BUILDING TRUST

PRODUCT DATA SHEET

SikaControl® ASR

Admixture to Control Alkali-Silica Reaction in Concrete

PRODUCT DESCRIPTION

SikaControl® ASR is a lithium nitrate based admixture used to control alkali-silica reaction (ASR) in high-alkali concrete, produced when using reactive aggregates. SikaControl® ASR meets the requirements of ASTM C494, Type S admixture.

USES

What is ASR?
Alkali-Silica Reaction (ASR) is a chemical reaction which occurs when the alkali hydroxides present in the pore solution of the 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 SikaControl® ASR may cause a minor set acceleration and provide a small amount of water reduction.

Applications: SikaControl® ASR can be used in concrete produced using aggregates which can potentially take part in alkali-silica reaction.

CHARACTERISTICS / 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 Sika® admixtures
- Easy to use

PRODUCT INFORMATION

Packaging	SikaControl® ASR is available in 55 gallon drums (208 liters), 275 gallon totes (1040 liters) and bulk delivery.
Appearance / Color	Clear Water White to Yellow Solution
Shelf Life	Shelf life when stored in dry warehouse conditions between 50 °F and 80 °F (10–27 °C) is one year.

Storage Conditions	SikaControl® ASR should be stored at above 40 °F (5 °C).
Specific Gravity	Approx. 1.2

APPLICATION INFORMATION

Recommended Dosage	The standard dosage of SikaControl® ASR depends on the alkali content of the cement used. Add 0.55 gallon of SikaControl® ASR for every pound (4.63 liters of SikaControl® ASR for every kilogram) of sodium equivalent supplied by the cement (Actual dosages should be determined by performance testing). To maintain the same water to cement ratio, subtract 0.85 gallon of water for each gallon (0.85 liter of water for each liter) of SikaControl® ASR added. **Sample Calculation:** If the cement content of concrete is 520 lbs/cyd (308 kg/m³) and the total alkali content of the cement is 0.6%, the dosage of SikaControl® ASR is: Gal/yd³= 520 x 0.6 x 0.55 / 100 = 1.72 L/m³= 308 x 0.6 x 4.63 / 100 = 8.56 Amount of Water to be reduced: Gal/yd³= 0.85 x 1.72 = 1.46 L/m³= 0.85 x 8.56 = 7.28 **Note:** Some supplementary cementitious materials like silica fume, fly ash and slag when used in appropriate amounts have a tendency to mitigate ASR in concrete. When such materials are used in concrete, the dosage of SikaControl® ASR can be reduced. The dosage reduction is dependent on the composition of the pozzolan, reactivity of the aggregate and the overall mix design. It is recommended to conduct accelerated mortar bar testing as per CRD C-662 to determine the minimum dosage of SikaControl® ASR needed to minimize deleterious expansion to acceptable levels. Please consult local Sika representative for more information on dosage calculations. Assistance in specifications and mix optimization is also available through Sika.
Mixing	SikaControl® ASR is added at the concrete plant. Measure required quantity manually or by automated dispenser. Add into the water line at the batch plant or to the mixer at the end of the batching cycle. **Combination with other Admixtures:** SikaControl® ASR works effectively as a single admixture or in combination with other admixtures in the Sika System. When air entrained concrete is specified, Sika recommends the use of Sika air entraining admixtures. When used in combination with other admixtures, care must be taken to dispense each admixture separately into the concrete. Do not mix with dry cement.

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

LEGAL DISCLAIMER

- **KEEP CONTAINER TIGHTLY CLOSED**
- **KEEP OUT OF REACH OF CHILDREN**
- **NOT FOR INTERNAL CONSUMPTION**
- **FOR INDUSTRIAL USE ONLY**
- **FOR PROFESSIONAL USE ONLY**

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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