

## PRODUCT DATA SHEET

# Sika® ViscoCrete® ACE 8421

High early strength, high range water reducing/superplasticising, admixture for precast concrete

### DESCRIPTION

Sika® ViscoCrete® ACE 8421 is an admixture of a new generation based on second-generation polycarboxylic ether polymer with high early strength gains. Sika® ViscoCrete® ACE 8421 is free of chloride & low alkali. It is compatible with all types of cements.

### USES

- Sika® ViscoCrete® ACE 8421 is suitable for making precast concrete elements at all workability's including Rheoplastic or Super workable concrete having fluid consistence, no segregation, a low water binder ratio and, consequently high early and long term strengths
- Sika® ViscoCrete® ACE 8421 may be used in combination with Sika Stabilizer for producing Rheodynamic concrete, capable of self-compaction, even in the presence of dense reinforcement without the aid of vibration, for making precast elements.
- As a component of Zero Energy System™
- Concreting in cold weather

### CHARACTERISTICS / ADVANTAGES

- Achieve high early strengths
- Produces Rheoplastic and Rheodynamic concretes having a low water cement ratio
- Optimise curing cycles by reducing curing time or curing temperatures
- Eliminate/minimize heat curing
- Eliminate the energy required for placing, compacting & curing (Zero Energy System™)
- Increase productivity/ reduction in cycle time
- Improve surface appearance
- Produce durable precast concrete elements
- Improved engineering properties, compared to traditional superplasticiser such as early and ultimate compressive and flexural strengths, reduced shrinkage and low permeability.
- It does not contain chlorides or other ingredients

promoting corrosion of steel reinforcement. It is therefore suitable for reinforced concrete.

#### Chemistry and mechanism of action

Sika® ViscoCrete® ACE 8421 has a different chemical structure from the traditional PCE polymer based superplasticisers. The base PCE molecule used to formulate Sika® ViscoCrete® ACE 8421 was custom made using nano-technology to enable effective dispersion with minimum hindrance to hydration process. It consists of a carboxylic ether polymer with long side chains and short main chains. At the beginning of the mixing process it initiates the same electrostatic dispersion mechanism as the traditional hyperplasticisers, but the short main chains facilitate quick start of hydration process. Rapid absorption of the molecule onto the cement particles, combined with an efficient dispersion effect maintains workability yet exposes increased surface of the cement grains to react with water. As a result of this effect, it is possible to obtain earlier development of the heat of hydration, rapid strength development of the hydration products and as a consequence, higher strengths at a very early age.

#### ZERO ENERGY SYSTEM:

Zero Energy System is based on a combination of the avant-garde admixture Sika® ViscoCrete® ACE 8421 and the innovative technology of Rheodynamic concrete. The Zero Energy System has been developed to help the precast concrete producer to rationalize his production process and save on energy costs combined with improved quality of the product and the working conditions.

### APPROVALS / STANDARDS

IS 9103, ASTM C494 Type F

#### Product Data Sheet

Sika® ViscoCrete® ACE 8421

March 2024, Version 01.01

021301011000005245

## PRODUCT INFORMATION

Chemical base	Polycarboxylate Ether
Packaging	245kg drum and bulk supply
Shelf life	12 months from date of production if stored properly in undamaged unopened, original sealed packaging.
Storage conditions	Store in dry conditions at temperatures between +10°C and +40°C. Protect from direct sunlight and frost.
Appearance / Colour	Light to dark reddish brown liquid
Density	~1.08 @25°C
pH-value	≥ 6

## APPLICATION INFORMATION

### Recommended Dosage

Optimum dosage of Sika® ViscoCrete® ACE 8421 should be determined in trial mixes. As a guide, a dosage range of 300 ml to 1800ml per 100kg of cementitious material is normally recommended. Because of variations in concrete materials, job site conditions, and/or applications, dosages outside of the recommended range may be required. In such cases, contact your local Sika representative.

#### Effects of over dosage

A severe over-dosage of Sika® ViscoCrete® ACE 8421 can result in the following:

- Air entrainment
- Bleed/segregation of mix
- Increased plastic shrinkage

A slight overdosing may not adversely affect the ultimate strength of the concrete and can achieve higher strengths than normal concrete, provided it is properly compacted and cured. Due allowance should be made for the effect of fluid concrete pressure on form work, and stripping times should be monitored.

In the event of over dosage consult your local Sika representative immediately.

### Dispensing

Sika® ViscoCrete® ACE 8421 is a ready-to-use liquid which is dispensed into the concrete together with the mixing water. The plasticising effect and water reduction are higher if the admixture is added to the damp concrete after 50 to 70% of the mixing water has been added. The addition of Sika® ViscoCrete® ACE 8421 to dry aggregate or cement is not recommended. Thorough mixing is essential and a minimum mixing cycle, after the addition of the Sika® ViscoCrete® ACE 8421, of 60 seconds for forced action mixers is recommended.

### Compatibility

Sika® ViscoCrete® ACE 8421 is compatible with most of the Sika products. Use Sika Stabilizer as viscosity modifying agent in self compacting concrete. It must not be used in conjunction with any other admixture unless prior approval is received from Sika Technical Services Department.

## BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## IMPORTANT CONSIDERATIONS

Sika® ViscoCrete® ACE 8421 ensures that rheoplastic concrete remains workable for a long time. Workabil-

ity loss is dependent on temperature, and on the type of cement, the nature of aggregates, the method of transport and initial workability. It is strongly recommended that concrete should be properly cured particularly in hot, windy and dry climates.

To achieve longer workability period please use Sika Plastiment as retarder. It is strongly recommended that concrete should be properly cured particularly in hot, windy and dry climates.

## ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

## MAINTENANCE

### CLEANING

Clean all tools and application equipment with water immediately after use.

## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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SikaViscoCreteACE8421-en-IN-(03-2024)-1-1.pdf