

GLENIUM[®] C 316

New generation high range water reducing admixture primarily developed for concrete industry where slump retention, high strength and durability are required in hot climate

DESCRIPTION

GLENIUM C 316 is a new generation high range water reducing admixture, based on chains of modified polycarboxylic ether, primarily developed for concrete industry where slump retention, high strength and durability are required in hot climate.

The ability to work with very low water/cement ratio and still obtain extended slump retention allows for the manufacture of high quality concrete as the risk of addition of mixing.

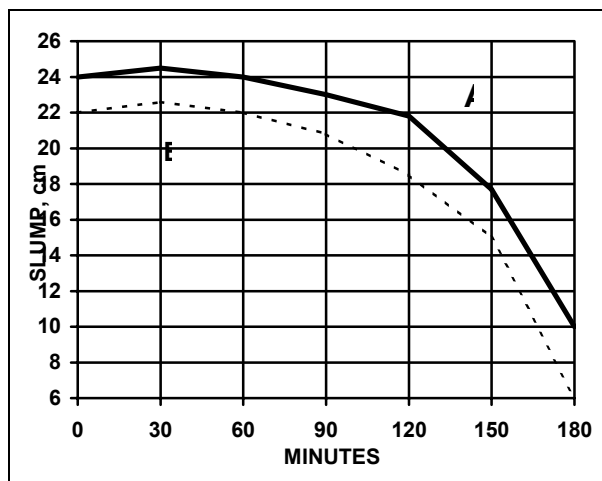


Figure 1 :
Typical slump retention. Concrete manufactured with **GLENIUM C 316** according to:

- water/cement ratio = 0.38; 500 kg/m³ CEM
Dosage : 1.0 lt/100 kg; SCC
- water/cement ratio = 0.30; 500 kg/m³ CEM
Dosage : 1.0 lt/100 kg; SCC

GLENIUM C 316 is free of chloride, is designed to meet ASTM C 494 requirements for Type A and Type F and it is also compatible with all cements meeting the ASTM standards.

The new chemistry of GLENIUM C 316

What differentiates from the traditional high range water reducing with good workability is a new, unique mechanism of action that greatly improves the effectiveness of cement dispersion.

Traditional high range water reducing like melamine and naphthalene sulphonates are based on polymers which are absorbed by the cement granules. They wrap around the granules surface areas at the very early stage of the

concrete mixing process. The sulphonic groups of the polymer chains increase the negative charge of the cement particle surface and disperse these particles by electrical repulsion.

This electrostatic mechanism causes the cement paste to disperse and has the positive consequence of requiring less mixing water to obtain a given concrete workability. Hydration however starts as soon as the cement particles get in contact with mixing water. The rapid growth of hydration crystals will change the surface mechanical of the particles and thus of set the free dispersion of them. **GLENIUM C 316** has a different chemical structure from the traditional high range water reducing. It consists of a carboxylic ether polymer with long side chains. At the beginning of the mixing process it initiates the same electrostatic dispersion mechanism as the traditional high range water reducing, but the side chains linked to the polymer backbone generate a steric hindrance which greatly stabilises the cement particles ability to separate and disperse. With this process, flowable concrete with greatly reduced water content is obtained. The alkalinity created by the cement paste allows the polymers of **GLENIUM C 316** to "open up and progressively release" many additional polymers chains that will prevent the early flocculation or stiffening of the mix.

The mechanism allows to obtain, compared to traditional retarding high water reducing admixtures, considerably longer workability, reduction of mixing water content and higher early strengths.

Compatibility

In order to optimize special requirements the use of the following complementary additives is suggested :

- air entraining agent MICRO AIR[®] to improve frost/thaw resistance;
- silica fume for high performance concrete (HPC) and improve durability in chemical aggressive environments;
- expanding agent RHEOMAC, for shrinkage compensating concrete;
- synthetic fibres RICEM to prevent cracks due to plastic shrinkage;
- curing agent MASTERKURE against too quick evaporation of mixing water.

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FIELDS OF APPLICATION

GLENIUM C 316 is especially suitable for concrete used in the construction of precast elements which requires good workability and high early and final strengths, such as:

- Production of load bearing precast elements (e.g. bridge girders, piles, concrete housing)
- Self compacting concrete for precast concrete
- Low slump concrete
- Structures constructed using travelling forms and slip forms
- Hot weather concreting
- Insitu casting of structural elements

FEATURES AND BENEFITS

- Rheoplastic concrete with the lowest water/cement ratio;
- no segregation or bleeding;
- low vibration time required even in case of high reinforced concrete;
- excellent surface appearance;
- compared to traditional superplasticisers, the addition of **GLENIUM C 316** reduces risks of retempering concrete on job site with additional water and improves the engineering properties of concrete like early and ultimate strengths, modulus of elasticity; bond strength to steel, depths of carbonation, impermeability, resistance to chemical aggressive agents, shrinkage and creep.

APPLICATION

GLENIUM C 316 is a ready-to-use admixture to be added to the concrete mix as a separate component. Optimal mixing water reduction is obtained if **GLENIUM C 316** is poured into the concrete mix right after the addition of the mixing water.

- Avoid adding the admixture to the dry aggregates.

DOSAGE

The normally recommended dosage rate is approximately 0.8 – 2.0 litres per 100 kg of cementitious material. Other dosages may be recommended in special cases according to specific job site conditions (consult our Technical Service Department for advice).

PACKAGING

GLENIUM C 316 is available in 205 litre drums or in bulk.

GLENIUM C 316 is not compatible with all admixture of RHEOBUILD series.

SHELF LIFE

GLENIUM C 316 can be stored for 6 month if stored at temperature above 0°C

PRECAUTIONS

For detailed Health, Safety and Environmental recommendations, please consult and follow all instructions in the product Material Safety Data Sheet.

ID-1-1-10607-GC 316/01/07/05

STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this **BASF Construction Chemicals** publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

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