONCRETE - CI™ admixture is available in 5 Liter, 30 Liter and 100 Liter

HDPE cans. Shelf life is 12 months when stored under standard conditions.

Safety Precautions

Care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs. Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Keep away from children and animals. Reseal containers after use.

For further information please contact

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