

# MasterGlenium<sup>®</sup> ACE 8447

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

## DESCRIPTION

**MasterGlenium ACE 8447** is an admixture of a new generation based on second-generation polycarboxylic ether polymer with high early strength gains. **MasterGlenium ACE 8447** is free of chloride & low alkali. It is compatible with all types of cements.

## RECOMMENDED USES

- **MasterGlenium ACE 8447** 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
- **MasterGlenium ACE 8447** may be used in combination with MasterMatrix 2 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

## FEATURES AND BENEFITS

- 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.

## Chemistry and mechanism of action

**MasterGlenium ACE 8447** has a different chemical structure from the traditional PCE polymer based superplasticisers. The base PCE molecule used to formulate **MasterGlenium ACE 8447** 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 **MasterGlenium ACE 8447** 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.

## PERFORMANCE TEST DATA

Aspect	: Reddish brown liquid
Relative Density	: 1.08 ± 0.02 at 25°C
pH	: ≥ 6
Chloride ion content	: < 0.2%

## TEST CERTIFICATION/APPROVALS

- ASTM C494 Type F
- IS 9103

## DOSAGE

Optimum dosage of **MasterGlenium ACE 8447** 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 Master Builders Solutions representative.

## Effects of over dosage

A severe over-dosage of **MasterGlenium ACE 8447** can result in the following:

- Air entrainment
- Bleed/segregation of mix

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- 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 Master Builders Solutions representative immediately.

### APPLICATION

**MasterGlenium ACE 8447** 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 **MasterGlenium ACE 8447** to dry aggregate or cement is not recommended.

Thorough mixing is essential and a minimum mixing cycle, after the addition of the **MasterGlenium ACE 8447**, of 60 seconds for forced action mixers is recommended.

### SUGGESTED SPECIFICATION

The hyperplasticiser shall be **MasterGlenium ACE 8447**, high range water reducing, high early strength gain type, Superplasticiser based on polycarboxylic ether formulation. The product shall have specific gravity of 1.08. The product shall comply with ASTM C494 Type F and shall be free of lignosulphonates, naphthalene salts and melamine formaldehyde when subjected to IR Spectra.

### COMPATIBILITY

**MasterGlenium ACE 8447** is compatible with most of the products under the MasterPozzolith & MasterSet series including MasterSet RT 55. Use MasterMatrix 102 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 Master Builders Solutions Technical Services Department.

### CORROSIVITY – NON CORROSIVE

**MasterGlenium ACE 8447** admixture will neither initiate nor promote corrosion of reinforcing steel embedded in concrete, prestressed concrete or concrete placed on galvanized steel floor and roof systems. Neither calcium chloride nor any calcium chloride-based ingredients are used in the

manufacture of **MasterGlenium ACE 8447** admixture. In all concrete application, **MasterGlenium ACE 8447** admixture will conform to the most stringent or minimum chloride ion limits currently suggested by construction industry standards and practices.

### WORKABILITY

**MasterGlenium ACE 8447** ensures that rheoplastic concrete remains workable for a long time. Workability 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 MasterSet RT 55 as retarder. It is strongly recommended that concrete should be properly cured particularly in hot, windy and dry climates.

### PACKAGING

**MasterGlenium ACE 8447** is supplied in 245 kg drums or in bulk on request.

### STORAGE /SHELF LIFE

**MasterGlenium ACE 8447** must be stored where temperatures do not drop below +5°C. If product has frozen, thaw at +5°C or above and completely reconstitute using mild mechanical agitation. Do not use pressurized air for agitation. Store under cover, out of direct sunlight and protect from extremes of temperature.

Shelf life is 12 months when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult your local Master Builders Solutions representative.

### PRECAUTIONS

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs (which can also be tainted with vapour until product fully cured or dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Keep away from children and animals. Reseal containers after use. Do not reuse containers for storage of consumable item. For further information refer to the material safety data sheet.

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