

# MasterGlenium SKY 646

**Last generation high range water reducing polycarboxylate ether admixture for ready-mix concrete with high slump retention and a low W/C. It is suitable for hot weather conditions.**

## MATERIAL DESCRIPTION

MasterGlenium SKY 646 is an innovative second generation superplasticizer of polycarboxylic ether (PCE) polymers. It is derived directly from the Total Performance Control™ concept.

MasterGlenium SKY 646 is specially engineered for ready-mix Rheoplastic concrete having fluid consistence and self-compacting concrete, having a very high workability retention. The fresh concrete shows no segregation and at the same time has a low water cement ratio and, consequently, high early and long term strengths as per EN 206-1 and UNI 11104 standards.

**May be used also to produce Rheodynamic concrete, capable of self-compaction, even in the presence of dense reinforcement, without the aid of vibration.**

**MasterGlenium SKY 646 is advised for:**

- Hot weather conditions
- Slip forming concrete
- Ready mix production and Precast manufacture
- Mixes having absorbing sands
- Mixes with low fines content
- Mixes with blended cements, CEM IV, CEM III, CEM II

MasterGlenium SKY 646 is chloride free, meets EN 934-2, and it is compatible with all cements meeting the EN 197-1 standards.

## TOTAL PERFORMANCE CONTROL™

The Total Performance Control™ concept ensures that ready-mix producers, contractors and engineers get a concrete that is of the same high quality as originally specified; starting from production at the batching plant, to the delivery and placing into the formworks and followed by its hardening process. Utilizing Rheodynamic™ concrete technology it provides a concrete mix with exceptional placing characteristics and accelerated cement hydration for early strength development and high-quality concrete.

## THE CHEMISTRY OF MASTERGLENium SKY

The Total Performance Control™ concept is the result of years of study of an in-house expertise in nanotechnology.

This allows Master Builders Solutions to control the chemical and physical behaviour of polymers and their interactions with cement.

MasterGlenium SKY 698 is an innovative second generation superplasticiser of polycarboxylic ether (PCE) polymers. The dispersion effect of superplasticizers is based on the adsorption of molecules on cement particles, imparting a negative charge that causes electrostatic repulsion and steric hindrance between them and, therefore, causing dispersion.

The hydration, and particularly the ettringite formation, works against the superplasticiser.

The molecules already adsorbed are covered by the ettringite lawn and thus are ineffective.

The particular configuration of the MasterGlenium SKY molecules allows its delayed adsorption onto the cement particles and disperses them efficiently over a long period of time. The molecular structure is essential for the early development of strength. With superplasticizers based on conventional polycarboxylate ether, the molecules cover the entire surface of the cement grain and build a barrier against contact with water. Therefore, the hydration process takes place slowly. The MasterGlenium SKY molecules on the other hand leave sufficient surface of the cement exposed to allow contact with water for a rapid hydration reaction which results in high early strength development.

## BENEFITS FOR READY-MIX PRODUCER

Total Performance Control and the use of MasterGlenium SKY 646 offers the following benefit to the ready-mix concrete producer:

- Reduction the water content with respect to the state of the art polycarboxylate based superplasticisers.
- Production of Rheoplastic and Rheodynamic concrete having a very low W/C.
- Workability retention for a longer period especially in hot weather conditions avoiding the problem of re-tempering with water before the pouring operation.
- Improvement of the rheology even in concrete mixes having a low fines content.
- Optimization of the production of durable concrete as per the EN 206-1 standards.

As compared to the traditional superplasticisers, the engineering properties such as early and ultimate

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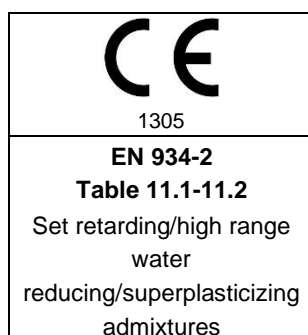
compressive and flexural strengths, bond to steel, and modulus of elasticity, shrinkage, creep, and impermeability are improved

## 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)
- Nanosilica MRoc MS 685 for high performance concrete and to improve the durability in chemical aggressive environments (exposure class XA1 to XA3, EN 206-1)
- synthetic fibres in PP, MasterFiber 18 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 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).



## DOSAGE

MasterGlenium SKY 646 The recommended dosage rate is 0,5~1,9 kg by cement weight.

## PACKAGING AND STORAGE

MasterGlenium SKY 646 is available in bulk or in 1000 lit IBC container.

MasterGlenium SKY 646 must be stored in a place where the temperature does not drop below 5°C. In case of freezing, warm up and homogenize the admixture solution before using.

## DIRECTIONS FOR USE

MasterGlenium SKY 646 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 SKY 646 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 SKY 646 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 SKY 646 is not compatible with all admixtures of MasterRheobuild series.

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Technical Information	
Form	Liquid
Colour	Brown
Relative density (g/cc at 20°C)	1.085 ± 0.020
Essential characteristic in accordance to EN 934-2	Performance
Chloride ion content	≤ 0.1% by mass
Alkali content (Na <sub>2</sub> O equivalent)	≤ 3.0%
Corrosion behaviour	Contains component only from EN 934-1: 2008 Annex A.1
Compressive strength	Equal consistence: 7 days ≥ 100%; 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%
Setting time	Initial: test mix ≥ control mix + 90 min Final: test mix ≤ control mix + 360 min
Consistency	Retention: comply 11.2

## 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](http://www.master-builders-solutions.com/it-it) or contact [infomac@mbcc-group.com](mailto: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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This version supersedes all the previous ones.