

MasterLife® CI 30

(Formerly known as Rheocrete CNI)

Corrosion – inhibiting admixture

MATERIAL DESCRIPTION

MasterLife® CI 30 is a calcium nitride based corrosion-inhibiting admixture for steel reinforced concrete. **MasterLife® CI 30** contains minimum 30% active ingredients by mass and meets ASTM C494 interim requirements for type C, Accelerating Admixtures.

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

MasterLife® CI 30 delays corrosion by repassivating defects on the oxide / steel surface. These defects are ferrous oxide ions attack the ferrous ions, they combine to create a ferrous chloride complex (rust) and initiate pitting corrosion on the reinforcing steel. 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. Nitride ions contained in **MasterLife® CI 30** are effective in preventing ferrous chloride complex formation by reacting with defective ferrous oxide ions prior to chloride attack and reforming the passive layer. Nitride ions surround the defective ferrous oxide ion and convert it to a more stable ferric ion species less susceptible to corrosion. This oxidation reaction serves to repassivate the reinforcing steel and re-establish the barrier between the steel and chlorides that initiate corrosion.

RECOMMENDED FOR

MasterLife® CI 30 is recommended for steel reinforced concrete where longer service lives are desired and it is expected that the concrete will be exposed to environmental chlorides from de-icing salts or marine exposure.

MasterLife® CI 30 may also be used to offset the potentially corrosive effects of the chloride-bearing concrete-making ingredients, and in applications where the initial chloride ion content of the concrete may exceed code requirements or other specified chloride limits.

FEATURES AND BENEFITS

MasterLife® CI 30 is a corrosion inhibitor that provides basic corrosion protection for steel reinforced concrete structures.

Effective Corrosion protection against chlorides in

concrete Extends the service life of reinforced concrete structures.

TYPICAL PERFORMANCE DATA

MasterLife® CI 30 provides plastic and hardened concrete properties consistent with an ASTM C494 Class C admixture.

The extension in service life due to the product is a function of the product dosage, the chloride exposure level, structure design factors and the transport properties of the concrete. The following tables illustrate the effect of **MasterLife® CI 30** dosage and chloride exposure level:

MasterLife® CI 30 Dosage L/m ³	Chloride Protection Limit, kg/m ³	
	With chloride bearing materials	All other applications
5.0	1.2	--
10.0	2.4	3.6
15.0	3.6	5.9
20.0	4.8	7.7
25.0	6.0	8.9
30.0	7.2	9.5

Contact local Masters Builders Solutions representatives for additional guidance regarding specific applications, service life, and the use of corrosion protection.

Chemical Composition

MasterLife® CI 30 contains a minimum of 30% calcium nitride by mass as an active ingredient. MasterLife® CI 30 is identical in composition and mechanism to other commercially available 30% calcium nitride corrosion-inhibiting admixtures; and at equal dosage rates, provides similar performance and corrosion protection.

The water content of **MasterLife® CI 30** is approximately 0.875 kg/L. This water contributes to the consistency of the concrete mixture and the hydration of the cementitious materials. The water contributed by **MasterLife® CI 30** should be used in calculation of the water-cementitious material ratio of the concrete.

Non- Chloride

MasterLife® CI 30 will not initiate or promote corrosion of

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reinforcing steel embedded in concrete, prestressed concrete or concrete placed on galvanised steel floor and roof systems. Neither calcium chloride nor any chloride-based ingredients are used in the manufacture of **MasterLife® CI 30**.

PROPERTIES

Supply form	: Liquid
Colour	: Pale Yellow

Concrete Setting Time

Concrete setting times may be accelerated with the use of **MasterLife® CI 30**. If desired, a retarding or hydration control admixture may be added to the concrete mixture to offset the acceleration effects of **MasterLife® CI 30**. Please contact your local Masters Builders Solutions Representative for additional information on set-balancing admixtures for concrete.

Compatibility

MasterLife® CI 30 may be used with Portland cements and mineral admixtures approved under recognised international standards. It is compatible with other chemical admixtures, including water reducers, superplasticers, retarders and air entrainers. Chemicals admixtures should be added separately to the concrete to ensure desired results.

APPLICATION

MasterLife® CI 30 will effectively inhibit corrosion in all types of steel reinforced concrete including pre-cast/prestressed and post-tensioned applications.

MasterLife® CI 30 is recommended for use in parking garages, bridge decks, marine structures, slabs, floors, and other reinforced concrete applications requiring corrosion protection against chlorides from de-icing salts or marine exposure. **MasterLife® CI 30** will also inhibit the potentially corrosive effects of chloride-bearing concrete-making ingredients.

DOSAGE

MasterLife® CI 30 is recommended for use at a rate of 5.0 to 30.0 L/m³ of concrete, depending upon the severity of the corrosion environment and the anticipated chloride loading of the structure.

PACKAGING

MasterLife® CI 30 is available in 205L drums and bulk delivery.

SHELF LIFE

MasterLife® CI 30 can be stored at temperatures between 12 to 38°C. If **MasterLife® CI 30** freezes, it can be fully reconstituted by thawing and mechanical agitation. Do not use pressurized air or agitation.

PRECAUTIONS

Health: **MasterLife® CI 30** does not contain any hazardous substances requiring labeling.

It is safe for use with standard precautions followed in the construction industry, such as use of hand gloves, safety goggles, etc.

For detailed Health, Safety and Environmental Recommendations, please consult and follow all the instructions on the product Material Safety Data Sheet.

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MID#MasterLife CI 30 - 04.2021

STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this Master Builders Solutions publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

NOTE

Field service where provided does not constitute supervisory responsibility. Suggestions made by Master Builders Solutions either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not Master Builders Solutions, are responsible for carrying out procedures appropriate to a specific application.

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