



The Chemical Company

RHEOCRETE® CNI

Corrosion-inhibiting admixture for steel reinforced concrete

DESCRIPTION

RHEOCRETE CNI is a calcium nitrite based corrosion-inhibiting admixture for steel reinforced concrete. **RHEOCRETE CNI** admixture contains a minimum of 30% active ingredients by mass and meets ASTM C 494 interim requirements for Type C, Accelerating Admixtures.

FEATURES AND BENEFITS

RHEOCRETE CNI admixture is a corrosion inhibitor that provides basic corrosion protection for steel reinforced concrete structures.

It provides effective corrosion protection against chlorides in concrete.

It also extends the service life of reinforced concrete structures.

PROPERTIES

In the alkaline environment of concrete, a natural passive ferric oxide layer 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 and moisture, resulting in corrosion of the steel.

RHEOCRETE CNI admixture delays corrosion by re-passivating defects on the steel surface. These defects are ferrous oxide ions that are susceptible to chloride attack. When chloride 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.

Nitrite ions contained in **RHEOCRETE CNI** admixture are effective in preventing ferrous chloride complex formation by reacting with defective ferrous oxide ions prior to chloride attack and reforming the passive layer. Nitrite 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 re-passivate the reinforcing steel and re-establish the barrier between the steel and chlorides that initiate corrosion.

APPLICATION

RHEOCRETE CNI admixture will effectively inhibit corrosion in all types of steel reinforced concrete including precast/pre-stressed and post-tensioned applications. **RHEOCRETE CNI** admixture is recommended for use in parking garages, bridge decks, marine structures, slabs, floors and other reinforced concrete applications requiring corrosion protection against chlorides from deicing salts or marine exposure. **RHEOCRETE CNI** admixture will also inhibit the potentially corrosive effects of chloride-bearing concrete-making ingredients.

COMPATABILITY

RHEOCRETE CNI admixture may be used with Portland cements and mineral admixtures. It is compatible with other chemical admixtures, including water reducers, superplasticisers, retarders and air entrainers. Chemical admixtures should be added separately to the concrete to ensure desired results.

CONCRETE SETTING TIME

Concrete setting times may be accelerated with the use of **RHEOCRETE CNI** admixture. If desired, a retarding admixture such as **POZZOLITH 300Ri** or **POZZOLITH 122Ri**, may be added to the concrete to offset the acceleration effects of **RHEOCRETE CNI** admixture. Please contact your local BASF Construction Chemicals Technical Sales Representative for additional information on set-balancing admixtures for concrete.

DOSAGE

RHEOCRETE CNI is recommended for use at a rate of 10.0 to 30.0 L/m³ of concrete, depending upon the severity of the corrosion environment and the anticipated chloride loading of the structure. The dosage of **RHEOCRETE CNI** admixture for a given application may be selected from the table or computed by using the following expression:

Dosage (L/m³)

$$= 3.69 \times \frac{\text{Anticipated Chloride Loading (kg/m}^3\text{)}}{\text{Chloride-to-Nitrite Ratio}}$$

Chloride protection limits for **RHEOCRETE CNI** are as given in the dosage table. The chloride protection limits given are based on critical chloride-to-nitrite ratios that range from 1.20 to 1.50. Please contact your local BASF Construction Chemicals Technical Sales Representative for additional information regarding dosage rates of **RHEOCRETE CNI** for your application.

RHEOCRETE CNI Dosage L/m ³	Chloride Protection Limit, kg/m ³
10.0	3.6
15.0	5.9
20.0	7.7
25.0	8.9
30.0	9.5



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RHEOCRETE CNI may be used to offset the potentially corrosive effects of chloride-bearing concrete-making ingredients, and in applications where the initial chloride ion content of the concrete may exceed specified chloride limits. Contact your local BASF Construction Chemicals Technical Sales Representative for more details for this type of approach.

CHEMICAL COMPOSITION

RHEOCRETE CNI admixture contains a minimum of 30% calcium nitrite by mass as an active ingredient.

The water content of RHEOCRETE CNI admixture is approximately 70%. This water contributes to the consistency of the concrete mixture and the hydration of the cementitious materials. The water contributed by RHEOCRETE CNI should be used in the calculation of the water-to-cementitious material ratio of the concrete.

NON-CHLORIDE

RHEOCRETE CNI admixture will not initiate or promote corrosion of reinforcing steel embedded in concrete, pre-stressed 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 RHEOCRETE CNI.

PACKAGING

RHEOCRETE CNI admixture is available in bulk, 1000 litre pallecons, 195 litre drums or 20 litre pails.

PRECAUTIONS

RHEOCRETE CNI admixture can be stored at temperatures between -12 to 38°C. If RHEOCRETE CNI admixture freezes, it can be fully reconstituted by thawing and mechanical agitation. Do not use pressurised air for agitation

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STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this BASF 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 BASF either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not BASF, are responsible for carrying out procedures appropriate to a specific application.

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