



# 1.25 XPERT ASR Resistant

## Admixture to Resist Alkali-Silica Reaction in Concrete

### PRODUCT DESCRIPTION

XPERT ASR RESISTENT is a lithium nitrate-based admixture used to control alkali-silica reaction (ASR) in high-alkali concrete, produced when using reactive aggregates.

### APPLICATIONS

Alkali-Silica Reaction (ASR) is a chemical reaction which occurs when the alkali hydroxides present in the pore solution of concrete react with certain forms of reactive silica present in the aggregates to form an alkali silica gel. This gel itself is harmless, but in presence of moisture it swells and generates tensile stresses in the concrete, eventually causing the concrete to crack. The main source of alkalis (sodium and potassium) in fresh concrete is Portland cement.

When lithium nitrate is added to the concrete in sufficient quantity, the alkali silica gel along with the sodium, potassium and calcium ions also contains lithium ions. This gel containing lithium ions does not have a tendency to swell and expand in the presence of moisture and hence prevents the concrete from cracking.

**Note:** Addition of XPERT ASR RESISTENT may cause a minor set acceleration and provide a small amount of water reduction.

**Application:** XPERT ASR RESISTENT can be used in concrete produced using aggregates which can potentially take part in alkali-silica reaction.

### ADVANTAGES

- Minimizes deleterious expansions in concrete due to ASR.
- Increases durability and life span of the concrete structure.
- Allows use of locally available aggregate.
- Compatible with appropriate pozzolans and other XPERT admixture
- Easy to use.

### STORAGE ANF SHELF LIFE

XPERT ASR RESISTENT should be stored at above 40o F (50 C).

Shelf life when stored in dry warehouse conditions between 50o F and 80o F (10oC – 27oC) is one year.

### HOW TO USE DOSAGE

The standard dosage of XPERT ASR RESISTENT depends on alkali content of the cement use add 0.55 gallons of XPERT ASR RESISTENT for every pound (4.6 liters of ASR RESISTENT for every kilo gram) of sodium equivalent supplied by the cement dosages should be determent by performance testing. To maintain the water to cement ratio, subtract 0.85 gallon of water for each gallon (0.85 liter of water for each liter) of XPERT ASR RESISTENT added.

### CHARACTERISTICS

CATEGORY	PARAMETERS
Appearance	Dark Brown Liquid
Chloride Content	Nil – 0.005%
Specific Gravity	1.2

### MIXING

XPERT ASR RESISTENT is added at the concrete plant. Measure required quantity manually or by automated dispenser. Add into water line at the batch plant or to the mixer at the end of the batching cycle.

**Combination with other Admixtures:** XPERT ASR RESISTENT works effectively as a single admixture or in combination with other admixtures in the XPERT system. When air entrained concrete is specified, XPERT recommends the use of XPERT air entraining admixtures. When used in combination with other admixtures, care must be taken to dispense each admixture.

### PACKAGING

XPERT ASR RESISTENT is available in 210 liters drums or 1000-liter tanks.

### SAMPLE CALCULATION

If the cement content of concrete is 520 lbs/cyd (308 kgs/m<sup>3</sup>) and the total content of the cement is 0.6%, the dosage of XPERT ASR RESISTENT is:

$$\text{Gal/yd}^3 = (520 \times 0.6 \times 0.55) / 100 = 1.72$$

$$\text{L/m}^3 = (308 \times 0.6 \times 4.63) / 100 = 8.56$$

Amount of Water to be reduced:

$$\text{Gal/yd}^3 = 0.85 \times 1.72 = 1.46$$

$$\text{Gal/yd}^3 = 0.85 \times 8.56 = 7.28$$