

Mapecrete ASR

Lithium-Based Chemical Admixture for Alkali-Silica Reactivity Concrete

FOR PROFESSIONAL USE ONLY

DESCRIPTION

Mapecrete® ASR is a ready-to-use, liquid, chemical admixture that can be added to concrete mixtures for mitigating the probability of creating alkali-silica reactivity (ASR) in concrete. Alkali-silica reactivity is a chemical reaction that occurs between the reactive silica in aggregates used to make concrete and the alkalis (sodium or potassium) present in the concrete mix. The reaction causes the formation of a gel that absorbs water and swells, exerting stresses that can lead to cracking and premature deterioration of the concrete. The deterioration weakens the matrix, enabling the concrete to be further damaged by traffic loading, vibrations and environmental stresses such as freeze/thaw cycles or steel corrosion.

FEATURES AND BENEFITS

- Proven chemistry to reduce effects of alkali silica reaction
- Reduces expansion and cracking in concrete caused by alkali silica reaction
- Reduces aggregate popouts caused by alkali silica reaction
- Compatible with all MAPEI chemical admixtures
- No adverse effects on plastic or hardened properties of concrete
- Ready to use

WHERE TO USE

Mapecrete ASR should be used in concrete where reactive aggregates are suspected or have shown a possibility to generate alkali silica reactivity. Lithium has been utilized since the 1950s to minimize the potential of reactive aggregates to form alkali silica reaction. Areas of application include:

- Slabs on grade.
- Precast structural elements.
- Bridges and pavements.

- Runways.
- Parking garages.
- Areas where reactive aggregates are regionally suspected.

DOSAGE RATES

Mapecrete ASR is dosed at 0.55 gal. per cu. yd. (4.6 L per m³) for each pound (kg) of sodium equivalent (Na₂Oe) or “total alkali content”. Calculate the dosage of *Mapecrete ASR* as follows:

1. Determine amount of cement per yd³ or m³.
2. Locate the “total alkali content” or calculate the sodium equivalent as follows:

$$\text{a. Na}_2\text{Oe} = \% \text{ Na}_2\text{O} + 0.658 \times \% \text{ K}_2\text{O}$$

3. Convert the sodium equivalent to a decimal.
4. The required dosage of *Mapecrete ASR* will be as follows:

$$\text{a. U.S. gals. per cu. yd.} = (\text{Cement weight, pounds}) \times (\text{Na}_2\text{Oe} \%) \times (0.55)$$

$$\text{b. L per m}^3 = (\text{Cement weight, kg}) \times (\text{Na}_2\text{Oe} \%) \times (4.6)$$

For example:

1. 585 lbs. per cu. yd. or 347 kg per m³ of cement
2. 0.6% total alkali content
3. $0.6/100 = 0.006$
4. The required dosage of *Mapecrete ASR* would be as follows:
 - a. U.S. gals. per cu. yd. = $(585) \times (0.006) \times (0.55) = 1.93$ gals. per cu. yd.
 - b. L per m³ = $(347) \times (0.006) \times (4.6) = 9.58$ L per m³

WATER CONTENT

For every gallon or Liter of *Mapecrete ASR* used, reduce the mix water by 0.7 U.S. gal. (2.65 L) to achieve the designed water-cement ratio.

SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCM)

When materials such as silica fume, Class C or F fly ash, or slag are utilized in concrete mixtures along with *Mapecrete ASR*, it may allow for a lower dosage to be used per cu. yd. (m³). To establish the appropriate lower dosage of *Mapecrete ASR*, perform proper ASTM testing on that mix design to establish the effect of the SCM. Additional testing should also be done when chemical admixtures containing sodium salts are utilized in the mix. Contact your local MAPEI sales representative for more information.

COMPATIBILITY WITH OTHER PRODUCTS

Mapecrete ASR is compatible for use with all chemical admixtures manufactured by MAPEI. This includes but is not limited to:

- Mid- and high-range water reducers from the MAPEI line.
- Water reducers.
- Non-chloride accelerators.
- Retarders and slump extenders.
- Viscosity-modifying admixtures.
- All types of Portland cements, including low-alkali cements

MAPEI's Technical Services Department is available to evaluate which admixture or admixture packages are most suitable for any specific need. Contact MAPEI's Technical Services Department for further advice.

PACKAGING

Mapecrete ASR is available by bulk delivery, in 5-U.S.-gal. (18.9-L) buckets, 55-U.S.-gal. (208-L) drums and 275-U.S.-gal. (1 040-L) totes.

STORAGE

Mapecrete ASR can be stored for 1 year in sealed containers. Protect from freezing.

Technical Data

Consistency	Liquid
Solids content	30%
Color	Clear
Density	10.09 lbs. per U.S. gal. (1.210 kg per L)
Primary function	Alkali silica reaction admixture
Corrosivity	Non-corrosive. <i>Mapecrete ASR</i> does not contain calcium chloride or other chloride-based components. Its use will not contribute to the increased corrosion of reinforcing steel in concrete.

ADDITIONAL INFORMATION

Refer to the Safety Data Sheet (SDS) for specific data related to health and safety as well as product handling.

For information on MAPEI's commitment to sustainability and transparency, as well as how MAPEI products may contribute to green building standards and certification systems, contact sustainability_USA@mapei.com (USA).

WARNING

The test results shown in the TECHNICAL DATA table were obtained in compliance with test methods and curing cycles, if applicable, defined in the industry standards referenced on the Technical Data Sheet. Please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement nor replace requirements per the TDS in effect at the time of the MAPEI product installation. For the most up-to-date TDS and warranty information, please visit our website at www.mapei.com. **ANY ALTERATIONS TO THE WORDING OR REQUIREMENTS CONTAINED IN OR DERIVED FROM THIS TDS SHALL VOID ALL RELATED MAPEI WARRANTIES.**

Before using, the user must determine the suitability of our products for the intended use, and the user alone assumes all risks and liability. **ANY CLAIM SHALL BE DEEMED WAIVED UNLESS MADE IN WRITING TO US WITHIN FIFTEEN (15) DAYS FROM DATE IT WAS, OR REASONABLY SHOULD HAVE BEEN, DISCOVERED.**

CONTACT INFORMATION

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For the most current product data and BEST-BACKEDSM warranty information,
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