

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.

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

Typical properties

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

Form	viscous liquid
Colour	light brown
Relative density	1.1 @ 20°C
pH	6.6
Viscosity	128 +/- 30 cps @ 20°C
Transport	Not classified as dangerous
Labelling	No hazard label required

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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 from BASF Construction Chemicals SA 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 0.8 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.

Packaging

Available in 200 litre drums and in bulk tanks upon request.

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[®]51 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.

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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.

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