PRODUCT DATA SHEET

Sika® Sigunit® SA 160

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

DESCRIPTION

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

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.

CHARACTERISTICS / ADVANTAGES

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 unique product formulation provides fast setting, continuous early-age strength development high durability and good 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.

PRODUCT INFORMATION

Packaging	1000 L IBC tank
Appearance / Colour	Beige Suspension
Shelf Life	If stored in tightly closed original containers under the described storage conditions, it has a shelf life of 12 months from date of manufacture. Periodical remixing can extend the shelf life further.
Storage Conditions	- 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.

Density	1.420–1.480 (SG @ 25 °C)
pH-Value	1.5–3.0
Viscosity	300–1000 mPa.s (Brookfield, +20 °C) (Viscosity is dependent on degree of product agitation and temperature)
Total Chloride Ion Content	< 0.1 %
Equivalent Sodium Oxide	< 0.1 %

TECHNICAL INFORMATION

Concreting Guidance	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. Sika® Sigunit® 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, 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 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 minutes	6–8 minutes	18-20 MPa	Good
5 minutes	8–12 minutes	12–15 MPa	OK
> 10 minutes	> 15 minutes	< 10 MPa	Poor

Concrete Mix Design	When Sika® Sigunit® 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.

APPLICATION INFORMATION

Recommended Dosage	The consumption of Sika® Sigunit® 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.

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| Dispensing | 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:
Works very well with:
▪ Mono pumps (stator & rotor pumps)
▪ Peristaltic 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 draw the material off the bottom of the drum/container. |
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SYSTEM INFORMATION

| Compatibility | Compatibility with other accelerators:
Sika® Sigunit® SA 160 can be interchanged with most of Sika® Sigunit® AF alkali-free accelerators. For advice, please contact your local Sika technical representative.
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. |
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BASIS OF PRODUCT DATA

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

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

CLEANING OF TOOLS

CLEANING OF DOSING PUMP
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. Make sure that all operators involved in testing and application are fully informed.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

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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