

PREVENT ASR-LN

LITHIUM NITRATE ALKALI SILICA REACTIVITY MITIGATING ADMIXTURE FOR CONCRETE

DESCRIPTION:

Alkali Silica Reactivity (ASR) is a chemical reaction that can occur in concrete between the alkali in cement (Na_2Oe) and the silica in aggregates. The result of this reaction is a silica gel that readily absorbs water in the pore solution, expands and causes the concrete to crack. Admixtures with Lithium components are now recognized as the most effective choice in ASR mitigation and are included in the new American Association of State Highway and Transportation Officials (AASHTO) Guide Specifications on ASR and in a number of State Department of Transportation (DOT) specifications. **PREVENT ASR-LN** is a Lithium Nitrate liquid admixture for concrete that chemically mitigates ASR expansion and will increase a structure's service years.

PREVENT ASR-LN has a minimum of 30% Lithium Nitrate by mass and weighs approximately 10.0 lbs./gallon.

ADVANTAGES:

- Improved durability of concrete
- Extends the service life of concrete structures
- Provides effective ASR protection to the concrete from the presence of alkalis
- No adverse effects on plastic or hardened concrete properties
- The use of low-alkali cement is not required
- Can be used with approved pozzolans
- Lithium Nitrate has more than a fifty year history of testing and research on the successful effectiveness in controlling ASR in concrete and concrete structures.

COMPATIBILITY:

PREVENT ASR-LN is compatible with all types Portland cement, class C and F fly ash, silica fume, fibers, approved air entraining, water reducing, and super plasticizing admixtures. For best results, each admixture must be introduced separately into the concrete mix.

USES:

PREVENT ASR-LN mitigates ASR in all types of concrete and is used for:

- Warehouses
- Highways and bridges
- Airport runways
- Commercial structures
- Parking garages

TECHNICAL NOTE:

PREVENT ASR-LN does not contain calcium chloride or any chloride-based components. It will not promote or contribute to corrosion of reinforcing steel in concrete.

TRIAL MIX REQUIREMENT:

It is strongly recommended that trial mixes be run prior to construction. **PREVENT ASR-LN** dosages can be adjusted when used in combination with suitable pozzolans such as silica fume and some types of fly ash. This will allow the most effective dosage of **PREVENT ASR-LN** to be determined based on the effectiveness of the pozzolans, the reactivity of the aggregate and the overall design of the mix. Consult your local RussTech technical service representative for instructions on dosing and performing calculations.

DOSAGE RATE CALCULATION:

PREVENT ASR-LN dosage rates are determined based on the alkali content of the cement. The dosage calculation is as follows:

1. Consult with the cement producer to determine the total alkali content. This is typically expressed as "Na₂Oe" on the certificate of analysis. **Per ASTM C 150 this is expressed as (Na₂O + 0.685K₂O).**
2. Determine the amount of cement to be used in the mix design.
3. Divide the sodium equivalent by 100 to convert the percent (%) to a decimal.
4. **PREVENT ASR-LN** is dosed at .55 gallons for each pound of sodium equivalent.

EXAMPLE:

Cement manufacturer displays a value of .8% Na₂Oe on the certificate of analysis. The mix design has a cement content of 564 pounds per cubic yard. Divide .8% by 100 to get a decimal of .008. Multiply .008 x 564 to get a Sodium equivalent of 4.512 pounds per cubic yard. Multiply 4.512 x .55 gallons of PREVENT ASR-LN to get the dosage per yard of 2.48 gallons.

MIX WATER ADJUSTMENT:

A water adjustment must be made to allow for the water in the **PREVENT ASR-LN**. This will be necessary to maintain the specified water/cementitious ratio.

The water in the mix should be reduced by as much as the water added through the addition of **PREVENT ASR-LN**. The adjustment factor is 6.7 lbs (.8 gallons) of water for each gallon of **PREVENT ASR-LN** used. In the above example with a dose of 2.48 gallons of **PREVENT ASR-LN** per yard the mix water would be reduced by 2.48 x 6.7 pounds (.8 gallons) to equal 16.6 pounds (1.98 gallons) less water per cubic yard.

RECOMMENDATIONS:

It is recommended that a high-range water reducer such as **SUPERFLO 443**, **SUPERFLO 2000RM**, or **SUPERFLO 2000SCC** be incorporated to maintain a workable slump in low water/cementitious ratio concrete mixes.

STORAGE:

PREVENT ASR-LN may freeze at temperatures of 20 F (-7 C). Although freezing does not harm **PREVENT ASR-LN** precautions should be taken to protect it from freezing. If it should freeze, thaw and reconstitute with mechanical agitation. **Do Not Use Pressurized Air For Agitation.**

PACKAGING:

55-gallon drums, 275-gallon tote, and bulk delivery.

SHELF LIFE:

18 months

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