



# WATERPROOFING

## SikaSwell®

# Hydrophilic Profiles and Sealants

ACTIVE WATERPROOFING SOLUTIONS FOR CONSTRUCTION JOINTS

**BUILDING TRUST**



# SikaSwell® – ACTIVE WATERPROOFING SYSTEM

**HYDROPHILIC JOINT SEALING SYSTEMS** like SikaSwell® profiles and sealants are water-stops which can swell and are used in watertight concrete structures for systematic sealing of construction joints. When in contact with water, the SikaSwell® waterstop builds up a swelling pressure inside of the construction. This swelling pressure seals the construction joint and stops water crossing.

## INTRODUCTION

SikaSwell® swellable profiles and sealants are an internationally tested and proven range of extremely cost effective hydrophilic joint sealing systems which swell in contact with water.

SikaSwell® profiles are easily bonded to joints and penetrations in concrete with Sika® adhesives, normally with no effect on reinforcement and formwork. The SikaSwell® product range includes solutions for sealing construction joints, pipe penetrations, precast sections and isolation joints i.e. between concrete and steel components. They can be used for the primary joint sealing of concrete joints against low to medium water pressure or to provide additional protection and security for other waterproofing systems such as water-stops, e.g. in complex detailing and structures exposed to high water pressure.

The SikaSwell® systems can also provide effective solutions for waterproofing in difficult exposures or application conditions, e.g. against seawater or water with a high salt content, during periods of heavy rainfall on site or when rapid installation without extended waiting is needed.

## KEY ADVANTAGES

- Very cost effective sealing of construction joints and penetrations
- Suitable for difficult situations (i.e. environmental conditions or access)
- Products for almost all water qualities including sea water and water with high salt content
- Can provide back-up security in combination with other waterproofing systems
- Solutions for sealing between different materials and substrates
- Internationally tested and approved



# SikaSwell® – WATERPROOFING PRINCIPLE

**HYDROPHILIC GASKETS SWELL** in contact with water. The volume enlargement is three-dimensional and the swelling pressure is developed on that side of the waterstop which is in contact with water. During this process the SikaSwell® waterstop exerts pressure on the surrounding surfaces and seals the construction joint against water penetration. SikaSwell® products are characterised by a reliable capacity and a reversible swelling process. The sealing effect can be guaranteed even in small joint openings.



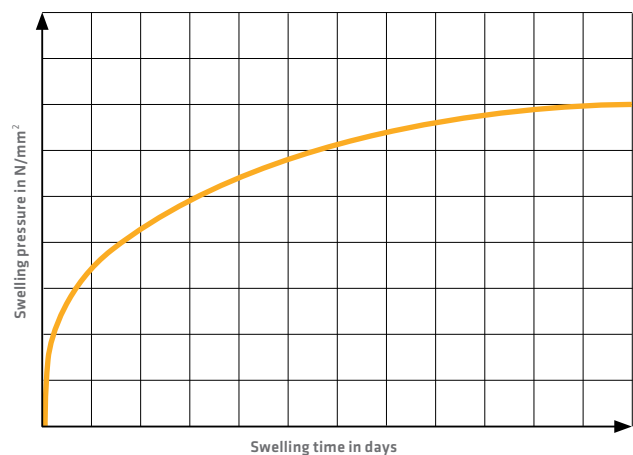
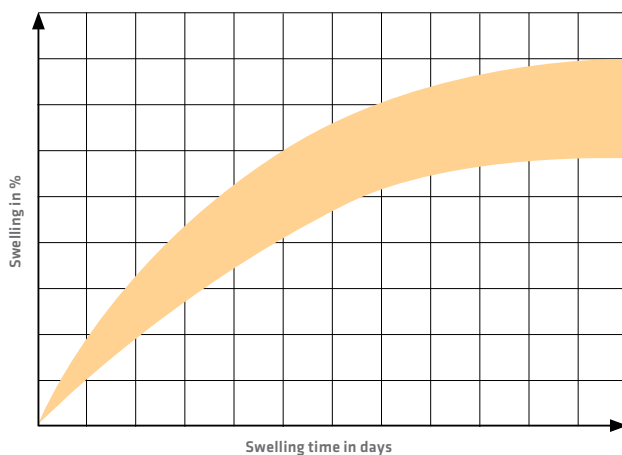
A proper sealing system in the joint is necessary to prevent long-term leakage.



In the presence of water SikaSwell® profiles and sealants develop an expansive swelling pressure to prevent the penetration of water and provide a durable waterproofing solution in the joint.



## SWELLING CAPACITY



The swelling capacity of each product is unique. The specific swelling capacity of each product is shown by the respective product data sheet. Swelling in volume and primary pressure defines the performance of the specific waterstop. Both volume and pressure increase over time until they reach the maximum value.



# SikaSwell® – OVERVIEW

**SikaSwell® PROFILES AND SEALANTS** are used in construction joints in basements and other below ground water structures with a low to medium ground water pressure. Other applications include construction joints in in-situ and precast concrete, connecting joints in diaphragm walls, pipe and steel work penetrations through walls and floor slabs, cable ducts and more. SikaSwell® products are very easy to apply and therefore the risk of application failures is minimized.

The SikaSwell® profiles and sealants are applied to a sound and clean substrate, free of grease, dust and loose particles. Due to the direct application on the finished surface this waterproofing joint sealing system has no influence on the reinforcement and formwork.

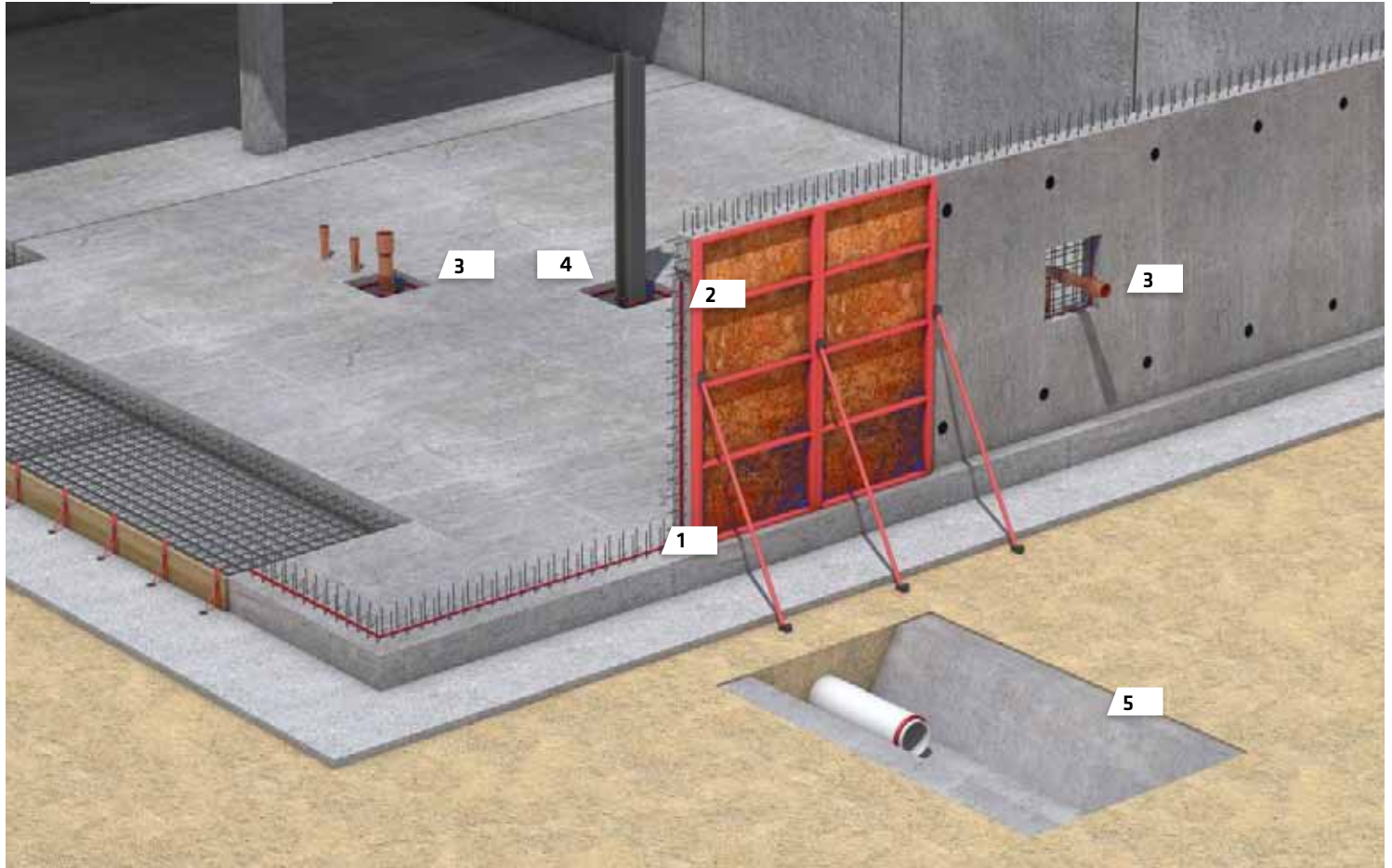
The application should take place shortly before concreting to avoid premature swelling. The waterstop must have continuous contact onto the base in the joint area to provide maximum and proper sealing capacity and to prevent any leakage at a later stage.

SikaSwell® sealant can be applied as adhesive for the profiles and directly onto rough surfaces. Both, SikaSwell® sealant and profiles can be used in new structures and refurbishment works. Furthermore they are very effective in combination with other waterproofing systems such as SikaFuko® injection hose system, to seal connection joints between existing and new buildings or structures for example.

When concreting, take care to ensure that the swelling waterstop is fully embedded into the waterproof concrete.



# SikaSwell® – TYPICAL APPLICATIONS



1



## Construction Joints

SikaSwell® can be used for nearly all types of construction joints and are very advantageous in joints with difficult access.

2



## Waterproofing Details

SikaSwell® Plugs and Rings are an easy and secure way of sealing around all types of formwork spacers. Different sizes are available for most common spacer systems.

3



## Penetrations

SikaSwell® systems provide flexible waterproofing solutions for all types of penetrations, with swellable sealants and different shaped profiles to meet all different requirements.

4



## Isolation Joints

SikaSwell® can seal the isolation joints between materials very easily and can be applied or bonded to many different substrates as well as concrete, including natural stone, metals and many plastics.

5



## Precast Concrete

Precast elements can be sealed by individual SikaSwell® products e.g. between precast concrete pipes and culverts.

# SikaSwell® A PROFILES, PLUGS AND RINGS

**THIS ACTIVE JOINT SEALING SYSTEM** offers unique swelling properties, proven long-term durability and is highly economic and cost effective.

## TECHNOLOGY

The base material of the SikaSwell® A swelling waterstops are tough and flexible acrylate polymers which can store water in their molecular structure with accompanying increase in volume.



Picture above: Product in Normal condition.

Picture below: Product in swelled condition after contact with water.

## PERFORMANCE

The unique flexible properties enable it to swell into small cracks and gaps and to expand to fill any voids, providing more security.

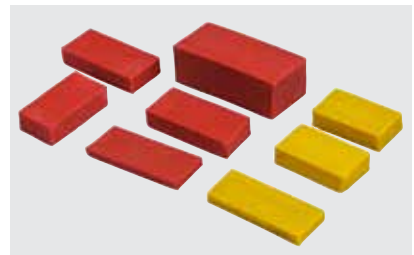


Different samples show unique swelling performance into small pores, voids and gaps without losing cohesion.

## AREAS OF APPLICATION

The SikaSwell® A profiles can be used for different construction joints, transitions and penetrations in in-situ water-tight concrete structures.

There are SikaSwell® A profiles specifically designed to develop these swelling pressures with seawater and water with a high salt content.



SikaSwell® A plugs and rings are sealing elements specially developed for the sealing of formwork spacers made of fibre concrete or plastic.

## TEST REPORT

SikaSwell®-A:

- BBA Approval Inspection Certificate – Technical Approval For Construction, Agrément Certificate 13/4994 (02.05.2013)
- Vattenfall Test Report, BBA Approval, Watertightness Testing of Hydrophilic Waterstop (23.05.2012)
- MPA NRW: German approval for construction joints (18.11.2009)
- Wissbau: Functional test sealing capacity (25.10.2012)
- Wissbau: Test of swelling pressure (25.10.2012)
- FH Aachen: Mechanical long term stability (08.12.2012)





# SikaSwell® P PROFILES

**THIS ACTIVE JOINT SEALING SYSTEM** offers a high mechanical stability in various profile shapes including a protective coating to withstand even heavy rain.

## TECHNOLOGY

The base material of the SikaSwell® P swelling waterstops is a swellable polymer, an elastomer matrix filled with particles of superabsorbents. The superabsorbents are able to swell in contact with water. There are mono and hybrid types available.



Picture above: Product in Normal condition.

Picture below: Product in swelled condition after contact with water.

## PERFORMANCE

The special protective coating allows use even in adverse weather conditions. SikaSwell® P can withstand compressive pressures in one direction. Different shapes and types enable selection of the best product for each requirement.



Picture above: Protective coating.

Picture below: Mono types/Hybrid types.

## AREAS OF APPLICATION

The high mechanical properties of the SikaSwell® P profiles are ideal for application in connection joints in precast concrete elements, transitions and penetrations in in-situ watertight concrete structures.



## TEST REPORT

SikaSwell®-P:

- STUVA: Water tightness Test (01.2014)
- PSB Corporation: Functional test sealing capacity (15.08.2002)

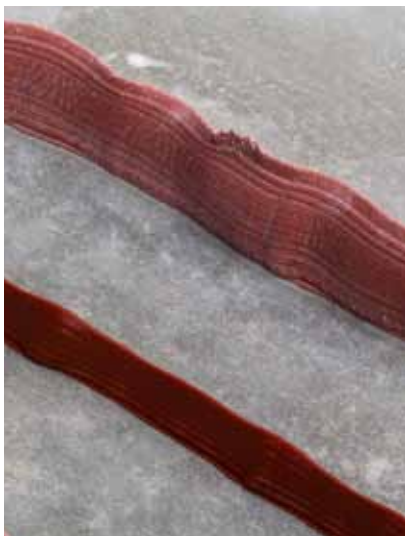


# SikaSwell® S-2 SEALANT

**SikaSwell® S-2** is a one component, gun applied swellable sealant system for fast application. It enables the use of an active hydrophilic joint sealing system even on rough surfaces.

## TECHNOLOGY

SikaSwell® S-2 is a one part polyurethane sealant with an optimized expansion rate and unique swelling properties. The sealant is moisture curing.



Product in normal and swelled condition after contact with water.

## PERFORMANCE

SikaSwell® S-2 offers high flexibility in application and is adaptable to fit many different details. It is available in practical cartridges and unipacs. The paste can be applied with a suitable hand-held gun.



## AREAS OF APPLICATION

The SikaSwell® S-2 is a sealant for fast and easy application, with a minimized risk of application failures. It is suitable for use on rough surfaces and all around for the sealing of construction joints in watertight concrete structures. It is also used as an adhesive for fixing of other SikaSwell® profiles or the injection hose system SikaFuko® Swell-1.



Picture above: Sealant used on a stand-alone basis.

Picture below: Sealant used as adhesive for the profile.

## TEST REPORT

- Hong Kong Testing Co., LTD.: Water permeability Test (9.10.2010).





# SikaFuko® SWELL-1 INJECTION HOSE SYSTEM

**SikaFuko® Swell-1** injection hose system combines injection technology with the use of hydrophilic profiles in one product.

## TECHNOLOGY

SikaFuko® Swell-1 is a reinjectable injection hose system with three exterior swelling strips (yellow) on the surface of the hose.



Picture above: Product in normal condition.

Picture below: Product in swelled condition after contact with water (yellow strips, Phase 1).

## PERFORMANCE

The SikaFuko® Swell-1 injection hose system offers two different and independent sealing technologies and therefore high security. Waterproofing in two distinctly separate phases:

Phase 1: Swelling by water or salt water penetration

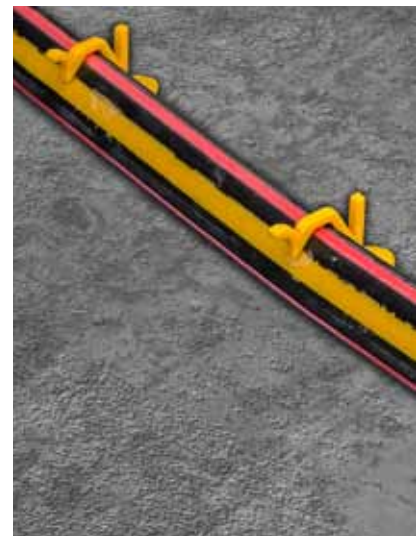
Phase 2: By injection or reinjection at a later stage (if necessary).



Neoprene strips (red) are compressed under injection pressure, injection material can penetrate into the joint and structure (Phase 2).

## AREAS OF APPLICATION

The SikaFuko® Swell-1 system is used to seal construction joints in watertight concrete structures against water and seawater ingress. It is flexible and easy in application.



## TEST REPORT

- Hygiene-Institut Gelsenkirchen: Scientific examination according to water-hygienic aspects (27.11.2008).



# SikaSwell® – SELECTION GUIDE

**SikaSwell® A, SikaSwell® P, SikaSwell® S AND SikaFuko® Swell** are swellable profiles, sealant and injection hose system based on different materials and are available in various shapes and sizes. SikaFuko® Swell-1 even combines different sealing technologies. Due to this each product has its ideal application field.

## SikaSwell® SELECTION GUIDE

	Construction Joints		Penetrations	
	Concrete Structure	Precast Elements	Pipes	Steel Work
SikaSwell® A-2005	■	■	■	■
SikaSwell® A-2010	■	■	■	■
SikaSwell® A-2015/2025	■	■	■	■
SikaSwell® P-2003/2005	■	■	■	■
SikaSwell® P-2010/2010 H	■	■	■	■
SikaSwell® P-2507 H	■	■	■	■
SikaSwell® S-2	■	■	■	■
SikaFuko® Swell-1	■	■	■	■

■ Ideal product for application  
 ■ Possible application  
 ■ Not applicable

The dimension and specific selection of the SikaSwell® product depends in each application area on the quality of substrate, e.g. rough or smooth, the shrinkage behaviour of the waterproof concrete, the maximum expected water pressure and the structure thickness.

## SikaSwell® SELECTION GUIDE ACCORDING TO WATER CONDITIONS

	Water Characteristics		
	Fresh water	Light to medium salt water (salt content < 8%)	Heavy salt water (salt content > 8%)
SikaSwell® A	■	■	■
SikaSwell® A-M	■	■	■
SikaSwell® P	■	■	■
SikaSwell® S-2	■	■	■

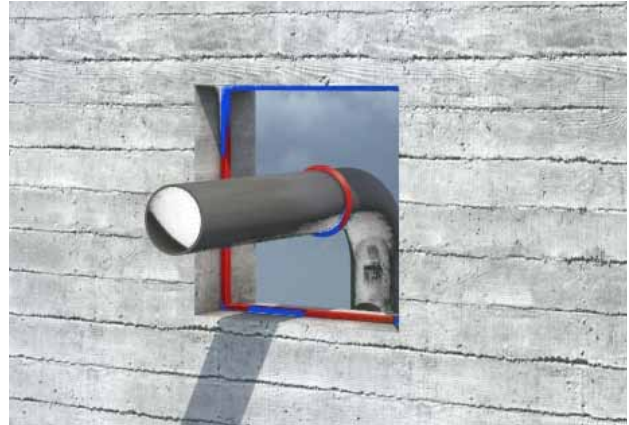
■ Ideal product for application  
 ■ Not applicable

# SikaSwell® – EXAMPLES ON SITE

**Construction joints**



**Penetrations**



**Precast concrete elements**



**Connection diaphragm walls**



**Transitions steel/concrete**



**Formwork spacers**





# GLOBAL BUT LOCAL PARTNERSHIP



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