

# MasterRoc® HCA 10

## Cement hydration control system for wet and dry sprayed concrete, grouting and cement injection

### DESCRIPTION

**MasterRoc HCA 10** is a high quality, liquid, non chloride chemical admixture which controls the dynamics of cement hydration. It delays hydration by suspending the hydration process and enabling re-activation hours or even days later with no loss of quality in the hardened sprayed concrete.

When dispensed into wet or dry mixes at the batching plant it fully stabilizes the hydration process by forming a protective barrier around the cement particles. **MasterRoc HCA 10** can be used with all types of cement minerals (C<sub>3</sub>S, S<sub>3</sub>A, C<sub>2</sub>S, C<sub>4</sub>AF and gypsum).

In order to re-activate the hydration process and accelerate the strength gain in mixes stabilized with **MasterRoc HCA 10**, **MasterRoc SA** alkali- free accelerator is added at the nozzle or injection point.

### FIELDS OF APPLICATION

- Tunneling and mining
- Temporary and permanent support
- Slope stabilization
- Annulus grouting (TBM)
- Cementitious injection systems

### FEATURES AND BENEFITS

With the use of **MasterRoc HCA 10**, wet and dry concrete mixes can be kept workable for up to 3 days. This provides considerable benefits in the batching and utilization of the concrete.

- Fully flexible delivery options for sprayed concrete mixes
- No cleaning of pumps or pipes during work interruptions
- Complete use of wet and dry mixes – no waste disposal
- Time and cost saving

In addition to these benefits related to its function as a hydration control system, it also provides considerable reduction of rebound and dust.

### TECHNICAL DATA\*

Form	Liquid
Colour	Red
Density (at +20°C)	1.10 ± 0.02
pH value	< 2
Solubility in water	Total
Thermal stability	+1°C
Chloride content	<0.1%
Physiological effect	Corrosive

### PACKAGING

**MasterRoc HCA 10** is packaged in 210 liter plastic drums and 1000 liter IBCs.

### MIXING

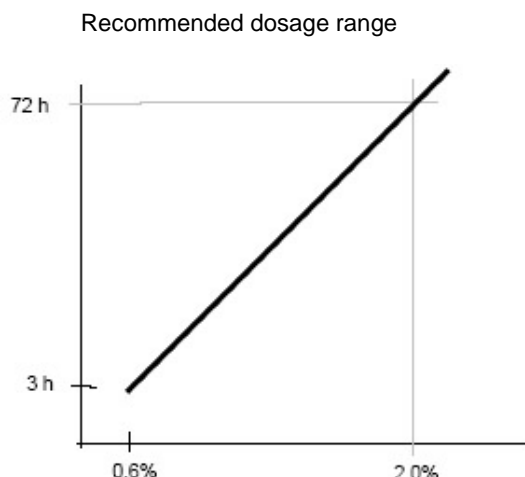
**Wet-mix sprayed concrete:** Premix aggregates with cement and one half of the mixing water. Under continuous mixing, add **MasterRoc HCA 10** and a high performance superplasticizer, premixed with the second half of the mixing water, or after all the water has been added. Normal mixing time is sufficient. To avoid slump loss, the recommended minimum water content is 200 l/m<sup>3</sup>. In the event of unexpected delays, a later addition of 0.2 – 1 % of **MasterRoc HCA 10** is possible to prolong storage time for a few hours.

**Dry-mix sprayed concrete:** Premix aggregates with cement. The water content should be between 3 and 6%. Slowly add manually or with a dosing device the necessary quantity of **MasterRoc HCA 10** under constant mixing and continue to mix for 2 to 3 minutes. If evenly distributed over dry-mix material (e.g. by spraying), mixing time can be reduced.

## MasterRoc® HCA 10

The addition of **MasterRoc HCA 10** to the fresh mix is ideal. However, it can be added until up to 30 minutes after mixing of the dry-mix material without any problems.

### CONSUMPTION



Dosage indicated in this data sheet is only to be used as a guideline. To obtain accurate dosage rates, field tests have to be done with cement and aggregates under local conditions. It is recommended that you consult your local Master Builders Solutions representative.

Normal recommended dosage of **MasterRoc HCA 10** varies between 0.2% - 1% by weight of cement. The required dosage depends on: type of cement used, w/c ratio, ambient and concrete temperature and targeted open time.

### STORAGE

Minimum storage temperature for **MasterRoc HCA 10** is +1°C. If it has frozen, thaw and completely reconstitute with a mild mechanical

agitation. Do not use pressurized air for agitation. Please contact your local Master Builders Solutions representative prior to the use of any products that have frozen.

The maximum storage temperature for **MasterRoc HCA 10** is +60°C. Performance tests should always be carried out prior to use.

If stored in tightly closed original containers and under the above mentioned conditions, it has a shelf life of at least 12 months.

### TYPICAL WET-MIX DESING FOR AN OPEN TIME OF 4 TO 6 HOURS

Ordinary Portland Cement	400 kg/m <sup>3</sup>
Microsilica	30 kg/m <sup>3</sup>
Aggregate 0-8mm	1710 kg/m <sup>3</sup>
<b>MasterRoc HCA 10</b>	0.5 - 2.0 kg
MasterGlenium superplasticizer	2.4 – 6.0 kg
Water/binder ratio	0.45

### SAFETY PRECAUTIONS

**MasterRoc HCA 10** is an irritant fluid. Contact with skin and eyes must be avoided. It is essential that safety glasses and rubber gloves are worn during handling. In case of contact with eyes or skin, flush immediately with plenty of water and seek medical advice.

For further information, see the Material Safety Data Sheet.

\* Properties listed are based on laboratory controlled tests.

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#### STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this Master Builders Solutions 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

Field service where provided does not constitute supervisory responsibility. Suggestions made by Master Builders Solutions either orally or in writing may be followed, modified or rejected by the owner, engineer or contractor since they, and not Master Builders Solutions, are responsible for carrying out procedures appropriate to a specific application.

Master Builders Solutions Construction Chemicals UAE LLC

P.O. Box 37127, Dubai, UAE

Tel: +971 4 8090800

Fax: +971 4 8851002

[www.master-builders-solutions.ae](http://www.master-builders-solutions.ae)

