METHOD STATEMENT

SikaSwell®

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BUILDING TRUST

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1. SCOPE

This method statement describes the step by step procedure for the sealing of construction joints in watertight concrete structures using the SikaSwell® A profiles and SikaSwell® S-2 sealant. This method statement should be used in conjunction with the most recent issue of the local product datasheets for SikaSwell® A profiles and SikaSwell® S-2 sealant.

2. SYSTEM DESCRIPTION

SikaSwell® products are extremely cost effective hydrophilic joint sealing systems for construction joints which swell in contact with water. SikaSwell® A profiles are easily bonded to joints and penetrations in concrete with SikaSwell S-2® adhesives, normally with no influence on reinforcement and formwork.

Table 1 SikaSwell® Product range *Not all available in UK market.

USES

Sealing most types of construction joints in many different structures and applications including:

- Construction joints in in-situ concrete
- Pipe and steel work penetrations through walls and floor slabs

Characteristics/Advantages

- Easy and fast to apply
- Highly economical joint sealing solution
- Versatile solution for joints and details
- Can be applied on different substrates
- Swells in contact with water
- Long-term reliability tested
- Different types and dimensions available

LIMITATIONS

- Do not use SikaSwell® products for movement joints.
- Sikaswell® A profile must be fully confined to prevent free swell and joints must be structrually tied to prevent differential movement.
- SikaSwell® A profiles and SikaSwell® S-2 adhesive sealant expand in contact with water. This does not happen immediately, but slowly after several hours depending on the existing voids and gaps to be filled. Nevertheless, it is advised not to leave SikaSwell® A profile and SikaSwell® S-2 sealant for any length of time in the open air or exposed to water.
- If the water level suddenly increases the watertightness of joints will only be achieved when SikaSwell® A profiles or SikaSwell® S-2 sealant have swollen.
- In a totally dry state SikaSwell® products shrink to their original dimensions but expand again in contact with water.
- SikaSwell® S-2 should be used as a stand-alone solution around plastic pipes, complex profiles and small diameter penetrations.
- SikaSwell® products are recommended for sealing against water pressures up to 2 bar. For pressurs higher than 2 bar use alternative or supplementary Sika Joint Sealing Solutions or contact Sika Technical Services for further information.
- Sikaswell® system should form a continuous network in all construction joints, linked to other joint protection systems or appropiately terminated above ground level.

REFERENCES

To ensure the correct application of all components of the SikaSwell® products, please also refer to the following documents for each system component:

- PDS (Product Data Sheet)
- SDS (Safety Data Sheet)

3. PRODUCTS

SikaSwell® range is supplied ready to use. The SikaSwell® product range consists of swellable sealing profiles such as SikaSwell® A profiles, Rings and SikaSwell® S-2 adhesive sealant for different applications and conditions.

Note: Not all products/profiles are available on all markets. Please contact Sika for local availability.

3.1 SIKASWELL® A SEALING PROFILE AND RINGS

SikaSwell® A is an acrylic sealing profile which swells in contact with water to seal all types of construction joints and penetrations in concrete. It has a rectangular profile and is available in several sizes.

SikaSwell® A – PROFILES

Type	Width (mm)	Thickness (mm)	Cross Section (Schematically view)	m/ Box
SikaSwell® A 2005	20	5		6x20 = 120m
SikaSwell® A 2010	20	10		6x10 = 60m
SikaSwell® A 2025	25	20		6x5 = 30m

SikaSwell® A – RING

Type	Internal Diameter (mm)	External Diameter (mm)	Cross Section (Schematically view)	PC / Box
SikaSwell® A Ring	18	20		264
SikaSwell® A Ring	26	28		240
SikaSwell® A Ring	42	45		120

3.2 SIKASWELL® S-2 SEALANT

To achieve a durable, watertight connection between the SikaSwell® A Profiles and the substrate, a SikaSwell® S-2 sealant is used.

PRODUCT	Type	Packaging
SikaSwell® S-2	600 ml unipacs	(20 pc/Box)

CONSUMPTION*

Size of triangular section	600 ml unipacs
12 mm	8.2 m
15 mm	6.2 m
20 mm	3.6m

* Effective consumption depends on the surface roughness. Consumption based as stand-alone solution ie around pipe penetrations and when it is not possible to install Sikaswell® A profile.

3.3 MATERIALS STORAGE

Materials must be stored properly in undamaged original sealed packaging, in cool, dry conditions. Protected from direct sunlight, rain and humidity.

Refer to specific information contained in the product data sheet regarding minimum and maximum storage temperatures.

4. SURFACE PREPARATION

Correct surface preparation is essential in order to achieve good adhesion with the SikaSwell®S-2 sealant and A profiles. Substrates should be prepared as follows:

- Existing Concrete
  All loose particles, release agents, laitance, paint, rust and other poorly adhering materials must be removed by suitable hand or mechanical preparation. Excessively rough surfaces can be susceptible to leakage and should be levelled with Sika Monotop Repair materials or mechnical treatment.

- Freshly cast concrete
  It is important that the entire joint surface is mechanically prepared or retarded and jet washed to remove surface laitance and contaiminants. Where the Sikaswell® is to be applied, rough surfaces may be smoothed with a batten whilst the concrete is still workable.

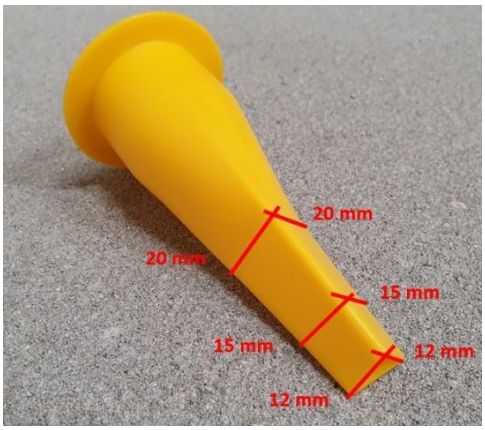
- Metal and Plastic surfaces
  Surfaces must be mechanically cleaned to remove rust, grease, dirt and contamininants and dry before application of Sikaswell® S-2 adhesive.

5. INSTALLATION METHOD

5.1 SIKASWELL® S-2 SEALANT INSTALLATION AS STAND ALONE SOLUTION

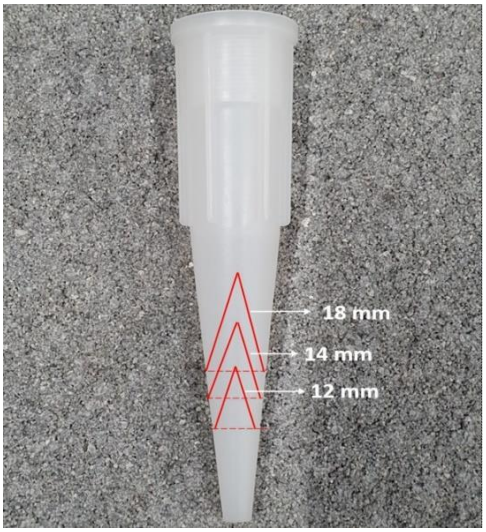
The nozzle can be cut differently to adjust the amount of sealant to the conditions on site. e.g. thickness of concrete section, surface roughness, size of aggregates etc.

- For a concrete thickness of 175 - 200 mm the sides of the triangle should be 12 mm
- For a concrete thickness of 200 - 300 mm the sides of the triangle should be 15 mm
- For a concrete thickness above 300 mm the sides of the triangle should be 20 mm



Unipack nozzle (yellow) cutting:

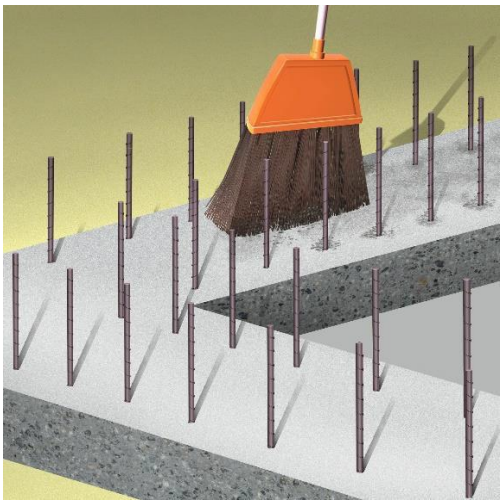
- Unipack packaging includes triangular shaped nozzles. The standard nozzle of the unipack will deliver a 12mm triangle.
- Cut to the required mark for when triangles of 15mm and 20mm are required.



Cartridge nozzle (white) cutting:

The nozzle has 3 markings. Cut the nozzle to length depending on the bead size required, then cut the triangle to suit.

- The first marking will deliver a triangle of 12 mm
- The second marking will deliver a triangle of 14 mm
- The third marking will deliver a triangle of 18 mm

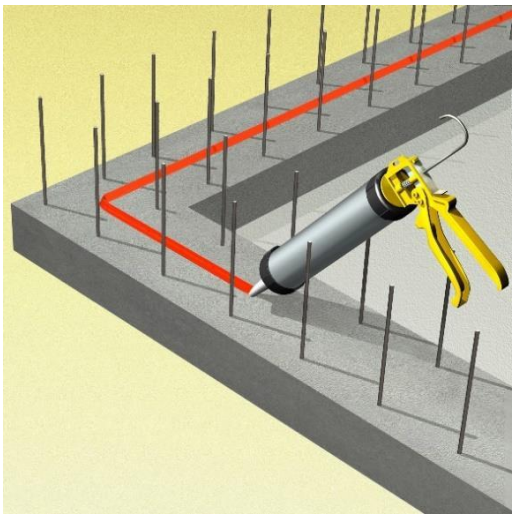


The surface preparation according to chapter 4:

The concrete must be structurally sound and clean. Mechanically remove cement laitance, loose or friable areas, old coatings etc. (scabble, blast clean, abrade etc.). This can be achieved by retarding new concrete and washing down.

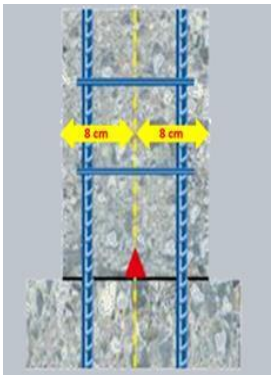
The cleaned surface must be free from dust, oil and grease etc, that could impair adhesion of the sealant.

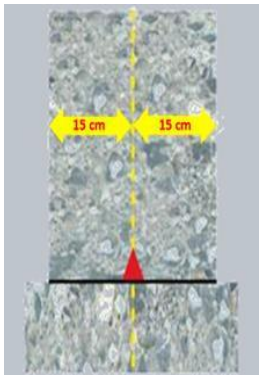
The substrate must be dry or matt damp (no standing water) before and during the application and curing process.



Apply SikaSwell® S-2 to the clean surface.

SikaSwell® S-2 must be extruded in sufficient quantity to level the roughness of the substrate in the centre of the concrete section.





Apply the adhesive in the centre of the concrete section with a minimum concrete cover of

- 75mm (reinforced concrete) or
- 150 mm (unreinforced concrete)

Concrete cover must be fully reinforced in accordance with BS:EN1992 to provide sufficient restraint and prevent spalling of the concrete.

During placement compact the fresh concrete well around the Sikaswell® to ensure a good dense concrete without voids or honeycombs.

Drying time SikaSwell® S-2:

- Pouring height < 500 mm: 12 hours
- Pouring height > 500 mm: Minimum 24 hours depending on thickness and temperature (Slow curing ~2 mm/day (+23 °C / 50% r.h.))

5.2 SIKASWELL® S-2 PENETRATION DETAILING

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A maximum 12mm bead(s)* of Sikaswell® S-2 mastic should be used to seal all penetrations.

*(The number of Sikaswell® S-2 rings to be determined by waterproofing system requirements).

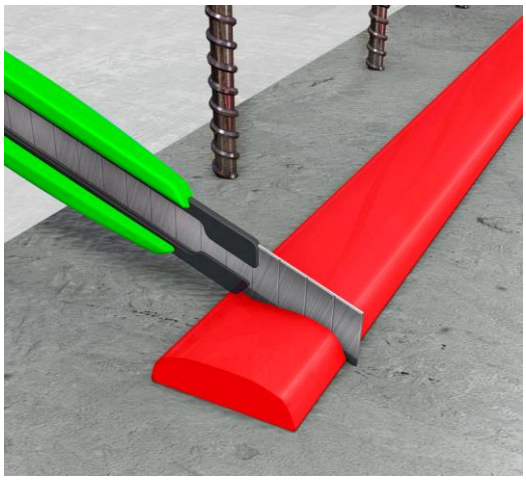
Multiple pipe penetrations must have a minimum of 50mm gap between them to allow for concrete compaction and expansion of Sikaswell® S-2 mastic.

5.3 SIKASWELL® A PROFILE INSTALLATION

All loose particles, release agents, laitance, paint, rust and other poorly adhering materials must be removed by suitable hand or mechanical preparation.

Surfaces which are excessively rough tend to leak later.

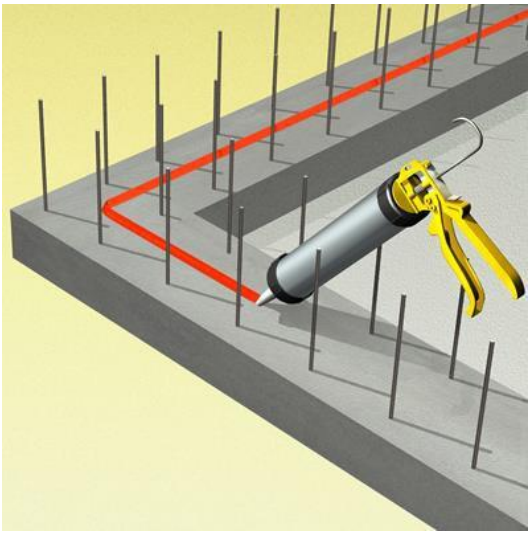
We recommend smoothing of freshly placed concrete with a batten where the sealing profile is to be placed. SikaSwell® products need continuous contact to the substrate.



Cut the SikaSwell® A profiles to the required length.

Selection of the profile type, size and number of strips is governed by the thickness, grade of concrete, reinforcement position as well as waterhead to which it is to be exposed to.

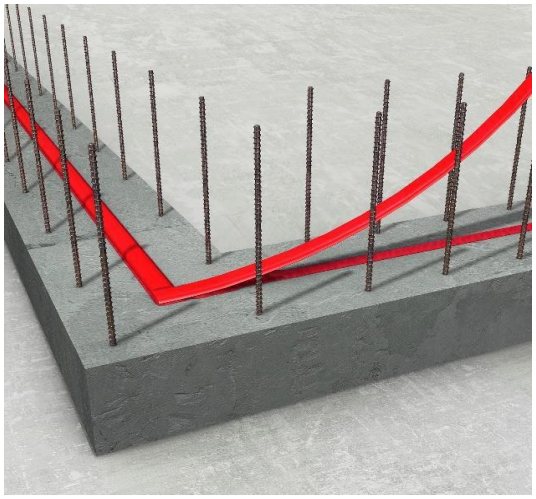
Sikaswell® A profiles should have a minimum distance of 20mm from rebar to allow for concrete compaction.



Apply the SikaSwell® S-2 or SikaSwell® 1 Rapid NS as adhesive to the cleansurface.

For rough surfaces SikaSwell® S-2 / SikaSwell® 1 Rapid NS must be extruded in sufficient quantity to level the roughness of the substrate.

End connections and corners must be butt jointed and over strapped with Sikaswell® S-2 or SikaSwell® 1 Rapid NS.



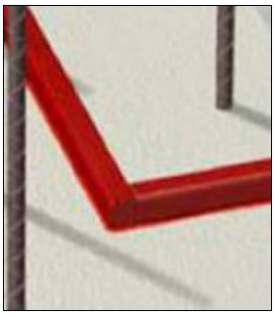
Apply the adhesive in the centre of the concrete section with a minimum concrete cover of

- 75 mm (reinforced concrete) or
- 150 mm (unreinforced concrete)

Concrete cover must be fully reinforced in accordance with BS:EN1992 to provide sufficient restraint and prevent spalling of the concrete. This is extremely important when using Sikaswell® in concrete upstands.

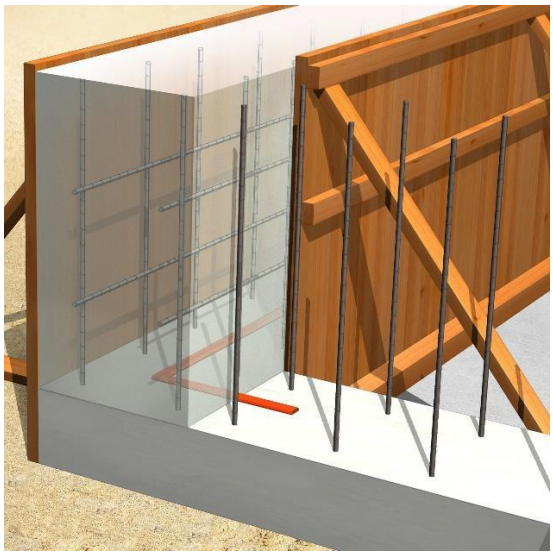
Apply the SikaSwell® A profile within 30 minutes and press into the adhesive to ensure full and coninuous contact between Sikaswell® S-2 / SikaSwell® 1 Rapid NS and the substrate.

When this is achieved a continuous small bead of Sikaswell®S-2 / SikaSwell® 1 Rapid NS will be visible on both sides of the Sikaswell® A profile.



Fixing details:

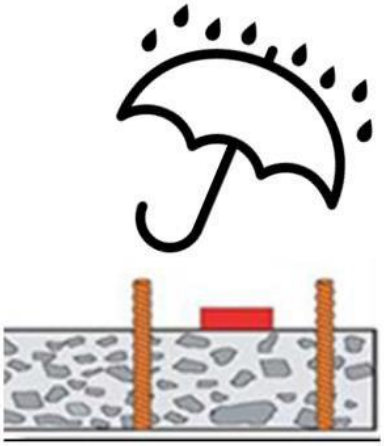
Connections and corners must be butt jointed and over banded with a small bead of Sikaswell® S-2 / SikaSwell® 1 Rapid NS adhesive.



Allow the Sikaswell® S-2 adhesive to harden for a minimum 12 to 24 hours (SikaSwell® 1 Rapid NS minimum 4-6 hours) before placing concrete depending on height of concrete pour.

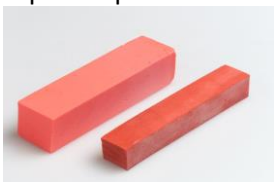
Fully compact concrete around profiles to provide a dense concrete without honeycombs or voids.

Avoid pouring concrete from exessive height and contact between vibrating pokers and the Sikaswell® system as this can damage or dislodge the Sikaswell® system.



SikaSwell® A profiles, SikaSwell® S-2 and SikaSwell® 1 Rapid NS sealant adhesive should be protected from rain, weather and standing water prior to placement of the concrete.

Any material that has been exposed to water and has turned pink and/or started to swell must be removed and replaced prior to casting concrete. (please see below).



5.3 EQUIPMENT - TOOLS

Professional tools and equipment are required for safe application and to produce a watertight joint / detailing installation.

Application of the SikaSwell® profiles and sealant

- Brush
- Knife
- Sealant gun

6. HEALTH AND SAFETY

6.1 PERSONAL PROTECTION EQUIPMENT (PPE) - SAFETY FIRST

- Appropriate eye protection should be worn at all times while handling products.
- Protective clothing (e.g. safety shoes, long-sleeved working clothing, long trousers).
- Chemical-resistant, impervious gloves complying with an approved standard must be worn at all times when handling chemical products.
- Always wash hands with suitable soap after handling products and before food consumption.

Wash your exposed skin occasionally during the workday and immediately if any material gets on it. Avoiding skin contact by keeping tools and equipment clean is one of the best ways to protect oneself.

Despite safety precautions, with any instances of skin contact rinse immediately with clean warm water and use soap to thoroughly clean the skin.

FOR DETAILED INFORMATION REFER TO THE RESPECTIVE PRODUCT'S MATERIAL SAFETY DATA SHEET (MSDS)

6.2 FIRST AID

No hazards which require special first aid measures.

FOR DETAILED INFORMATION REFER TO THE RESPECTIVE PRODUCT'S MATERIAL SAFETY DATA SHEET (SDS).

7 ENVIRONMENT

7.1 CLEANING TOOLS / EQUIPMENT

Uncured material can be removed with Sika® Thinner C. Cured material can only be removed mechanically (or with heat treatment).

7.2 WASTE DISPOSAL

No hazards which require special waste disposal.

FOR DETAILED INFORMATION REFER TO THE RESPECTIVE PRODUCT'S MATERIAL SAFETY DATA SHEET (SDS).

8. 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 products 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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