

PRODUCT DATA SHEET

Sika® Sigunit® SA 160

(formerly MRoc SA 160)

Shotcrete accelerator

DESCRIPTION

Sika® Sigunit® SA 160 is a liquid, high-performance, alkali-free set accelerator for sprayed concrete, whose dosage can be varied to the desired setting and hardening times.

Suitable for use in hot and tropical climatic conditions.

USES

- Temporary and permanent ground support in tunneling and mining.
- Slope stabilisation.
- Suitable for acceleration of cementitious grouts, such as for annulus grout in TBM tunnels, cemented ground injection and foam concrete.

FEATURES

Sika® Sigunit® SA 160 is ideally suited for wet mix sprayed concrete for ground support:

- 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 product formulation provides fast setting, continuous early-age strength development high durability and enhanced long term strength.
- Very low dust generation during application and therefore a good working environment.
- Possibility of low rebound applications when using the correct nozzle angle and distance.
- Non-aggressive properties provide improved working safety, reduced environmental impact and lower handling costs.

TECHNICAL INFORMATION

Concreting guidance

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

Initial set	Final set	24h Strength	Rating
2 min.	6-8min.	18-20 MPa	Good
5 min.	8-12 min.	12-15 MPa	Ok
>10 min.	> 15 min.	<10 MPa	Poor

Concrete mix design

When Sika® Sigunit® SA 160 is used for wet mix spraying, it is advised to have the w/c ratio < 0.45.

When targeting extremely high early strength, it is preferable to have w/c ratio ≤ 0.40.

The lower w/c ratios provide faster setting, higher early strength, better durability and lower accelerator dosage; moreover, it allow for thicker layers to be applied overhead.

PRODUCT INFORMATION

Composition	Blend of special inorganic materials
Packaging	Drums, 1,000 L flowbin or in bulk
Shelf life	6 months from date of production if stored properly
Storage conditions	<ul style="list-style-type: none">▪ Must be stored at minimum +5°C and maximum +35°C (optimum temperature for storage and performance +20°C).▪ Has to be kept in closed containers made of plastic, glass fiber or stainless steel.▪ Must not be stored in normal steel containers.▪ Storage in bulk tanks requires the use of agitation and / or circulation systems.▪ After prolonged storage or transport we recommend to fully agitate it prior to use by mechanical stirring or re-circulation pumping.▪ Please contact your local Sika technical representative prior to the use of any product that has been frozen.▪ After prolonged storage, performance testing should always be carried out before use.
Appearance and colour	Beige liquid
Density	~1.43 kg/l (+25 °C)
Viscosity	> 200 mPa.s (Brookfield, + 20°C. Viscosity is dependent on degree of product agitation and temperature)
pH-Value	2.1 – 3.1
Total chloride ion content	Nil (EN 480-10)
Equivalent sodium oxide	< 1.0 % by mass (EN 480-12)

APPLICATION INFORMATION

Recommended dosage	<p>3–10 % by weight of binder</p> <p>Dosages by weight of binder depend on the mix design, raw materials, climatic conditions and concrete requirements.</p> <p>Trial mixes must be performed to establish the exact dosage rate required.</p>
Dispensing	<p>Sika® Sigunit® SA 160 is added at the nozzle. It is essential to have a constant and accurate dosage of accelerator into the concrete stream. To ensure quality sprayed concrete, follow the pump selection guidelines given below:</p> <p>Works very well with:</p> <ul style="list-style-type: none">▪ Mono pumps (stator & rotor pumps)▪ Peristaltic pumps <p>Should not be used with:</p> <ul style="list-style-type: none">▪ Piston pumps▪ All pumps with ball and seat valves▪ Pressure tanks▪ Gear pumps <p>Do not use a filter on the suction hose as this causes obstructions. Preferably draw the material off the bottom of the drum/container.</p>
Compatibility	<p>Sika® Sigunit® SA 160 is compatible with the following Sika products: SikaPump®, Sika® ViscoCrete®, Sikament®, SikaFume®, SikaFiber®, SikaTard®</p> <p>We recommend to perform trial mixes to establish the required performance when combining Sika® Sigunit® SA 160 with the above products or other admixtures. Please consult our Sika Technical Department.</p>

BASIS OF PRODUCT DATA

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

IMPORTANT CONSIDERATIONS

- Do not mix or interchange Sika® Sigunit® SA 160 with any type of accelerator produced by another manufacturer, as this can cause immediate clogging of dosing pumps and hoses.
- The effect of the accelerator depends on the content, age and type of cement as well as the shotcrete temperature. It is recommended to use only fresh cement. With some cements the setting characteristics can be slower. We recommend the use of Portland cements, which normally give faster setting than blended or sulphate resistant cement types.
- Sika® Sigunit® SA 160 also works well with composite cements types (blended cements, fly ash/slag). In all cases, it is strongly recommended to carry out 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 should be carried out on a test mortar in accordance with EFN-ARC European Specification for Sprayed Concrete (1996), Appendix 1, Clause 6.3.
- The shotcrete quality is widely affected by the substrate, the applied layer thickness, the spraying process, the quality of equipment and the application technique.
- The w/c ratio of the base shotcrete mix in the wet spraying process, and the quantity of gauging water in the dry spraying process are also parameters influencing the acceleration effect of Sika® Sigunit® SA 160.
- Overdosing (> 10% by weight of binder) may result in decreased final strength.

ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

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

CLEANING OF EQUIPMENT

After the use of Sika® Sigunit® SA 160, 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 when next used.

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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ISO 9001, 14001, 45001 – SGS
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- Sika MB Construction Chemicals for Manufacturing LLC
- Master Builders Solutions LLC

All products are supplied under a management system certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and ISO 45001.



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