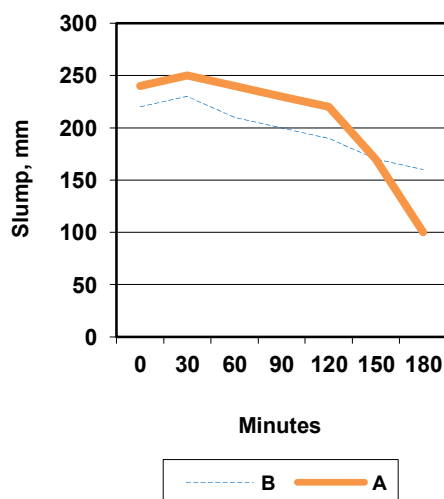


MasterGlenium 27

High range water reducing admixture for concrete - EN 934-2: T3.1 & T3.2

Material Description

MasterGlenium 27 is a high range water reducing admixture, based on modified polycarboxylic ether polymers. Primarily developed for the ready-mix concrete industry where slump retention, high strength and durability are required. It has a primary role in producing 'self-compacting concrete'.



The excellent dispersion effect makes MasterGlenium 27 the ideal admixture for the ready-mix concrete industry. The ability to work with a very low water/cement ratio and still obtain extended workability retention, allows for the manufacture of high quality concrete.

Figure 1: Typical slump retention. Concrete manufactured with MasterGlenium 27 according to:

- A. Water/cement ratio = 0.55; 270 kg CEM II AL 42.5 r;
 D_{max} = 25.4 mm; T = 30°C
- B. Water/cement ratio = 0.45; 350 kg CEM II AL 42.5 R;
 D_{max} = 25.4 mm; T = 25°C

The Chemistry

What differentiates MasterGlenium 27 from the traditional high range water reducing action with good workability is a 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 particles. They wrap around the cement particles at the very early stage of the concrete mixing process. The sulfonic 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. MasterGlenium 27 has a different chemical structure than that of traditional high range water reducing products. It consists of a carboxylic ether polymer with long side chains.

At the beginning of the mixing process it imitates the same electrostatic dispersion mechanism as the traditional high range water reducing action, but the side chains linked to the polymer backbone generate a steric hindrance, which stabilises the particles ability to separate and disperse. With this process, flowable concrete with greatly reduced water content is obtained. The alkalinity created by the paste allows the polymers of MasterGlenium 27 to 'open up and progressively release' many additional polymer chains that will prevent the early flocculation or stiffening of the mix.

This mechanism allows considerably longer workability, reduction of mixing water content and higher early strengths, compared to traditional or retarding, high water reducing admixtures.

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Characteristics and Benefits

MasterGlenium 27 offers the following benefits:

- Self-compacting concrete.
- Rheoplastic concrete with the lowest water/cement ratio.
- No segregation or bleeding.
- Low vibration time required even in case of highly reinforced concrete.
- Compared to traditional superplasticizers, the addition of MasterGlenium 27 reduces risks of retempering concrete on the job site with additional water and improves the engineering properties of concrete i.e. early and ultimate strengths modulus of elasticity; bond strength to steel, depths of carbonation, impermeability, resistance to chemical aggressive agents, shrinkage and creep.

Dosage

The normally recommended dosage rate of MasterGlenium 27 is approximately:

- *By Volume* - 0.48 to 1.91 litres per 100 kg of cement (binder).
- *By Weight* - 0.50 to 2.00 kg per 100 kg of cement (binder).

The dosage rates given above are for typical usages, they are not meant as absolute limits, as other dosages may be utilised in special cases according to specific job conditions. If required consult our Technical Services Department for advice. Trial mixes should be carried out to ensure optimum dosage and effect. Where the concrete is to be machine finished by utilising power float or power trowelling methods, we recommend that you contact the Technical Services Department for dosage rate guidance.

Mixing

MasterGlenium 27 is a ready-to-use admixture to be added to the concrete mix as a separate component. Optimal mixing water reduction is obtained if MasterGlenium 27 is dispensed

into the concrete mix right after the addition of the first 50 - 70% of the mixing water, i.e. when all the solids are wetted out. Avoid adding the admixture to the dry aggregates.

Compatibility

MasterGlenium 27 can be used with all types of EN 197 Cements. For use with other special cements, contact our Technical Services Department.

MasterGlenium 27 should not be pre-mixed with other admixtures. If other admixtures are to be used in concrete containing MasterGlenium 27 they must be dispensed separately.

MasterGlenium 27 is not compatible with all admixtures of the MasterRheobuild series.

In order to optimise special requirements the use of the following complementary additives is suggested:

- Air entraining agents MasterAir to improve frost/thaw resistance
- Silica fume MasterRheobuild TDS for high performance concrete (HPC) and improve durability in chemical aggressive environments
- For 'self-compacting concrete' MasterGlenium 27 should be used in conjunction with MasterRoc MS products.

When such complimentary admixtures are required it is important that laboratory trials are performed, prior to any supply, to determine the respective dosages of any complimentary admixture, and the suitability, in the fresh and hardened state, of the resultant concrete. In these circumstances we recommend that you consult our Technical Services Department for further advice.

Packaging

MasterGlenium 27 is supplied in Bulk, 1000-litre IBC's and 15-litre containers.

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Product Data	
Appearance:	Brown liquid
Specific gravity @ 20°C:	1.05 ± 0.02 g/cm ³
pH-value:	7.0 ± 1
Alkali content (%):	≤ 1.00 by mass
Chloride content (%):	≤ 0.10 by mass
Corrosion behaviour:	Contains only components according to BS EN 934-1:2008, Annex A.1
Air Content:	Fulfilled
Water reduction:	≥ 112% of Reference mix
Increase in consistence:	Increase of ≥ 120mm from initial slump or ≥ 160mm from initial flow
Retention of consistence:	At 30 mins ≥ Reference mix at initial
Compressive strength:	Fulfilled
Durability:	NPD
Dangerous substances:	NPD
Logistics	
Shelf life:	12 months if stored according to manufacturer's instructions in unopened container.
Storage conditions:	Store in original sealed containers and at temperatures between 5°C and 30°C. Store under cover, out of direct sunlight and protect from extremes of temperature. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging.
Handling and transportation:	Refer to MasterGlenium 27 Safety Data Sheet
Disposal:	Refer to MasterGlenium 27 Safety Data Sheet

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DISCLAIMER

MasterGlenium 27, Master Builders Solutions UK Ltd, Version 6

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

Health and Safety: *For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted. **Spillage:** Chemical products can cause damage; clean spillage immediately.

DISCLAIMER: "Master Builders Solutions UK Ltd" (the Company) endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, the Company has no control over the selection of its products for particular applications. It is important that any prospective customer, user or specifier, satisfies him/her-self that the product is suitable for the specific application. In this process, due regard should be taken of the nature and composition of the background/base and the ambient conditions both at the time of laying/applying/installing the material and when the completed work is to be brought into use. Accordingly, no liability will be accepted by the Company for the selection, by others, of a product, which is inappropriate to a particular application. Products are sold subject to the Company's standard conditions of sale and all customers, users and specifiers, should ensure that they examine the Company's latest Product Literature.

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Declaration of Performance can be found at:
www.master-builders-solutions.com/en-gb

Master Builders Solutions UK Ltd

Swinton Hall Road, Swinton, Manchester, M27 4EU

Tel: +44 (0) 161 727 6300

www.master-builders-solutions.com/en-gb

