

System description SBM 11

SABA Sealer Field sealing joints in concrete fields at airports, bus lanes, motorways, storage yards



Edition February 2006. This replace all older versions

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1. Introduction

Joint seals at airports require specific and custom made solutions.

The streaming spaces and runways usually consist of large concrete slabs of Portland cement, which are divided into sections by means of dilatation joints.

In order to guarantee a permanent liquid proof floor, which withstand loads and pressures, all joints can be sealed with certified SABA Sealers.

The risk of soil pollution, joint damage, loose objects and grass growth can be reduced effectively.

SABA designed SABA Sealer Field specifically for this application.

SABA Sealer Field can be applied without heating and can be processed very effectively in large quantities as well.

2. Type of joints

The joints remain liquid proof (waterproof) on these areas;

- Dilatation joints in concrete floor panels
- Saw cuts in concrete floor panels
- Transitions from concrete floor panels to channels, wells, line carriageway drainage and appliances such as lighting fittings
- Transitions from concrete floor panels to asphalt panels
- Seals of crack formations, which have been sawn open, in concrete floor panels.

Performance demands

- The joint seals need to be elastic and ageing resistant under climatic burdens (period of reference > 15 years)
- Withstanding motor fuels such as kerosene, gasoline and lubricants.
- Withstanding "Jetblast" (hot exhaust fumes from jet engines)
- Withstanding acids, bases and other chemical damage (as used in de-icing)
- Withstanding mechanical loads by tires and normal traffic
- Withstanding intrusion of pebbles

3. Product choice:

Sealing kit SABA Sealer Field, self-leveling, for horizontal joints.

A high quality product, based on polysulfide, which meets the performance demands above well over.

For the less common vertical joints SABA Sealer MBT (thixotropic properties) can be applied.

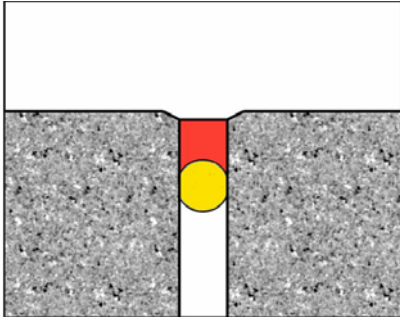
These two-component products are very elastic and meet the highest specifications;

- US Federal Specification SS-S-200E
- Prüfbericht P 2159-2 of Polymer Institut in Florheim-Wicker (D)
- KOMO / KIWA product certificate number K 21553 / 01
- CE quality mark according EN 14188 – 2 class A, B, C, and D

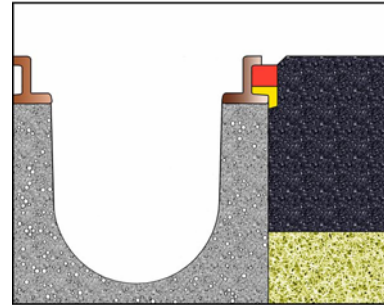
For additional information; see accompanying product sheets.

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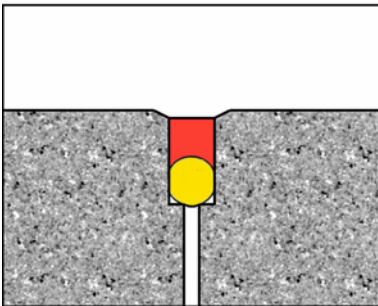
4. Principal details



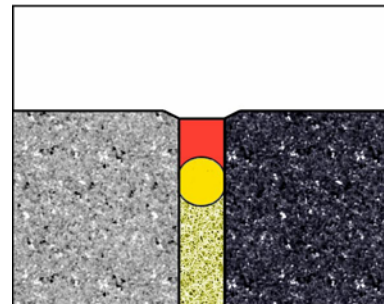
Detail 1 dilatation joint in concrete, Sealer Field on backfoam



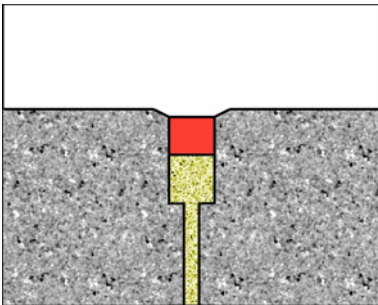
Detail 4 transition joint on drainage channel



Detail 2 saw cut in concrete, Sealer Field on backfoam back filling



Detail 5 transition joint on asphalt, Sealer Field on Backfoam



Detail 3 saw cut in concrete, Sealer Field on silver sand

In stead of using SABA Backfoam it is also possible to use silver sand as back filling. It is advisable to prevent contamination of adhesive surfaces.

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5. Joint construction

Horizontal joints with inclination up to 6%

Joint latitude

Minimal joint latitude: 8 mm

Maximal joint latitude: no limitation.

(Concerning joints with latitudes over 20 mm it is recommended to consider the chance of mechanical damage and take additional precautions.)

Joint depth: the depth should be in such a way, that the complete construction of back filling, joint substance and bevelled edges can be created.

Bevelled edges

Concerning joints in flooring it is recommended to create bevelled edges at an angle of 45°, with a latitude of approx. 5 mm.

Apply sunk face

Apply the joints 2 to 5 mm under the reveal.

Determining joint thickness

The joint thickness is determined by the following formula:

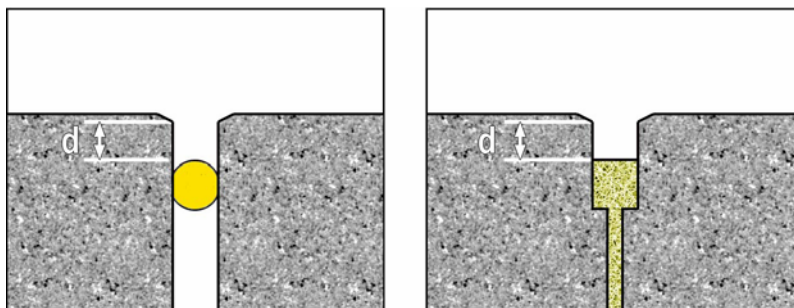
$$d \text{ (= thickness)} = \frac{b \text{ (= latitude)}}{3} + 6 \text{ mm}$$

This table follows from the formula above:

Joint latitude	Joint thickness
10 mm	10 mm
15 mm	11 mm
20 mm	12,5 mm
25 mm	14 mm
30 mm	16 mm
35 mm	17,5 mm
40 mm	19 mm

Sealing technique

Application of back filling



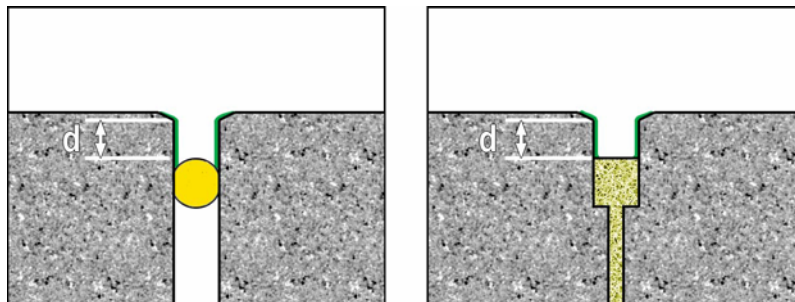
Apply the SABA Backfoam back filling into the joint at the correct depth so it is forced in place (see table).

Apply silver sand dried by fire into the joints at the correct depth.

Application of primer

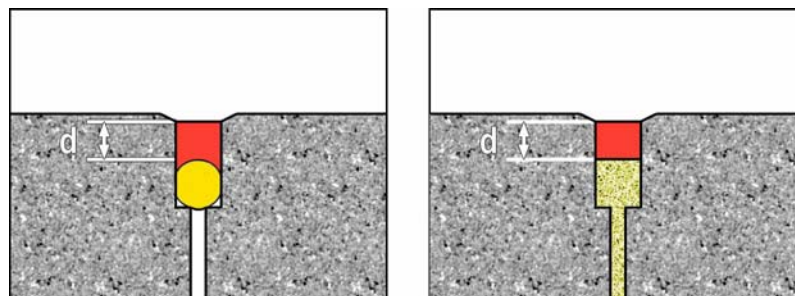
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- Use SABA
Primer H17 (using spray or a brush) to prime clean adhesive surfaces on the concrete lateral surfaces, drying time minimally 30 minutes and maximally 6 hours. (see table primer choice)
If processing time is exceeded, apply primer again.
- When applying silver sand as back filling, pay close attention that sand is not drawn to the adhesive surfaces. (contamination of adhesive surfaces)

Application of sealant



- Spray SABA Sealer Field into the joint, after which it levels to a neat and horizontal joint at an inclination up to approx. 6%.
- When applying silver sand, make sure that no 'dunes' are created by which the layer of seal may be thinner (and therefore weaker).

Vertical joints

The technique above is also applicable for vertical joints, at which SABA Sealer MB is used in stead of SABA Sealer Field.

A smooth finish is created when slightly soapy water is used.

Processing time/ Potlive by SABA Sealer Field

Potlive mixed seal: approx. 1 hour at 23 °C up to 75% humidity

Print free: after approx. 3 hours

Time estimate polymerization: 24 up to 48 hours at 23 °C and 75% humidity

6. Application methods

Application methode versus processing time in standard tin packaging

The polymerization process (to cure) of SABA Sealer Field rather depends on the temperature and humidity when mixing tin packaging.

The curing time is set on average temperatures in the temperate climatic zone as described.

A professional processor may influence this duration of curing time as follows:

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6.1 Accelerator

If temperatures are below 10 °C the separate component SABA Accelerator may reduce the curing time.

6.2 Retarder

In tropical circumstances over 25 °C and high humidity the component SABA Retarder may be used to slow down the cure speed.

These products make it possible to process SABA Sealer Field in all dry, frost-free circumstances. (note the application circumstances)

By applying SABA Accelerator or SABA Retarder separately one can influence the response time of SABA Sealer Field.

Do not exceed the proper dosage as the specification of the sealant may be impaired.
The two products cannot be used at the same time.

Processing time in application by compulsive mixing device

When using a compulsive mixing device, A-components and B-components are pumped in the correct mixing ratio through static mixers by means of a special pump device and are applied by jet pipes.

This manner of processing happens out of a 60 or 200 liter barrel of A-component and into a 14.5 liter barrel B-component.

This processing method makes it possible to set the curing time by machine at e.g. 60 minutes.

6.3 Application methods/ Manner of processing

SABA Sealer Field, self leveling, is processed professionally as follows:

- a) Seal spray; After mixing parts A and B with the SABA seal spray LKB 7500 RV by air pressure.
- b) Pressure vessel; After mixing parts A and B it is poured into a pressure vessel and sprayed into the joints through a lockable transfer hose by means of air pressure.
To mix: Parts A and B are mixed mechanically to a homogenous unity, (prevent air inclusion). This is possible using the SABA mixing set type M2500 for 2.5 liter sets or M7500 for 7.5 liter sets.
- c) Process wise; With special equipment it is possible that components A and B, mixing ratio 10 : 1 (weight), can be pumped towards a static mixer, after which the mixed joint substance can be applied directly into the joints through jet pipes.

SABA Sealer MBT, thixotropic, is delivered in mixing containers of 450 ml or sets of 2.5 or 7.5 liters.

To process the mixing containers containing parts A and B, the SABA mixing set MKK 450 and the SABA seal spray HKK 450 (hand) or LKK 450 (air) are required.

To process the tin container sets of 2.5 or 7.5 liters with components A and B, it is necessary to mix them mechanically with the SABA Mixing set M2500 or M7500.

Afterwards the appropriate seal spray can be filled with matching pressure plate 2500 or 7500.

In the appendix "PROCESS REGULATION FOR SABA TWO-COMPONENT JOINT SUBSTANCES" the systems with matching equipment and the steps to take are explained.

When starting up with these activities, professional help can be provided by SABA employees.

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6.4 Circumstances of application

To ensure that the circumstances of application are as verifiable as possible we advise to measure dew point and temperature twice a day when sealing the joints with SABA Sealer Field and SABA Sealer MBT, in order to determine whether the climatic circumstances are good and whether the adhesive surfaces are dry enough.

Measurements can be taken using a so-called "Protimeter":

- Environmental temperature and humidity.
The dew point is determined.
- Temperature of the adhesive surfaces.
This must be at least 3⁰ C higher than the dew point.
- Moisture rate at the adhesive surfaces.
It should not exceed Proti rate 15.
- During the process the air temperature should be between 5⁰ C and 35⁰ C.

The measurements need to be recorded in writing and if necessary written down into a map if available.

7. Choice of colour

SABA Sealer Field is supplied in the colours black and grey.

SABA advises to apply SABA Sealer Field in black.

Explanation:

Most durable rubbers are black. The colour is partly determined by carbon compounds, which reinforce the process of polymerization.

Because of this the chemical resistance, wear resistance and ageing resistance are higher when using black.

The grey SABA Sealer Field is more sensitive to air impact.

8. Choice of primer

- For concrete adhesive surfaces using SABA Primer H17, drying time minimally 30 minutes and maximally 6 hours.
- For metal adhesive surfaces using SABA Primer 9102, drying time minimally 15 minutes and maximally 6 hours.
- For thermal galvanized steel adhesive surfaces using SABA Primer Zinc first in connection with possible electrolysis, drying time minimally 10 minutes and maximally 4 hours.
- For polyester and vinylester, as well as ceramic tiles and synthetics degrease using SABA Cleaner 22 first and prime using SABA primer 9102, drying time minimally 15 minutes and maximally 6 hours.
- For (steel-wheel) asphalt and mastic asphalt using SABA Primer 9911, drying time minimally 30 minutes and maximally 6 hours.
In case a bitumen coat (texture) is present on the uncut adhesive surfaces, treat it, as softening may occur at temperatures over 50⁰ C and this would turn the coat into the weakest link of the sealing.

It is important to choose the appropriate primer!

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Adhesive surfaces, primer and joint substance should be compatible.

When using unfamiliar adhesive surfaces such as products for newly built constructions, synthetics, paint systems and coating, then a test by R & D department may provide a decisive answer.

As adhesive surfaces such as polyethylene and polypropylene generally do not adhere well or do not adhere at all, ask for advice in such matters.

Coatings

- Apply joints before applying coatings
- The joints need to be given enough space from a coating (applied later on) for it to work freely. (guarantee)
- In case coatings need to be applied before joints are, make sure the following is done:
 - * Prime the adhesive surfaces using the coating completely and thoroughly. (not only on drips which do not adhere well)
 - * Determine that coating and sealant are compatible.
 - * Determine that the adhesion of the coating will not turn into the weakest link of the sealing.

9. Boundary conditions

SABA Sealer Field and SABA Sealer MBT will endure best in joint constructions if:

- The joint construction is designed using the correct measurements considering the expected settlement and the durable elasticity of applied products
- The adhesive surfaces are “healthy”, which is to say strong and free from cement slurry seal (be careful when sawing), glue remains, bitumen, curing compound and contaminations
- The application is done meticulously and in the right circumstances (dry). (see measurements)
- The specifications and recommendations as mentioned in this description are followed
- Follow-ups occur by means of regular inspections and maintenance of the joints.

Follow-up

The user of the joints is to inspect them regularly and remove sand, pebbles, pieces of glass and other harmful objects.

It is necessary to have a professional inspection and restorative maintenance done once every three years. (or as often as necessary depending on intensity of use)

Small defects such as crumbling of concrete adhesive surfaces can be restored. Larger ones require a recovery plan.

SABA Sealer Field and SABA Sealer MBT are easily repairable. (good adhesion of old on new)



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Comments

SABA Sealer MB is a two-component polysulfide joint substance which is self leveling and has superior specifications.

It can be applied when high demands are set for chemical resistance, as is the case in the chemical and process industry.

In stead of SABA Sealer Field, SABA Sealer MB can always be used as an alternative.

10. Explanation of abbreviations

US-Federal-Specification SS-S-200E	American airport specification for joints
EPS	Epoxy polysulfide
MB / MBT	Milieu Beschermend / Milieu Beschermend Thixotroop (Protective of Environment / Protective of Environment Thixotropic)
CR / CRT	Chemisch Resistent / Chemisch Resistent Thixotroop (Chemical Resistance / Chemical Resistance Thixotropic)
HM	High Module
DIBt	Deutsches Institut für Bautechnik (German Institute for Building techniques)