

GLENIUM[®] ACE 456

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

Description and field of application

GLENIUM ACE (Admixture Controlled Energy) 456 consists of a range of innovative superplasticizers based on newly developed polycarboxylate ether polymers. The particular molecular configuration of GLENIUM 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 GLENIUM 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 GLENIUM ACE 456.

ZERO ENERGY SYSTEM:

Zero Energy System is based on a combination of the latest GLENIUM ACE 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.

Fields of Application

GLENIUM ACE 456 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. GLENIUM ACE 456 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.

Features & Benefits

GLENIUM 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 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.

Packaging

GLENIUM ACE 456 is available in bulk, containers, drums or cans.

Standards

GLENIUM ACE 456 meets the requirements of EN EN934-2 and ASTM C494 Type A, E & F.

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*Technical Data/Typical Properties

Appearance and Form	Whitish to light Brownish liquid
Specific gravity @ 25°C	1.060 typical
pH-value @ 25°C	4-7
Chloride ion content ≤	≤0.01%
Alkali content (Na ₂ O equivalent %)	< 3%

Directions for use

GLENIUM 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 GLENIUM 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 GLENIUM ACE 456 admixture provide enough mixing time to secure a homogenous dispersion. Continue mixing and adjust the water content to obtain the required workability.

Dosage rate

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

GLENIUM ACE 456 is compatible and recommended for use with:

- RheoMATRIX to modify the viscosity of SCC.
- MICRO-AIR, air entraining admixture, to improve freeze-thaw resistance (exposure class XF1 to XF4, EN 206-1)
- RHEOFINISH, demoulding agent for easy formwork removal and improved finish.
- MASTERKURE, curing compound for highly efficient water retention and friendly use.

GLENIUM ACE 456 is **not compatible** with all admixtures of RHEOBUILD series.

Storage

GLENIUM ACE 456 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. If stored in unopened containers according to manufacturer's instructions, the shelf life is 12 months.

The occurrence of a surface layer with GLENIUM ACE 456 is normal and will have no effect on the performance of the product.

Handling & Storage

No special requirements must be observed while the product is used. Protection gloves and glasses are recommended. Do not eat, drink or smoke during the application. GLENIUM ACE 456 is not-flammable, non-toxic or irritant and are not subject to special transport requirements.

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Note

Field service, where provided, does not constitute supervisory responsibility. For additional information contact your local BASF representative.

BASF reserves the right to have the true cause of any difficulty determined by accepted test methods.

Quality and care

All products originating from BASF's Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and OHSAS 18001.

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* Properties listed are based on laboratory controlled tests.

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