

PRODUCT DATA SHEET

Sika® Sigunit® Rock-20

SHOTCRETE ACCELERATING LIQUID ADMIXTURE



DESCRIPTION

Sika® Sigunit® Rock-20 is a liquid shotcrete and mortar accelerator for applications using the dry or wet spray process.

USES

Sika® Sigunit® Rock-20 accelerates setting of concrete and mortars using the dry or wet spray process in applications such as:

- Underground linings (i.e. in tunnels)
- Heading stabilisation in tunnelling
- Rock and slope stabilisation
- Formation of permanent gunite or shotcrete shells on shotcrete repairs

CHARACTERISTICS / ADVANTAGES

The accelerator's effect depends on the cement content, type and age, substrate temperature and type, shotcrete temperature, layer thickness and spray process / equipment. The water/cement ratio of the basic concrete mix is another important parameter which influences the acceleration effect of Sika® Sigunit® Rock-20.

The following properties distinguish Sika® Sigunit® Rock-20:

- Exceptional early strength development
- Improves adhesion to substrate and reduces rebound even up to <10% (depending on the conditions and the ingredients of the concrete mix)
- High layer thickness can be applied in one operation, even on overhead applications
- Improves the bond of the shotcrete to rock and concrete, making overhead spraying easier
- Can be used with all cement types
- Due to its effectiveness demands very low dosages in comparison with other products for similar results
- Chloride free, does not attack or corrode iron or steel reinforcement

APPROVALS / CERTIFICATES

CE-marking and Declaration of Performance as Sprayed concrete set acceleration admixture (Table 2) according to EN 934.05:2007, based on certificate of factory production control issued by notified factory production control certification body and type testing.

PRODUCT INFORMATION

Chemical base	Aqueous solution of sodium aluminate
Packaging	IBC, bulk supply upon request
Appearance / Colour	Liquid, turbid light yellow
Shelf life	6 months from date of production

Storage conditions

Sika® Sigunit® Rock-20 must be stored in its original containers. Sika® Sigunit® Rock-20 reacts in contact with atmospheric humidity [moisture] or rain, e.t.c., and must therefore always be stored in sealed containers. Sika® Sigunit® Rock-20 should only be decanted into clean containers. Avoid air entrapment. Filling through floor inlets or immersed pipes is best. Containers must always be properly sealed. Do not store in aluminium tanks. Protect from extreme cold. Store in undamaged and unopened, original sealed containers. Note: Once containers are opened, use the material as quickly as possible.

Density	~1.44 kg/lit (at +20°C)
pH-Value	11.0 – 13.0 [Conc. (% w/w): 1%]
Total Chloride Ion Content	Free (EN 934.01)

TECHNICAL INFORMATION

Concrete Mix Design

Pump granulometry:

Normal max. particle size 8 mm to 16 mm.

Concrete consistency (dependent on spray equipment):

Concrete flow 45 cm; W/C 0.48.

A suitable flow agent is required (e.g. Sika® ViscoCrete® series).

Fresh concrete temperature: > +15°C.

For better system performance, the use of mixtures with low W/C ratios (<0.50) in combination with compatible superplasticizers Sika® ViscoFlow® or Sika® ViscoCrete® is recommended. In case of demands for higher pump ability, the use of Sika® Visco I-100 will give exceptional results.

Reduction in cement quantity can be achieved, with use of suitable Sika admixtures and appropriate mix design.

SYSTEMS

Compatibility

The following Sika products are generally used to improve the performance or application properties of the basic concrete mix:

- Sika® ViscoCrete® series
- Sika® ViscoFlow® series
- SikaTard®-930
- Sika-Aer® Fine
- Sika® Visco I-100
- SikaFume® HR-E / Sikacrete® AR

Trials are recommended before combining products.

APPLICATION INFORMATION

Recommended Dosage

2-6% b.w. of cement.

The correct dosage must be determined by preliminary testing.

Restrictions

- Sika® Sigunit® Rock-20 must be added either with the mixing water for the dry process or with a gauging device suitable for the wet spray process.
- Skilled nozzle operation and thorough mixing within the concrete are essential.
- The fresh concrete characteristics (correct workability) must be adjusted to suit the spray equipment, its capacity, temperature and other local conditions.
- The use of a high precision gauging device is essential in order to achieve correct application without interruptions. The exact dosage depends on cement quality, aggregate granulometry and quality, concrete and accelerator temperature, substrate humidity, output rate etc. Suitability tests must be performed.
- Properties of fresh concrete (suitable workability) must be regulated in order to adjust to the shotcrete machines and their capacity, ambient temperature and other local conditions.
- Sika® Sigunit® Rock-20 is not compatible with silica based and non-alkali accelerators. In case of use of Sika® Sigunit® Rock-20 in pumps or other equipment that such types of products have been previously used, even at small quantities, thorough cleaning before and after use is recommended. Mixing of Sika® Sigunit® Rock-20 with non-compatible accelerators can cause sedimentation or immediate solidification of mix.
- Certain superplasticizers are not compatible with Sika® Sigunit® Rock-20. Mixing of non-compatible superplasticizers with Sika® Sigunit® Rock-20 can lead to increased rebound and loss of strength in shotcrete. Consult the Technical Department.
- Low temperatures affect the performance of Sika® Sigunit® Rock-20 negatively. Preventive measures must be taken in order to protect the accelerator and the concrete.
- Sika® Sigunit® Rock-20 is not compatible with non-alkali accelerators, such as Sigunit®-49 AF.
- Ask for technical support from Sika Hellas.

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.

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.

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

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 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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