MasterGlenium 11

New generation high range water reducing admixture for ready-mix concrete where slump retention, high strength and durability are required.

DESCRIPTION AND WHERE TO USE

MasterGlenium 11 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 11 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 11 is chloride free, meets EN 934-2: Table 3.1 & 3.2 and it is compatible with all cements meeting the EN 197-1 standards.

THE CHEMISTRY OF MASTER GLENIUM 11

What differentiates MasterGlenium 11 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 11 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 11 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 11 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 11 reduces risks of retempering concrete on job site with additional water;
- compared to traditional superplasticizers, the addition of MasterGlenium 11 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.

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, MasterLife MS 610, for high performance concrete and to improve the durability in chemical aggressive environments (exposure class XA1 to XA3, EN 206-1);
- synthetic micro-fibres MasterFiber 18 to prevent cracks due to plastic shrinkage;
- curing agent MasterKure for sealing the surface of

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freshly finished concrete against rapid evaporation of water which may cause plastic shrinkage cracking;
- demoulding agent from MasterFinish line for good surface appearance.

In compliance with the European Regulation (EU No 305/2011 and EU No. 574/2014) the product is provided with the CE marking according to UNI EN 934-2 and the relative DoP (Declaration of Performance).

CE 1305
EN 934-2 **Table 3.1 – 3.2** High range water reducing/superplasticizing admixtures

DOSAGE

The recommended dosage rate is 0.52 - 1.85 kg (0.5 to 1.8 kg) 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 11 is available in 1030 Kg container, 20 Kg pail or in bulk.
MasterGlenium 11 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.

Technical Information	
Form	Liquid
Relative density (g/cc at 20°C)	1.028 – 1.032
Essential characteristic in accordance to EN 934-2	**Performance**
Chloride ion content	≤ 0.1% by mass
Alkali content (Na_2O equivalent)	≤ 5.0%
Corrosion behaviour	Contains component only from EN 934-1: 2008 Annex A.1
Compressive strength	Equal consistence: 24h ≥ 140% 28 days≥ 115% Equal w/c ratio: 28 days ≥ 90%
Air content	Equal consistence: ≤ 2.0 %; Equal w/c ratio: ≤ 2.0 %
Water reduction	≥ 12%
Consistency	Increase: ≥ 120 mm Retention: comply 3.2

DIRECTIONS FOR USE

MasterGlenium 11 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 11 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 11 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.

COMPATIBILITY

MasterGlenium 11 is not compatible with all admixtures of MasterRheobuild series.

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SAFETY INSTRUCTION

For information on the correct and safe use, transport, storage and disposal of the product, consult the most recent Safety Data Sheet.

OTHER SERVICES

For price analysis, specifications, supplementary brochures, references, reports and technical assistance, visit the website www.master-builders-solutions.com/it-it or contact infomac@mbcc-group.com.

Scan the QR code to visit Master Builders Solutions Italy webpage.

Since 16/12/1992, Master Builders Solutions Italia Spa has been operating under a Certified Quality System compliant with the UNI EN ISO 9001 Standard. Furthermore, the Environmental Management System is certified according to the UNI EN ISO 14001 Standard and the Safety Management System is certified according to the UNI ISO 45001 Standard.

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