

Impede® CNI

Corrosion Inhibiting Admixture for Concrete

PRODUCT INFORMATION

PACKAGING

Packaged in 55 gallon drums, 275 gallon totes, and in bulk.

SHELF LIFE

2 years in original unopened container.

STORAGE

Impede® CNI may freeze at temperatures below 6°F (-14°C). If frozen, **Impede® CNI** can be thawed and thoroughly agitated to completely restore its corrosion inhibiting capabilities.

SPECIFICATIONS/COMPLIANCES

ASTM C494 Type C
ASTM C1582
AASHTO M 194 Type C

DESCRIPTION

Impede® CNI is a ready to use aqueous solution of 30% calcium nitrite which chemically inhibits corrosion of steel embedded in concrete. **Impede® CNI** is recommended for corrosion protection of steel reinforced post tensioned strands and pre-stressed strands embedded in concrete which is exposed to chlorides. Typical applications include concrete structures built in cold climates where de-icing salts are used (such as bridge decks and parking structures), and marine environments (such as bridges, piers, docks, and sea walls).

PERFORMANCE BENEFITS

- Integral corrosion protection
- Extends service life of structures subjected to chlorides
- Increases early compressive/flexural strengths

DOSAGE RATES AND DIRECTIONS FOR USE

Impede® CNI is recommended for use at a dosage rate of 2.0 to 6.0 gallons/yd³ (10 to 30 L/m³) of concrete, dependent upon the degree of chloride exposure and level of corrosion protection desired. Refer to the project specifications to determine the chloride concentration and dosage rate of calcium nitrite required. The table below can be used as a guide for determining **Impede® CNI** dosage rates.

For best results, each admixture must be batched at separate intervals with the initial or final batch water, and should not come in direct contact with any other admixture until they are mixed in the concrete batch. Admixtures should not come in contact with any dry cementitious material.

Chloride Ion Offset:

Impede® CNI may be used to offset the corrosive effects of chloride ions found in concrete containing reinforced steel. Chloride ions can be found in almost all concrete materials. The American Concrete Institute has established levels of acceptable chloride ions in concrete based upon service conditions.

Impede® CNI Dosage Rates vs Chloride Protection	
Impede® CNI gal/yd ³	Chloride lbs/yd ³
2.0	6.0
2.5	8.0
3.0	9.9
3.5	11.5
4.0	13.0
4.5	14.0
5.0	15.0
5.5	15.5
6.0	16.0

ACI 318 – Building Code Requirements for Structural Concrete

Table 1

Type of Member	Maximum Water-Soluble Chloride Ion (Cl-) in Concrete (% by weight of cement)
Prestressed concrete	0.06
Reinforced concrete exposed to chloride in service	0.15
Reinforced concrete that will be dry or protected from moisture in service	1.00
Other reinforced concrete construction	0.30

**Table data as of 2018*

The next table contains the recommendation of ACI 318 “Building Code Requirement for Structural Concrete.”

Many concrete materials can contribute to levels of chloride ions in the concrete that may exceed ACI limits. **Impede® CNI** may be added to the concrete mix to counteract the detrimental effects of the chloride ions if necessary.

The availability of aggregates that can provide the desired chloride content may not be economically feasible due to geographic availability. The use of **Impede® CNI** may be an alternative to the replacement of materials.

To determine how much **Impede® CNI** to use, the concrete must first be tested for water-soluble chloride ion content. Once the chloride ion content is determined, the **Impede® CNI** dosage rate may be taken from the table below.

Table 2

Water Soluble Chloride Ion Content (lbs/yd ³)	Impede® CNI Dosage (gal/yd ³)
0.00 – 0.50	0.50
0.51 – 0.75	0.75
0.76 – 1.00	1.00
1.01 – 1.25	1.25
1.26 – 1.50	1.50
1.51 – 1.75	1.75
1.76 – 2.00	2.00

*Example: In regards to a concrete member where reinforced concrete is exposed to chloride in service. A concrete mix containing a total cementitious amount of 564 lbs. has a chloride content of 0.9 lbs. of chloride ions per cubic yard or 0.16% by weight of cement. According to table 1, this puts the mix outside of acceptable limits. Locating 0.9 lbs. of chloride per cubic yard on table 2, 1.0 gallon of **Impede® CNI** per cubic yard is recommended.*

TECHNICAL NOTES

Impede® CNI is compatible with Portland cements, Portland Limestone cements, blended cements, class C and F fly ash, slag cements, silica fume, calcium chloride, and fibers. **Impede® CNI** can be used in all white, colored, and architectural concrete.

PRECAUTIONS/LIMITATIONS

This product does not contain calcium chloride or chloride containing compounds, and any chloride ions present are in trace amounts resulting from municipal water used during the manufacturing process.

This product is compatible with most other admixtures when added to the mix separately. Always conduct trial batches, prior to job applications, to confirm compatibility and to verify mix results. Contact your technical sales representative before dosing outside of recommended ranges or for assistance with specialty applications.

In all cases, consult the safety data sheet prior to use.

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