

## PRODUCT DATA SHEET

# Sika® ViscoCrete® ACE 456

(formerly MasterGlenium® ACE 456)

### WATER REDUCING AND RETARDING SUPERPLASTICIZING ADMIXTURE FOR PRECAST CONCRETE

#### DESCRIPTION

Sika® ViscoCrete® ACE 456 consists of a range of innovative superplasticizers based on newly developed polycarboxylate ether polymers. The particular molecular configuration of Sika® ViscoCrete® ACE 456 accelerates the cement hydration by exposing increased surface of the cement grains to react with water. As a result, it is possible to obtain earlier development of the heat of hydration, rapid development of the hydration products and, as a consequence, higher strengths at very early age.

The polymer structure of Sika® ViscoCrete® ACE 456 is specially designed to improve the rheology of precast concrete, making it very flowable and low viscous even at very low water/cement ratios, without increasing stickiness. Robustness is a distinctive feature of the precast concrete produced with Sika® ViscoCrete® ACE 456.

Suitable for use in hot and tropical climatic conditions.

#### USES

- Precast concrete structures in general
- Precast concrete tunnel segments
- Pre-stressed concrete elements
- Post-tensioned concrete bridge segments
- Fiber Reinforced Concrete (FRC) containing steel, synthetic and or polypropylene fibers
- Low w/b ratio concrete requiring high workability, slump retention and high early strength development
- Self compacting concrete

#### PRODUCT INFORMATION

<b>Composition</b>	Aqueous solution of modified polycarboxylates, co-polymers
<b>Packaging</b>	Drum, 1000 L flowbin or bulk supply in tanker
<b>Shelf life</b>	12 months from date of production if stored properly

#### FEATURES

Sika® ViscoCrete® ACE 456 offer the following benefits for the precast concrete industry:

- Production of highly flowable, robust self-compacting concrete having a low water cement ratio.
- Enhanced robustness and consistency in concrete quality with low stickiness.
- Elimination of heat curing.
- Improved surface appearance.
- Durable precast concrete elements as per EN 206-1.
- Optimization of the curing cycles by reducing curing time or curing temperature.
- Increased productivity.
- Sika® ViscoCrete® ACE 456 may be used in combination with Sika® Stabilizer. The technology produces advanced self-compacting concrete, without the aid of vibration. For economic, ecological and ergonomic ready-mix concrete production.

#### CERTIFICATES AND TEST REPORTS

Sika® ViscoCrete® ACE 456 follows the requirements of ASTM C494; Type F and EN 934-2

<b>Storage conditions</b>	Store in undamaged, unopened, original sealed packaging in dry conditions at temperatures between +5°C and +50°C. Mix well before using.
<b>Appearance and colour</b>	Clear to light brown liquid
<b>Density</b>	~1.06 kg/l (+25°C)
<b>Total chloride ion content</b>	Nil (EN 934-2)

## TECHNICAL INFORMATION

<b>Concreting guidance</b>	The standard rules of good concreting practice for production and placing must be observed when using Sika® ViscoCrete® ACE 456 in concrete. Refer to relevant standards. Fresh concrete must be cured properly especially at high temperatures in order to prevent plastic and drying shrinkage. Use Sika® Antisol® products as a curing agent or apply wet hessian.
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## APPLICATION INFORMATION

<b>Recommended dosage</b>	0.3 - 2.0 % by weight of binder Other dosages by weight of binder can be used depending on the mix design, raw materials, climatic conditions and concrete requirements. Trial mixes must be performed to establish the exact dosage rate required.
<b>Dispensing</b>	Sika® ViscoCrete® ACE 456 is a liquid admixture to be added to the concrete during the mixing process. The best results are obtained when the admixture is added to the mixing water that is used for the concrete mix after all the other components are already in the mixer and after the addition of at least 80% of the total water. The water content is adjusted to obtain the desired consistence or workability. Optimal water reduction is obtained if the Sika® ViscoCrete® ACE 456 is poured into the concrete mix right after the addition of the initial 80-90% of mixing water. Avoid adding the admixture to the dry aggregates. After adding Sika® ViscoCrete® ACE 456 admixture provide enough mixing time to secure a homogenous dispersion. Continue mixing and adjust the water content to obtain the required workability.
<b>Compatibility</b>	Sika® ViscoCrete® ACE 456 is suitable for mixes containing all types of cement and supplementary cementitious materials such as: Microsilica (Silica Fume), Fly Ash (PFA), GGBS (Ground Granulated Blast Furnace Slag) and the following Sika® products: <ul style="list-style-type: none"> <li>▪ SikaPump®</li> <li>▪ Sika® FerroGard®</li> <li>▪ SikaFume®</li> <li>▪ SikaFiber®</li> <li>▪ Sika® Aer</li> <li>▪ Sika® Stabilizer</li> <li>▪ SikaControl®</li> </ul> We recommend to perform trial mixes to establish the required performance when combining Sika® ViscoCrete® ACE 456 with the above products or other admixtures. Please consult our Sika Technical Department.

## BASIS OF PRODUCT DATA

- All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.
- Internal Reference - Version: MBS\_CC-UAE/GI\_ACE456\_11\_08/v1/03\_14/v2/05\_19

## IMPORTANT CONSIDERATIONS

- When using Sika® ViscoCrete® ACE 456 a mix design must be selected for the local material sources used and trial mixes performed to verify suitability.
- If frozen and/or if precipitation has occurred, it may only be used after thawing slowly at room temperature and intensive mixing.
- Sika® ViscoCrete® ACE 456 should not be added to dry cement.

- Due to the extended workability take special care that formwork is properly installed and secured.
- In case the setting time of concrete is extended, if cured properly, other properties may not be affected and higher ultimate strength may be achieved.
- Sika® ViscoCrete® products are not compatible with admixtures based on sulfonated naphthalene or melamine.

## ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

## 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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ISO 9001, 14001, 45001 – SGS  
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 ISO 9001, 14001 – SGS  
 -Sika Saudi Arabia Limited  
 ISO 9001, 14001 – TÜV  
 -Sika MB Construction Chemicals LLC  
 -Master Builders Solutions LLC

All products are supplied under a management system certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and ISO 45001.



### Product Data Sheet

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