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MasterRoc[®] SA 160

Alkali-free, liquid high performance set accelerator for sprayed concrete

Product description

MasterRoc SA 160 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.

Fields of application

MasterRoc SA 160 is suitable for all applications, where exceptionally high early strength, good final strength and extremely thick layers are required.

- Temporary and permanent rock support in tunnels
- Rock support in mining
- In poor 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.

Packaging

MasterRoc SA 160 is supplied in 275 Kg & 1200 Kg drums.

Features and benefits

MasterRoc SA 160 is ideally suited for wet mix sprayed concrete for rock support, because:

- The quick setting property 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 also achieved.
- MasterRoc SA 160 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 good working environment.
- Possibility of low rebound applications when using the correct nozzle angle and distance.
- Since the product is non-aggressive it provides improved working safety, reduced environmental impact and lower handling costs.

Technical data

Form	Suspension
Color	Beige
Density (+20°C)	1.43±0.03g/ml
pH value (1:1 water solution)	2.6 ± 0.5
Viscosity ¹⁾	>400 mPa.s
Thermal stability	+5°C to +35°C
[Na ₂ O] EQV. (%bw)	<1%
Chloride free	

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

Application procedure

The substrate should be clean and free from loose particles and preferably damp.

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

MasterRoc SA 160 can be sensitive to the type of cement. With some cements the setting characteristics can be too slow. We recommend the use of Portland cements (PC/HPC), which normally give faster setting than blended or sulphate resistant cement types. However, MasterRoc SA 160 also works well with composite



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cements types (blended cements, fly-ash/slag). In all cases, it is strongly recommended to do preliminary tests to check setting and the 24 h strength of the cements planned for use in a project.

Evaluation of setting and 24 h strength (without addition of slump killing system), Should be carried out on a test mortar in accordance with EFNARC European Specification for Sprayed Concrete (1996), Appendix 1, Clause 6.3.

The following results should be taken as a performance guide only:

Initial set	Final set	24 h strength	Rating
2 min.	6-8 min.	18-20 MPa	good
5 min.	8-12 min.	12-15 MPa	OK
>10 min	>15 min.	<10 MPa	poor

Remark: If the setting times are poor, the 24 h strength usually remains good.

Mixing

When MasterRoc SA 160 is used for wet mix spraying, the w/c+b ratio should be below 0.5 and preferably <0.45. When targeting extremely high early strength, 0.40 or lower. The lower w/c+b ratios provide faster setting, higher early strength, better durability, lower accelerator dosage and thicker layers can be applied overhead.

Dosage

MasterRoc SA 160 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 to 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 draw the material off the bottom of the drum/container.

Compatibility with other accelerators

MasterRoc SA 160 can be interchanged with most of BASF's alkali-free accelerators. For advice please contact your local BASF representative.

Do not mix or interchange MasterRoc SA 160 with any type of accelerator produced by another manufacturer, as this can cause immediate clogging of dosing pumps and hoses.

Consumption

The consumption of MasterRoc SA 160 also depends on the w/c+b ratio, temperature conditions (concrete and ambient), cement reactivity and on required layer thickness, setting time and early strength development. The consumption is normally in the range of 3 to 10% of binder weight.

Overdosing (>10%) may result in decreased final strength.

Cleaning of dosing pump

Prior to the use of MasterRoc SA 160, the dosing pump and other parts of the system **must be**

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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.

Storage

MasterRoc SA 160 must be stored at minimum +5°C and maximum +35°C. (optimum temperature for storage and performance is +20°C).

MasterRoc SA 160 has to be kept in closed containers made of plastic, glass fiber plastic or stainless steel.

MasterRoc SA 160 must not be stored in normal steel containers as the pH can cause corrosion that might affect the performance of the product.

After prolonged storage we recommend that MasterRoc SA 160 be always fully agitated prior to use by mechanical stirring or re-circulation pumping.

If stored in tightly closed original containers under the above given conditions, MasterRoc SA 160 has a shelf life of 6 months.

It is recommended to consult your local BASF representative prior to the use of any product that has been frozen.

Performance testing should always be carried out before use.

Safety precautions

MasterRoc SA 160 contains no hazardous substances requiring labeling. However, the same

precautions as with handling and use of cementitious products should be observed:

Avoid eye and skin contact and wear rubber gloves and goggles. If contact occurs, rinse with plenty of water. In case of eye contact seek medical advice.

For further information, refer to the Material Safety Data Sheet or contact your local BASF representative.

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