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EUCON CIA



CALCIUM NITRITE BASED CORROSION INHIBITOR

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EUCON CIA is a Calcium Nitrite based admixture designed to inhibit the corrosion of steel reinforcement in concrete. This product contains a 30% Calcium Nitrite solution. When used at recommended dosage rates, this product introduces the proper, industry recognized amount of anodic inhibitor.

How Calcium Nitrite Works

Good quality concrete has a high pH environment that allows for the formation of a natural layer of iron oxide to form on reinforcing steel. This layer of iron oxide called the passivating layer (specifically ferric oxide) protects the reinforcing steel from rusting.

The protective ferric oxide layer around the reinforcing steel has microscopic defects of *ferrous oxide*. Chloride ions that reach the steel at these defect points initiate corrosion. As corrosion continues on the *ferrous oxide*, the ferric oxide is undermined by chloride ions and rust is produced.

Staining, cracking and spalling of concrete occurs due to the corrosion products (rust) formed.

Calcium Nitrite protects steel in concrete by keeping the chloride ions from reacting with the ferrous ions of ferric oxide defects.

PRIMARY APPLICATIONS

- Exterior steel reinforced concrete
- Structural and plain concrete
- Parking decks and exposed balconies

FEATURES / BENEFITS

- Calcium Nitrite based formula used for many years in the concrete industry
- Chemically inhibits the corrosion process
- Reduces the need for additional accelerating admixtures in cold weather
- Compatible with other commonly used Euclid Chemical admixtures
- Dosage rate is directly related to expected chloride concentration
- Increases protection for reinforcement in concrete

TECHNICAL INFORMATION

Typical Engineering Data

The following results were developed under laboratory conditions.

- pH..... 8.0 to 10.5
- Specific Gravity 1.30 ± .002
- Unit Weight 10.4 to 11.3 lb. /gal.
- Freezing point 0 °F (-18 °C)

Set Acceleration:

EUCON CIA will accelerate concrete setting times at all recommended dosages. To counteract this acceleration use a retarder such as EUCON RETARDER 75 or EUCON RETARDER 100.

Air Entrainment:

EUCON CIA may slightly reduce the entrained air content. It may be necessary to increase the dosage of the air-entraining admixture to compensate for this loss. AIR MIX 200 is an acceptable air entraining agent. EUCON CIA and the air-entraining admixture must be added separately to the concrete mix.

Slump:

EUCON CIA has little effect on the slump of concrete.

SPECIFICATIONS / COMPLIANCES

- ASTM Classification C-494 Type C
- AASHTO Classification M194 Type C
- Corps of Engineers Classification CRD C87 Type C

DIRECTIONS FOR USE

Mix Designs:

It is strongly recommended that optimum mix trials be made before the start of job site pours. This will allow the ready-mix concrete producer to determine the proper batching sequence and the required dosage of other admixtures needed to deliver the specified concrete mix to the job site.

EUCON CIA may be added with the concrete batch water. It should not be mixed with any other admixture prior to being introduced into the concrete mixer. Mix designs are supplied upon request.

Dosage Rate:

The Chloride to Nitrite ratio is important. The project specification will indicate or specify the amount of chloride ions protection necessary. The dosage rate of EUCON CIA is directly related to the level of chloride protection and can be chosen from Table 1.

When no specified chloride ion protection level is specified contact your local Euclid sales representative.

Table 1
EUCON CIA Dosage Rates vs Chloride Protection

<u>EUCON CIA gallons/ Cu. Yd.</u>	<u>Chloride lbs. / Cu. Yd.</u>
2.0	6.0
2.5	8.0
3.0	9.9
3.5	11.5
4.0	13.0
4.5	14.1
5.0	15.6
6.0	16.0

Set Acceleration:

EUCON CIA will accelerate concrete setting times at all recommended dosages. To counteract this acceleration use a retarder such as EUCON RETARDER 75 or EUCON RETARDER 100.

Table 2
Eucon CIA Dosage Rates vs Retarder 100 dosage

<u>Eucon CIA gallons/ Cu. Yd.</u>	<u>Retarder 100 @70°F</u> oz./cwt.
3.0 - 4.0	3 - 5
4.0 - 5.5	4 - 7
5.5 - 6.0	5 - 8

Mix Water Reduction:

It is necessary to adjust the mix water to account for the water in EUCON CIA, Subtract 7.0 lbs. or 0.85 gallons of water per gallon of EUCON CIA.

PACKAGING

EUCON CIA is packaged in bulk, 275 gal (1041 liter) totes, and 55 gal (208 liter) drums.

CLEAN-UP

Clean tools and equipment with water before concrete hardens.

Cement and Admixture Compatibility:

EUCON CIA is compatible with all types of portland cements, concrete and concrete containing pozzolans.

EUCON CIA can be used in concrete mixes with other admixtures including air entraining admixtures, water reducers, retarders, superplasticizer, microsilica, fly-ash and slags

Each admixture must be added separately to the concrete mix.

PRECAUTIONS / LIMITATIONS

- Store at temperatures above 0°F (-18°C), When EUCON CIA freezes, its corrosion inhibition is completely restored by thawing and thorough agitation.
- Do not dispense directly onto dry cement.
- Quality concrete is necessary to slow the ingress of chloride into the concrete. According to ACI 318, the "Building Codes Requirements for Reinforced Concrete" requires certain design constraints, such as maximum water to cement ratio and providing adequate cover over the reinforcing steel. All pertinent codes and guides should be consulted prior to final approval of mix design.
- Additional protection can be achieved by using high range water reducing admixtures (such as EUCON 37) to reduce the water to cement ratio. Also, the use of EUCON MSA, a silica fume admixture can be used to reduce concrete permeability.

Form Eucon CIA-7.99

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