

MasterRoc SA I67

High performance alkali free set accelerator (AFA) for rapid production, durable sprayed concrete applications

Material Description

MasterRoc SA I67 is a high performance alkali-free set accelerator for sprayed concrete. It is a liquid admixture whose dosage can be varied to the desired setting and hardening times.

Areas of Application

MasterRoc SA I67 is suitable for all applications where exceptionally high early strength, good final strength and extremely thick layers of sprayed concrete are required.

- Temporary and permanent rock support in tunnels
- Rock support in mining
- In poor and wet ground conditions
- Slope stabilisation
- Also suitable for acceleration of cementitious grouts, such as used in TBM tunnel linings, cement ground injection and foam concrete backfill operations

Characteristics & Benefits

MasterRoc SA I67 is ideally suited for wet mix sprayed concrete support, because:

- The quick setting properties allows rapid work progress and the ability to construct thick sprayed concrete linings via layered application during one construction sequence
- The unique product formulation provides extremely fast setting coupled with continual early-age strength development
- Good long-term strength and durability are achieved
- MasterRoc SA I67 is a liquid product and thus provides easy handling as well as facilitating accurate addition to the concrete
- Very low dust production and therefore a safe and suitable working environment
- Since the product is non-aggressive it provides improved working safety, reduced environmental impact and lower handling costs

Technical Data

Form	Suspension
Colour	Beige to white
Density (@ 20°C)	1.47 ± 0.03 g/cm ³
pH value	2.7 – 0.5
Viscosity ⁽¹⁾	750 ± 250 mPas
Thermal stability	5°C to 35°C
Chloride content	<0.1%

(1) Brookfield +20°C. Viscosity is dependent on degree of product agitation and temperature

Application

The substrate must be clean and free from loose particles and preferably damp. High pressure water scaling gives optimal bonding in the correct geological conditions.

It is recommended to only use fresh cement as the age of the cement can influence the setting characteristics of the mix.

MasterRoc SA I67 has a low sensitivity to the type of cement, however with some cements high dosages are necessary for a fast setting. We recommend the use of Portland cements (PH/HPC), which often give faster setting than blended or sulphate resistant cement types. However, MasterRoc SA I67 also works well with composite cement types (blended cements, fly-ash/slag). In all cases, it is strongly recommended to do preliminary tests to check the setting time and the 24 hour strength of the cements planned for use in a project.

Evaluation of setting time and 24 hour strength (without addition of a slump killing system) should be carried out on a test mortar in accordance with EFNARC European Specification for Sprayed Concrete (1996), Appendix I, Clause 6.3, or other approved specifications. The following results should be taken as a performance guide only:

Initial Set	Final set	24hr Strength	Rating
2 min.	6-8 min	18-20 N/mm ²	good
5 min.	8-12 min.	12-15 N/mm ²	ok
>10 min.	>15 min.	<10 N/mm ²	poor

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Remark: Compared to most other set accelerators MasterRoc SA I67 uniquely combines fast setting with high early strength (when applied correctly and concrete mix optimized).

Mixing

When **MasterRoc SA I67** is used for wet mix spraying, the w/c+b ratio should be below 0.5, preferably less than 0.45. When targeting extremely high early strength 0.40 or lower is recommended. The lower the w/c+b ratio the faster setting, higher early strength, improved durability, lower accelerator dosage and thicker layers can be applied overhead.

Maximising the efficiency of mixing AFAs into the wet-mix concrete stream (and therefore performance), is achieved at the nozzle using twin compressed air/AFA feeds to the nozzle injector as is standard on Master Builders Solutions equipment for sprayed concrete applications.

Dosing System

MasterRoc SA I67 is added in the nozzle. To ensure a constant and accurate dosage to ensure quality sprayed concrete, it is crucial to follow the pump selection guideline given below:

Works very well with:

- Mono pumps (screw pumps)
- Squeeze pumps (Bredel)

Should not be used with:

- Piston pumps
- All pumps with ball and seat valves
- Pressure tanks
- Gear pumps

Do not use a filter on the suction hose as this causes obstructions. Preferably the material should be drawn from the bottom of the drum/container.

Compatibility

MasterRoc SA I67 can be interchanged with Master Builders Solutions alkali-free accelerators MasterRoc SA I60. However, storage of mixed MasterRoc SA accelerators is not recommended. Master Builders Solutions alkali-free accelerators shall not be mixed with any other type of Master Builders Solutions accelerator other than those listed above. Do not mix **MasterRoc SA I67** with any type of accelerator produced by another manufacturer, as this could cause immediate clogging of dosing pumps and hoses.

Cleaning of Dosing Pump

Prior to the use of **MasterRoc SA I67**, the dosing pump and other parts of the system must be thoroughly cleaned with plenty of water. Failure to do so provokes blockages in the dosing system. Make sure that all operators involved in testing and application are fully informed.

Estimating Data

The dosage of **MasterRoc SA I67** depends on the temperature conditions, reactivity of cement used and on required thickness of layers, setting time and early strength development. The consumption of **MasterRoc SA I67** is normally in the range of 3 to 10% of binder weight. Overdosing (> 10%) may result in decreased final strength.

Packaging

MasterRoc SA I67 is available in 200 litre drums, 1000 litre palletcons and bulk.

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Storage & Shelf Life

Segregate from metals. Segregate from bases. Segregate from oxidants. Segregate from foods and animal feeds. Suitable materials for containers: Stainless steel 1.4404, High density polyethylene (HDPE) Unsuitable materials for containers: aluminum, copper, iron.

Keep only in the original container in a cool, well-ventilated place. Protect from direct sunlight. Store protected against freezing. Protect from temperatures below: 5 °C.

After the prolonged storage we recommend that **MasterRoc SA I67** be always fully agitated prior to use by mechanical stirring or re-circulation pumping. Agitation by compressed air is not advised. If stored in tightly closed original containers under the above given conditions, **MasterRoc SA I67** has a shelf life of 6 months.

It is recommended that your Master Builders Solutions Technical Sales Representative be consulted prior to the use of any product that has been frozen.

After prolonged storage, performance testing should always be carried out before use.

Precautions

For the full health and safety hazard information and how to safely handle and use this product, make sure that you obtain a copy of the Safety Data Sheet (SDS) from our office or website.

Disclaimer

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MB Solutions Australia Pty Ltd

ABN 69 634 934 419
11 Stanton Road
Seven Hills NSW 2147

Freecall: 1300 227 300

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

MB Solutions New Zealand Ltd

45C William Pickering Drive
Albany, Auckland
New Zealand

Phone: +64 9 414 7233

Emergency Advice:

1300 954 583 within Australia (24hr)
0800 001 607 within New Zealand

