

PRODUCT DATA SHEET

Sika® ViscoCrete® ACE 457

Essential component of ZERO ENERGY SYSTEM – A new generation of high-performance polycarboxylate ether (PCE) superplasticizers for the Precast industry.

DESCRIPTION

Sika® ViscoCrete® ACE 457 (Admixture Controlled Energy) consists of a range of innovative superplasticizers based on newly developed polycarboxylate ether polymers. The particular molecular configuration of Sika® ViscoCrete® ACE 457 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 457 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 457.

ZERO ENERGY SYSTEM:

the Zero Energy System is based on a combination of latest Sika® ViscoCrete® ACE 457 superplasticizers and advanced self-compacting concrete technology. 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.

USES

The polymer structure of Sika® ViscoCrete® ACE 457 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 457.
- ZERO ENERGY SYSTEM: the Zero Energy System is based on a combination of latest Sika® ViscoCrete® ACE 457 superplasticizers and advanced self-com-

pacting concrete technology. 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.

FEATURES

Sika® ViscoCrete® ACE 457 offers the following benefits for the precast concrete industry:

- Production of highly flowable, robust self-compacting concrete having a low water cement ratio along with an optimal rheology.
- Enhanced robustness and consistency in concrete quality with low stickiness.
- Environmentally friendly, CO2 reduced mix- design optimization.
- Elimination of heat curing.
- Improved surface appearance.
- Durable precast concrete elements as per EN 206-1.
- Elimination of the energy required for placing, compaction and curing (ZERO ENERGY).
- Optimization of the curing cycles by reducing curing time or curing temperature.
- Increased productivity.

CERTIFICATES AND TEST REPORTS

Sika® ViscoCrete® ACE 457 meets the requirements of EN EN934-2 and ASTM C494 Type A, E & F.

PRODUCT INFORMATION

Packaging	available in bulk, containers, drums or cans.
Appearance and colour	liquid - Brown colored
Shelf life	If stored in unopened containers according to manufacturer's instructions, the shelf life is 12 months.
Storage conditions	Sika® ViscoCrete® ACE 457 must be stored in a place where the temperature does not drop below 5°C. In case of freezing, warm up and homogenise the admixture solution before using.
Total chloride ion content	<0.01%
Specific gravity	1.12 – 1.13

APPLICATION INFORMATION

Recommended dosage	The recommended dosage rate is 0.3 to 2.0 liters per 100 kg of the binder. Other dosages may be used in special cases according to specific production conditions. In this case please consult our Technical Services Department.
Compatibility	Sika® ViscoCrete® ACE 457 is compatible and recommended for use with: ▪ Sika Aer, entraining admixture. ▪ Sika Form Oil, demoulding agent for easy formwork removal and improved finish. ▪ Sika Antisol, curing compound for highly efficient water retention and friendly use.

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.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

Sika® ViscoCrete® ACE 457 is suitable for making precast concrete elements with highly-fluid concrete without segregation but low water cement ratio and, consequently, high early and final strengths. Sika® ViscoCrete® ACE 457 may be used in combination with RheoMATRIX for producing advanced self-compacting concrete like Smart Dynamic Concrete (SDC, latest V- type SCC), without the aid of vibration, for economic, ecological and ergonomic precast production.

MIXING

Sika® ViscoCrete® ACE 457 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 457 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 457 admixture provide enough mixing time to secure a homogenous dispersion.

Continue mixing and adjust the water content to obtain the required workability.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

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

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