BASF
The Chemical Company

GLENIUM® 51

A high performance concrete superplasticiser based on modified polycarboxylic ether

Description

GLENIUM® 51 has been primarily developed for applications in the ready mixed and precast concrete industries where the highest durability and performance is required.
GLENIUM® 51 is free from chlorides and complies with ASTM C494 Types A and F.
GLENIUM® 51 is compatible with all Portland cements that meet recognised international standards.

Chemistry and mechanism of action of GLENIUM® 51

Conventional superplasticisers, such as those based on sulphonated melamine and naphthalene formaldehyde condensates, at the time of mixing, become absorbed onto the surface of the cement particles. This absorption takes place at a very early stage in the hydration process. The sulphonic groups of the polymer chains increase the negative charge on the surface of the cement particle and dispersion of the cement occurs by electrostatic repulsion.

GLENIUM® 51 is differentiated from conventional superplasticisers in that it is based on a unique carboxylic ether polymer with long lateral chains. This greatly improves cement dispersion. At the start of the mixing process the same electrostatic dispersion occurs as described previously but the presence of the lateral chains, linked to the polymer backbone, generate a steric hindrance which stabilises the cement particles capacity to separate and disperse.

This mechanism provides flowable concrete with greatly reduced water demand.

Typical applications

The excellent dispersion properties of GLENIUM® 51 make it the ideal admixture for precast and readymixed concrete where low water cement ratios are required. This property allows the production of very high early and high ultimate strength concrete with minimal voids and therefore optimum density. Due to the strength development characteristics the elimination or reduction of steam curing in precast works may be considered as an economical option.

GLENIUM® 51 can be used to produce very high early strength floor screeds. For screed mix designs consult BASF Technical Services.

- high workability without segregation or bleeding
- less vibration required
- can be placed and compacted in congested reinforcement
- reduced labour requirement
- improved surface finish

GLENIUM® 51 may be used in combination with RheoMATRIX for producing Smart Dynamic Concrete (SDC). The technology produces advanced self compacting concrete, without the aid of vibration. For economic, ecological and ergonomic ready-mix / precast concrete production.

Packaging

GLENIUM® 51 is available in 208 litre drums and in bulk tanks upon request.

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***Typical properties**

Colour	Medium brown liquid
Specific gravity	1.095 @ 25°C
Chloride content	"chloride-free" to EN 934-2

Standards

EN 934-2 Tables 3.1 and 3.2

Effect on hardened concrete properties

- increased early and ultimate compressive strengths
- increased flexural strength
- higher E modulus
- improved adhesion to reinforcing and stressing steel
- better resistance to carbonation
- lower permeability
- better resistance to aggressive atmospheric conditions
- reduced shrinkage and creep
- increased durability

Compatibility of GLENIUM® 51

GLENIUM® 51 must not be used in conjunction with any other admixture unless prior approval is received form BASF Technical Services.

GLENIUM® 51 is suitable for mixes containing:

- microsilica
- pulverised fuel ash
- ground granulated blast furnace slag cement

Dosage

The normal dosage for GLENIUM® 51 is between 0.5 and 1.6 litres per 100 kg of cement (cementitious material). Dosages outside this range are permissible subject to trial mixes.

Directions for use

GLENIUM® 51 is a ready to use admixture that is added to the concrete at the time of batching.

The maximum effect is achieved when the GLENIUM® 51 is added after the addition of 50 to 70 % of the water. GLENIUM® 51 must not be added to the dry materials.

Thorough mixing is essential and a minimum mixing cycle, after the addition of the GLENIUM® 51, of 60 seconds for forced action mixers is recommended.

Storage

GLENIUM® 51 should be stored in original containers and at above 5 Centigrade. If frozen gradually thaw and agitate until completely reconstituted.

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

Safety precautions

GLENIUM® 51 contains no hazardous substances requiring labelling. For further information refer to the Material Safety Data Sheet.

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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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