



The Chemical Company

GLENIUM[®] 51

A new generation superplasticising admixture developed for the precast market

DESCRIPTION

GLENIUM 51 is a new generation superplasticising admixture based on chains of modified polycarboxylate ether. It is primarily developed to achieve high early strengths for the precast concrete industry where the highest durability and performance is required.

GLENIUM 51 is compatible with all Portland cements meeting recognised international standards and is free from chlorides and has been formulated to comply with ASTM C494 for Types A and F admixtures.

Chemistry and Mechanism of action

GLENIUM 51 is differentiated from conventional superplasticisers in that it is based on a unique polycarboxylate ether polymer with long lateral chains.

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.

The long lateral chains of **GLENIUM 51** greatly improve 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 that stabilises the cement particles capacity to separate and disperse. This mechanism provides flowable concrete with greatly reduced water demand.

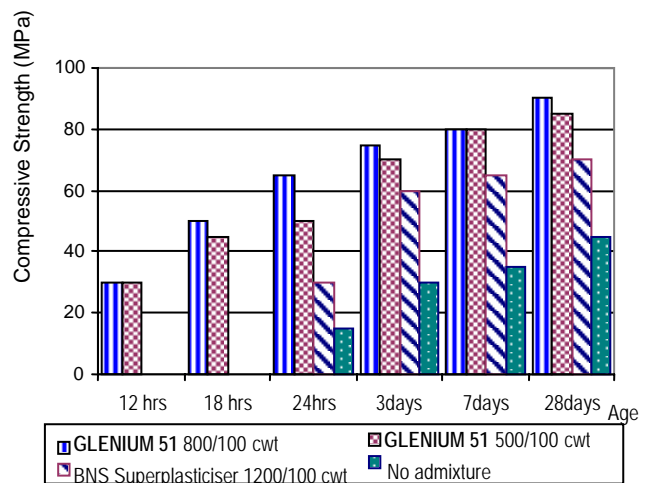
FIELDS OF APPLICATION

The excellent dispersion properties of **GLENIUM 51** make it the ideal admixture for precast 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. With high workability without segregation or bleeding, less vibration is required.

FEATURES AND BENEFITS

High water reduction	Excellent early and ultimate strengths. Possibility of elimination of steam curing. Low permeability, high durability concrete.
High flowability	Ease of placing and compaction. Less vibration required even in case of steel reinforcement congestion. Less workmanship required.
Non retarding	Faster turn around of forms and shorter stripping times.
Superior workability	Improves concrete finish. Excellent surface appearance and texture.
Reduced slump loss	No retempering. Ease of delivery to point of placement.
Low shrinkage and creep	Improves dimensional stability. Reduces risk of cracks.
Superior cohesion	Ease of pumping.
High elastic modulus	Superior load bearing capacity.
Minimal bleed water	Excellent concrete quality.

TYPICAL PERFORMANCE DATA



Comparative Test Results for **GLENIUM 51**. Mix with 480kg/m³ cement at 200mm slump.

BASF Construction Chemicals offices in ASEAN

Singapore

Tel :+65-6861-6766
Fax :+65-6861-3186

Malaysia

Tel :+60-3-5628-3388
Fax :+60-3-7847-6781

Indonesia

Tel :+62-21-893-4339
Fax :+62-21-893-4342

Thailand

Tel :+66-2204-9427
Fax :+66-2664-9267

Vietnam

Tel :+84-650-743-100
Fax :+84-650-743-200

Philippines

Tel :+63-2-889-4321
Fax :+63-2-889-4361



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APPLICATION

Dispensing

GLENIUM 51 is a ready-to-use admixture that is added to the concrete 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. A separate dispenser and feed line must be used.

DOSAGE

The normal dosage for **GLENIUM 51** is between 500 and 800ml per 100kg of cementitious materials. Dosages outside this range are permissible subject to trial mixes.

PACKAGING

GLENIUM 51 is available in 200L drums or in bulk delivery.

SHELF LIFE

GLENIUM 51 can be stored for 6 months if stored at temperatures above 0°C, in tightly sealed original drums. If found to be frozen, thaw it and reconstitute by stirring.

PRECAUTIONS

Health : **GLENIUM 51** does not contain any hazardous substances requiring labelling.

It is safe for use with standard precautions followed in the construction industry, such as use of hand gloves, safety goggles, etc.

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

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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.

NOTE

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