

GLENIUM™27CH

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

Description and where to us

GLENIUM™27CH is a new generation high range water reducing admixture, based on chains of modified polycarboxylic ether, primarily developed for ready-mix concrete industry where slump retention, high strength and durability¹ are required in hot climate.

The excellent dispersion effect makes GLENIUM™27CH the ideal admixture for the ready-mix concrete industry. 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 water.

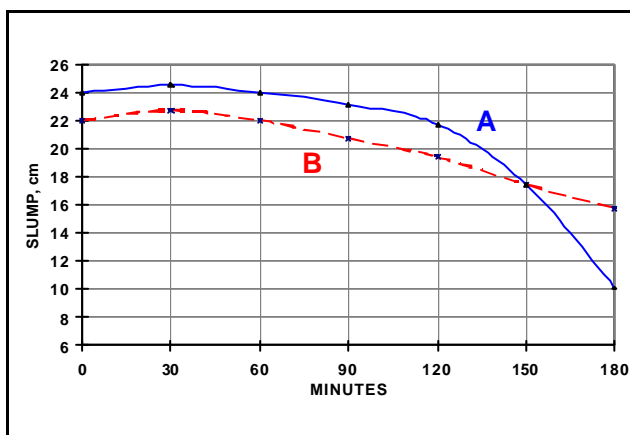


Figure 1: Typical slump retention. Concrete manufactured with GLENIUM™27CH according to:

- A. water/cement ratio = 0.55; 270 kg CEM II AL 42.5 R; Dmax = 25.4 mm; T = 30 °C;
- B. water/cement ratio = 0.45; 350 kg CEM II AL 42.5 R; Dmax = 25.4 mm; T = 25 °C

GLENIUM™27CH is free of chloride, meets ASTM C 494 requirements for Type A and Type F and it is also compatible with all cements meeting the ENV 197 and ASTM standards.

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 (based on NSF or MSF²), GLENIUM™27CH reduces risks of retempering concrete on job site with additional water even in hot climate;
- 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 agents¹, shrinkage and creep.

GLENIUM™_{27CH}

The new chemistry of GLENIUM™_{27CH}

What differentiates GLENIUM™_{27CH} from the traditional high range water reducing (based on NSF or MSF²), 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 sulfonates 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™_{27CH} 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™_{27CH} to “open up and progressively

release” many additional polymer chains that will prevent the early flocculation or stiffening of the mix. This 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 optimise special requirements the use of the following complementary additives is suggested: air entraining agent Micro Air®300 to improve frost/thaw resistance¹ (exposure classes type silica fume Meyco®MS610 for high performance concrete and improve durability in chemical aggressive environments¹ (exposure classes type 3, 4 and 5 according ENV 206) ;
- expanding agent Rheomac®100 formerly Stabilmac, for shrinkage compensating concrete;
- synthetic fibres Ricem® to prevent cracks due to plastic shrinkage;
- curing agent MackureC against too quick evaporation of mixing water.

The use of fly ash, silica fume, or slag is also beneficial in the production of self-levelling and very cohesive concrete

Dosage

The normally recommended dosage rate is 0.5 – 1.5 Litre per 100 kg of binder. It is recommended that tests are carried out to optimise dosage rates with different cement types. In these cases please consult our Technical Service Department for advice.

GLENIUM™27CH

Typical properties

Properties listed are for guidance and are not a guarantee of performance

Colour:	Dark brown/black liquid
Specific gravity	1.10 at 25°C
pH	7.0
Freezing::	-2°C. .
Flashpoint	none

Directions for use

The best method to use GLENIUM™27CH is as follows:

1. Mix cement and secondary binders, sand, coarse aggregates and the mix water until a stiff, yet homogeneous, mixture is obtained. Optimal mixing water reduction is obtained if GLENIUM™27CH is poured into the concrete mix right after the addition of the first 50-70% of the mixing water. Avoid adding the admixture to the dry aggregates.
2. Add GLENIUM™27CH admixture and mix again for to 60 seconds in order to disperse it homogeneously
3. Continue mixing until required workability is obtained.

Best performance is obtained in the production of very flowable concrete in the slump range of 20-25 cm. Since GLENIUM™27CH admixture is designed for the production of very high quality concrete, the cement content may be relatively high.

Compatibility

- In order to optimise special requirements the use of the following complementary additives is suggested: air entraining agent Micro Air®300 to improve frost/thaw resistance¹ (exposure classes type silica fume Meyco®MS610 for high performance concrete and improve durability in chemical aggressive environments¹ (exposure classes type 3, 4 and 5 according ENV 206) ;
- expanding agent Rheomac®100 formerly Stabilmac, for shrinkage compensating concrete;
- synthetic fibres Ricem® to prevent cracks due to plastic shrinkage;
- curing agent MackureC against too quick evaporation of mixing water.
- The use of fly ash, silica fume, or slag is also beneficial in the production of self-levelling and very cohesive concrete.

Packaging & temperature precaution

GLENIUM™27-CH is available in 200 litre drums, 1000 litre container or in bulk. GLENIUM™27CH must be stored in a place where the temperature does not drop below 5°C.

If GLENIUM™27CH admixture has frozen, thaw at 7 °C or above and completely reconstitute by mild mechanical agitation.

Do not use pressurised air for agitation!

GLENIUM™27CH is not compatible with all admixtures of Rheobuild® series.



The Chemical Company

GLENIUM™27CH

Storage

Store under cover, out of direct sunlight and protect from extremes of temperatures.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consult BASF Construction Chemicals SA's Technical Services Department.

Safety precautions

GLENIUM™27CH is not a fire or health hazard. Spillages should be washed down immediately with cold water. For further information refer to the material safety data sheet.

Note

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

Quality and care

All products originating from BASF Construction Chemicals SA, are manufactured under a management system independently certified to conform to the requirements of the quality standards ISO 9001/2000.

Whilst any information contained herein is true, accurate and represents our best knowledge and experience, no warranty is given or implied with any recommendations made by us, our representatives or distributors, as the conditions of use and the competence of any labour involved in the application are beyond our control.

As all BASF's technical datasheets are updated on a regular basis it is the user's responsibility to obtain the most recent issue.

BASF Construction Chemicals South Africa (Pty) Ltd

P.O. Box 420, Westonaria, 1780
11 Pullinger Street, Westonaria, 1779
Tel: +27 11 754 1343
Fax: +27 11 754 1105

852 Sixteenth Road, Midrand
PO Box 2801, Halfway House, 1685
Tel: +27 11 203 2405

Website : basf-cc.co.za

