BASF
The Chemical Company

MasterGlenium 21

Formerly: GLENIUM®21

New generation high range water reducing admixture primarily developed for ready-mix concrete where slump retention, high strength and durability are required. Advised for winter weather conditions.

DESCRIPTION AND WHERE TO USE

MasterGlenium 21 is a new generation high range water reducing admixture, based on chains of modified polycarboxlic ether, primarily developed for ready-mix concrete industry where slump retention, high strength and durability are required.

The excellent dispersion effect makes MasterGlenium 21 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 on job site.

MasterGlenium 21 is chloride free, meets UNI EN 934-2: Table 3.1 & 3.2 and it is also compatible with all cements meeting the UNI EN 197-1 and ASTM standards.

THE NEW CHEMISTRY OF MASTER GLENIUM 21

What differentiates MasterGlenium 21 from the traditional high range water reducing with good workability superplasticizers, 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.

MasterGlenium 21 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 MasterGlenium 21 to “open up and progressively release” additional polymer chains that will prevent the early flocculation or stiffening of the mix. This mechanism allows to obtain, compared to traditional high water reducing admixtures, considerably longer workability and reduction of mixing water content.

Since MasterGlenium 21 admixture is designed for the production of very high quality concrete, the cement content may be relatively high.

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 superplasticizers the addition of MasterGlenium 21 reduces risks of retempering concrete on job site with additional water;
- compared to traditional superplasticizers, the addition of MasterGlenium 21 improves the engineering properties of concrete like early and ultimate strengths, modulus of elasticity; bond strength to steel, depths of carbonation, shrinkage and creep, impermeability, resistance to chemical aggressive agents.

MASTER® BUILDERS SOLUTIONS

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COMPATIBILITY

In order to optimise some special properties of the concrete, use of the following complementary admixtures is suggested:

- air entraining agent **MasterAir** to improve freeze thaw resistance (exposure class XF1 to XF4, EN 206-1);
- silica fume, **MasterRoc MS 610**, for high performance concrete and to improve the durability in chemical aggressive environments (exposure class XA1 to XA3, EN 206-1);
- expanding agent **MasterLife SRA 100** (formerly **Stabilmac)**, for shrinkage compensating concrete;
- synthetic micro-fibres **MasterFiber 24** to prevent cracks due to plastic shrinkage;
- curing agent **MasterKure** for sealing the surface of freshly finished concrete against rapid evaporation of water which may cause plastic shrinkage cracking
- demoulding agent from **MasterFinish** line for good surface appearance.

MasterGlenium 21 is not compatible with all admixtures of MasterRheobuild series.

DIRECTIONS FOR USE

MasterGlenium 21 is a liquid admixture to be added to the concrete during the mixing process:

- 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 MasterGlenium 21 is mixed into the concrete right after the addition of the initial 80-90% of the total water;
- avoid adding the admixture to the dry aggregates;
- add MasterGlenium 21 admixture and mix again for to 60 seconds in order to disperse it homogeneously;
- continue mixing until required workability is obtained, with addition of the remaining water.

Technical Information	
Form	Liquid
Relative density (g/cc at 20°C)	1.030 - 1.070

DOSAGE

The recommended dosage rate is 0.5 - 1.2 liters per 100 kg of cement.

Other dosages may be recommended in special cases according to specific job site conditions.
In such cases please consult our Technical Service Department for advice.

PACKAGING AND STORAGE

MasterGlenium 21 is available in 1.000L container or in bulk. Samples are available in 10L cans.
MasterGlenium 21 must be stored in a place where the temperature does not drop below 5 °C. In case of freezing, warm up and homogenise the admixture solution before using.

From 16/12/1992 BASF Construction Chemicals Italia Spa operates under the Quality System in compliance with European Standard UNI-EN ISO 9001. The environmental management system of BASF Construction Chemicals Italia Spa is certified accordingly to UNI EN ISO 14001 and the System of Safety Management is certified accordingly to OHSAS 18001. Environment sustainability: Partner Green Building Council since 2009.

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For further information, please consult your local BASF Construction Chemicals Italia Spa representative.
The technical advice on how to use our products, either written or verbally given, are based on the present state of our best scientific and practical knowledge, and no guarantee and/or implicit or explicit responsibility are assumed on final results of works executed by the use of our products.
The owner, his representative, or the contractor is responsible for checking the suitability of our products as to the intended use and aims.

Supersedes all prior issues on this product.
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