Watertight Concrete
Construction Solutions
A History of Waterproofing

Founded in 1910, by the inventor Kaspar Winkler, in Zurich, Switzerland, Sika’s first generation of admixtures earned widespread acclaim. Sika-1, Sika-2, and Sika 4a were the products that laid the foundations for today’s worldwide Sika group and its industry prominence. By providing vital benefits such as faster set times and waterproofing, these systems quickly propelled Sika into early and sustained growth.

Today, with more than 100 years of worldwide experience in watertight concrete construction to draw upon, Sika Canada Inc. introduces a comprehensive and innovative product offering for watertight structures. A full range of concrete admixtures for the production of watertight concrete is supported by a complete spectrum of products for watertight joints including waterstops, single use or re-injectable injection hose systems, swelling waterstops and versatile sealing systems that can be applied before or after the placement of concrete.

Sika further supports the watertight structure market with innovative waterproofing systems, coatings, sealants, and repair mortars. This combination of multiple technologies allows Sika to present an extensive and custom tailored approach which addresses the customer’s needs in an economically efficient way.

- A watertight concrete structure can be designed to keep water out, keep water in, or both, particularly in the water industry. This can be the case for both fresh water supply and wastewater treatment facilities.

- In the future, greater controls on water quality and increasing regulations for the protection of groundwater will require the construction of many more watertight concrete structures.
These same positive trends in environmental legislation worldwide will also lead to many more requirements for watertight construction.
Sika offers comprehensive solutions for watertight structures. A complete range of concrete admixtures for the production of watertight concrete is supported by a full spectrum of products for watertight joints including waterstops, single use or re-injectable injection hose systems, swelling waterstops and versatile sealing systems. Sika offers unique possibilities for projects of any size.

**Watertight Concrete**

**Dense, Impermeable Concrete**

Watertight concrete requires minimized capillary volume, low absorption and reduced permeability. Sika’s range of concrete admixtures addresses specific issues and problems that may occur in your project.

**PVC Waterstops**

**Construction and Movement Joints**

Embedded in concrete, across and/or along the joints, waterstops form a watertight diaphragm preventing the passage of fluid through the joint.
Versatile Sealing Systems
Construction and Movement Joints
Unique “strip and seal” system to seal and waterproof difficult and irregular cracks and joints. It withstands extreme movement and chemical exposure while maintaining a watertight seal.

Injection Hose Systems
Construction Joints
One time use or re-injectable hose systems installed in concrete joints to waterproof and seal cracks or voids along the joint.

Swelling Waterstops
Penetrations and Construction Joints
Swelling waterstop profiles expand their original volume when exposed to water. This expansion creates an effective compression seal within joints of limited movement or penetrations.
Standards and Design Criteria for Watertight Concrete Structures

Grade 1

Performance
Some damp areas tolerable; Local drainage may be necessary

Typical usage
- Basic storage
- Unfinished basements
- Underground parking structures
- Plant rooms (excluding electrical equipment)

Grade 1 represents cost effective basic level of membrane-free, watertight concrete system, addressing low pressure water intrusion, and non-moving joints. Grade 1 can be used in cases where minor damp patches and air humidity are tolerable and when aesthetics are not critical. Typical applications include underground parking structures, or non-electrical utility or storage rooms.

Grade 2

Performance
No water penetration but moisture vapour tolerable; ventilation may be required

Typical usage
- Retail storage areas
- Most water and wastewater treatment plants
- Plant rooms and workshops requiring drier environment with electrical equipment in the area

Grade 2 represents an intermediate level of membrane free, watertight concrete system, addressing medium pressure water intrusion and non-moving / moving joints. This grade can be used in cases when vapour passage is acceptable but no visible dampness is permissible. Grade 2 can be successfully used in underground retail storage, small to medium size inground water retaining structures or residential swimming pools.
Grade 3

**Performance**
No water penetration acceptable.
Dry environment – ventilated
Dehumidification and air conditioning if required.

**Typical usage**
- Residential areas, offices, restaurants
- Recreation centers, gymnasiums
- Data storage centers

**Grade 3** represents an advanced level of membrane free, watertight concrete system, addressing medium water pressure, water intrusion and non moving / moving joints. Grade 3 can be used in cases when a dry, ventilated environment is required. This grade represents concrete with high aesthetic and long durability requirements used in a wide variety of applications, such as below grade offices, retail stores, restaurants, other residential applications or large, above ground water retaining structures or large, commercial swimming pools.

**Independent Testing**
Selected pore blocking, watertight concrete admixtures produced by Sika have been tested by British Board of Agrément and received certification for watertight concrete systems.

To determine the best technical solution to address various aspects of your project, please contact your local Sika sales representative.
Sika® Concrete Production for Watertight Concrete Structures

**Construction stages**

**Formwork**

In the formwork, every joint must be tight and sealed to prevent any leakage of concrete paste. Close fitting formwork will result in a smoother concrete finish.

**Steel Reinforcement**

In watertight construction, the design, placement and tying of steel reinforcement is particularly important to minimize any potential problems.

**Concrete Placement**

While transporting watertight concrete, ensure concrete remains in constant motion.
Concrete Finishing
Proper finishing techniques for a flat concrete surface are very important to ensure the structure's long term durability and serviceability.

Concrete Curing
For watertight concrete, thorough and correct curing is essential. Immediate covering with damp burlap, plastic sheeting or curing blanket or the immediate use of a curing compound which acts as a continuous evaporation reducing system is critical.

Joint Surface Preparation
Use Sika® Rugasol® surface retarder on the formwork for concrete joint faces to easily obtain a suitable rough surface for optimum aggregate interlock with the subsequent concrete placement.
Use of Sika® Watertight Concrete Powder enhances the freeze/thaw durability of concrete.

Drying concrete shrinkage can be significantly reduced by use of shrinkage reducing admixture.
The Structure of Capillary Pores and Voids in Concrete

The important relationship between the concrete structure’s compaction and its pore content is illustrated in the following graphics:

<table>
<thead>
<tr>
<th>Size in m</th>
<th>Solid substance</th>
<th>Kind of pores</th>
<th>Type of pores</th>
<th>Radius of pores</th>
<th>Moisture absorption by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10^-1</td>
<td></td>
<td>Capillary pores</td>
<td>Coarse pores</td>
<td>&gt; 2 mm</td>
<td>in seconds</td>
</tr>
<tr>
<td>10^-2</td>
<td></td>
<td>Capillary pores</td>
<td>Macro-capillary</td>
<td>2 mm</td>
<td>in days</td>
</tr>
<tr>
<td>10^-3</td>
<td></td>
<td>Capillary pores</td>
<td>Micro-capillary</td>
<td>2 µm</td>
<td>in years</td>
</tr>
<tr>
<td>10^-4</td>
<td></td>
<td>Capillary pores</td>
<td>Meso-pores</td>
<td>50 nm</td>
<td>Condensation</td>
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<tr>
<td>10^-5</td>
<td></td>
<td>Capillary pores</td>
<td>Micro-pores</td>
<td>2 nm</td>
<td>Adsorption</td>
</tr>
</tbody>
</table>

Preventing or greatly reducing Compaction Pores by using a soft/plastic Consistency of Concrete

Produced with Sika® ViscoCrete® and Sikament® technology

The use of Self ConsolidatingConcrete offers unique benefits such as:
- No vibration and less finishing
- Improved quality and durability
- Improved concrete/waterstop interlock
- Reduced noise and improved health and safety condition
- Reduced labour and equipment

Reducing Capillary Pores and Voids by Water Reduction

Capillarity with a high w/c ratio: >0.6
Large pore network and voids due to the low content of fines.

Capillarity with a low w/c ratio: 0.4
Very dense cement matrix, ideal for watertight concrete.

Rapid Chloride Permeability

Rapid Chloride Permeability Test

Hydrophobic pore blocking agents effectively reduce water permeability and chloride permeability through the concrete. This results in improved concrete durability. Concrete treated with Sika Watertight Admixtures shows significant improvement over reference concrete and also over concrete containing High Range Water Reducing Admixture.

Water Permeability

Water Permeability test performed as per modified DIN 1048 / EN 12390-8 (6 bar / 144 hrs)
Concrete Jointing Technology for Producing Watertight Concrete Structures

There are 3 different principles that can be applied to produce

**Principle 1: Integral Cast-In-Place**

Water ingress is stopped within the structural concrete.

Ideal for use:
- Where exterior waterproofing is undesirable for aesthetic reasons
- Where the waterproofing has to be protected from direct contact with aggressive water, hydrostatic water pressure or ground movement (e.g. due to abrasion)
- Where source of hydrostatic head pressure can be from either inside or outside of the structure

**Principle 2: Internal Surface Applied**

Water ingress is stopped at the interior surfaces of the structure.

Ideal for use:
- When connecting to an existing structure
- For restoration and repair work
- Where source of hydrostatic head pressure is inside the structure (tank or containment area)
Concrete Jointing Technology for Producing Watertight Concrete Structures

Principle 3: External Surface Applied

Water ingress is stopped at the exterior surfaces of the structure.

Ideal for use:
- Where congested steel reinforcement does not permit proper installation of integral cast in place waterproofing solutions.
- Where water outside the structure must be prevented from coming into contact with the reinforcement (e.g. aggressive sulphate or chloride containing water)

The Selection Criteria (Principle 1–3)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Principle 1 Integral Cast in Place</th>
<th>Principle 2 Internal Surface Applied</th>
<th>Principle 3 External Surface Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pressure Grade 1</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
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<tr>
<td>Water pressure Grade 2</td>
<td>• • •</td>
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</tr>
<tr>
<td>Water pressure Grade 3</td>
<td>• • •</td>
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<td>n/a</td>
</tr>
<tr>
<td>Construction joint</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
</tr>
<tr>
<td>Movement joint</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
</tr>
<tr>
<td>Contiguous secant piling</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
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<tr>
<td>Connection to existing buildings (movement)</td>
<td>retrofit</td>
<td>• • • •</td>
<td>• • • •</td>
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<tr>
<td>Repair work</td>
<td>n/a</td>
<td>n/a</td>
<td>• • • •</td>
</tr>
<tr>
<td>Cracks</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Water inside</td>
<td>• • •</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Abrasion/mechanical damage</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
</tr>
<tr>
<td>Chemical attack (sulphate water)</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
</tr>
<tr>
<td>Aesthetic aspects</td>
<td>• • •</td>
<td>• • • •</td>
<td>• • • •</td>
</tr>
</tbody>
</table>

* • • Very good • • Good • Limited * must consider positive vs. negative pressure
Sika® Greenstreak® waterstops for concrete joints

Sika® Greenstreak® waterstops are extruded from flexible PVC material for sealing both non-moving and moving concrete joints subject to hydrostatic pressure. Waterstops are cast-in-place and can be heat welded to create a continuous diaphragm which prevents the passage of fluid through joints.

PVC is the standard for flexible waterstops, offering a broad design selection and is accepted under the ACI 350 “Code Requirements for Environmental Engineering Concrete Structures”. Independent laboratory tests are available for the following applicable standards:

- Corps of Engineers CRD-C 572-74
- Bureau of Reclamation
- British Standards
- Various State Highway and/or Public Works Department Standards

**Ribbed with Centrebulb** is the most versatile waterstop profile available. The centrebulb accommodates lateral, transverse and shear movement and ribbed profiles outperform dumbbell profiles.

**Base Seal** is ideal for slab-on-grade joints, backfilled walls or tunnel applications and are easy to form. There are some limitations with transitions and intersections.

**Retro-fit waterstops** are also available for applications between new and existing structures. **Westec brand TPER and PE waterstops** are available for chemical exposure applications not suitable for PVC waterstops.

Sika Canada offers a variety of waterstop products to accommodate many different applications. Labour saving factory fabrications are available for transitions and intersections and promote quality waterstop installation procedures. Contact a Sika Canada engineer regarding specific project needs.
Sealing of movement and construction joints with the Sikadur® Combiflex® SG System

A high performance joint sealing system consisting of the Sikadur® Combiflex® SG sealing strips and Sikadur® 30 or 31 Hi-Mod Gel epoxy adhesives. This system is renowned worldwide for proven performance in sealing difficult joints and/or cracks in all types of structures. It is particularly useful in watertight basement construction and can be applied to either an interior or exterior concrete surface to meet the specific project requirements.

Advantages

- Easily adaptable to the construction program.
- Easy to adapt to complicated construction details.
- Simultaneous additional crack repairs are possible.
- Damage or leaks can be repaired on exterior or interior concrete surfaces.
- Easy to control the application because it is visible.
- Easy to repair damage.

The Sika Systems

The selection of the appropriate width and thickness of the Combiflex membrane strip is dependent on the joint requirements and exposure:

- Sikadur® Combiflex® strip thickness of 1 mm (40 mils) for low mechanical stress.
- Sikadur® Combiflex® strip thickness of 2 mm (80 mils) for higher mechanical stress.
- The Sikadur® Combiflex® strip widths available are 10, 20, and 30 cm (4, 8 and 12 in).
  Special widths on request.
- The Sikadur® 30 and 31 Hi-Mod Gel adhesives provide either extended open time or fast-setting properties respectively with Sikadur® 31 Hi-Mod Gel suitable for potable water contact, meeting ANSI/NSF Standard 61.

Limitations

- Application is weather-resistant.
- Additional protection is required when backfilling.
- Backfilling/support structure is necessary to prevent negative pressure.
Sealing of Construction Joints with SikaFuko® VT Injection Hose System

SikaFuko® VT is a specially designed and patented solid core PVC injection hose system which is installed in concrete construction joints to waterproof and seal any cracks or voids along the length of the joint. The SikaFuko® VT system seals joints watertight and offers a complete maintenance program if leakage appears in the future. When the appropriate Sika® injection material is selected, the SikaFuko® VT system can be used for multiple injections; a significant advantage over any other hose system available.

The SikaFuko® VT Injectable hose system is a logical step forward in improving waterstop technology. Utilizing this state-of-the-art injection system results in “zero leak tolerance”. Easy to install and reasonably priced - SikaFuko® VT simplifies the job and guarantees watertight concrete construction joints.

Advantages

- Patented valve design can be cleaned by using water and vacuum pressure to clear the hose for future injections.
- SikaFuko® VT is suitable for a wide range of injection materials.
- The ability to reinject SikaFuko® VT provides a maintenance option to ensure a watertight joint for the life of the structure.
- SikaFuko® VT is installed in the joint prior to the second pour and does not require split formwork.
- SikaFuko® VT can be used to “water test” non-injected and injected joints for watertightness in a safe and simple manner.

Typical Applications

- Not suitable for use in movement joints.

Cross-section depicting two separate injections
The yellow material was the first injection while the orange material was delivered with a second injection.

The SikaFuko® VT Process

Concrete Pour: When concrete is placed around the SikaFuko® VT Hose, the external pressure of the concrete seats the neoprene strips, sealing off injection openings and the injection channel.

Injection: The internal injection pressure compresses the neoprene strips and allows the injection material to flow out from eight longitudinal gaps. This enables a uniform discharge of the injection material over the full length of the hose.
Sealing of Construction Joints with SikaFuko® VT Injection Hose System

Sika® Joint Sealing Technologies for Watertight Concrete Structures

Contact Sika Canada for information regarding SikaFuko® Eco 1 (formerly Duroject), an alternative injection hose system. It is designed to deliver resin or microfine cements in a one-time injection. It is not for applications that may require subsequent injections.

Cleaning The Hose:
When using an approved injection material, the SikaFuko® VT Hose is easily flushed clean by using water and applying vacuum pressure. The negative pressure reseats the neoprene strips, preventing injected material from being drawn back into the injection channel upon cleaning.

Ready For Future Injection:
SikaFuko® VT Injection System is ready for re-injection if needed.

Compressible neoprene strips in the longitudinal grooves are a unique and extremely important element of the SikaFuko® VT Hose System. These strips act as valves during injection and as a seal while cleaning the tube for re-injection.

Solid hose core made of high quality PVC. The core is capable of absorbing concrete pressure, ensuring integrity of injection channel.

Lateral, staggered injection openings to ensure uniform discharge of the injection material.

Injection Channel

SikaFuko® Eco 1 One-time Injection Hose System

Cleaning The Hose:
When using an approved injection material, the SikaFuko® VT Hose is easily flushed clean by using water and applying vacuum pressure. The negative pressure reseats the neoprene strips, preventing injected material from being drawn back into the injection channel upon cleaning.

Ready For Future Injection:
SikaFuko® VT Injection System is ready for re-injection if needed.
Sealing of construction joints with SikaSwell® and Hydrotite hydrophilic waterstops

SikaSwell® and Hydrotite are state of the art hydrophilic waterstops with unmatched durability and watersealing capacity. Comprised of non-bentonite, modified chloroprene rubber, SikaSwell® and Hydrotite expand up to 8 times their original volume when exposed to water. This expansion creates an effective compression seal within joints of limited movement. Recognized worldwide, SikaSwell® and Hydrotite have proven track records as high quality and cost effective solutions to water containment needs.

SikaSwell® and Hydrotite are available in a multitude of sizes and shapes for numerous applications, including construction joints, saw-cut control joints, cracks repairs and pipe penetrations. Some profiles are offered as co-extrusions to provide directional expansion.

**ADVANTAGES**

- Outstanding physical properties
- Special expansion delay coating to allow concrete cure prior to expansion
- Reliable and durable (lifespan up to 100 years)
- ISO 9002 certified
- Simple, low cost installation
- Appropriate for retro-fit as well as new construction
- Can withstand high hydrostatic pressures

**TYPICAL APPLICATIONS**

- Water and wastewater treatment facilities
- Manhole structures
- Tunnels and culverts
- Dams, locks, canals, water reservoirs and aqueducts
- Pipe penetrations
- Swimming pools
- Storage tanks
- Retaining walls
- Foundations
- Slabs on grade
Sealing Construction Joints with Hydrotite CJ profiles

As this innovative product absorbs water and expands, it conforms to gap variations along the joint. This action ensures complete sealing even under extraordinary hydrostatic pressures. Hydrotite CJ profiles are treated with a special expansion-delay coating to prevent it from reacting to the fresh concrete and expanding before curing takes place.

Sealing Pipe Penetrations with various Hydrotite Profiles

Hydrotite can be bonded to various piping materials, including concrete, steel and plastic. Bond Hydrotite to the pipe prior to concrete placement. Installation in existing walls requires an oversize cutout be made and Hydrotite installed both on the pipe and the outside diameter of the cutout. Fill the annulus with a non-shrink grout.

Contact Sika Canada for alternative strip-applied waterstops for less stringent applications, products include:

SIKASWELL® A - hydrophilic acrylate-ester
SWELLSTOP - butyl rubber / bentonite hydrophilic
LOCKSTOP® - mastic / asphaltic waterstop

SikaSwell® S2 is a single component water-swelling sealant with excellent and unique properties. It may be applied in locations where conventional preformed waterstops cannot be easily used. This includes irregular shaped joints, rough surfaces, and odd penetrations.

Easy Application – As a moisture-cure single component water-swelling sealant, standard caulking guns can be used.

Physical Properties – After curing, SikaSwell® S2 has excellent physical properties. The rubber-like elasticity of the material and expansion characteristics create an effective watertight seal.

Expansion – SikaSwell® S2 expands when exposed to water to create an excellent water seal, while retaining rubber-like elasticity.

Adhesion – SikaSwell® bonds to various materials such as concrete, metal, and glass.
Sika® Injection Technology for Waterproofing Construction Joints or Remedial Works to Leaking Concrete Structures

Solutions for leaks and construction damage

Concrete Damage
Damage can occur to the concrete in many ways but primarily through difficulties in interpreting design aspects, inadequate or untimely consolidation, or by accident. Sika produces a full range of concrete repair systems, which are compatible with all Sika® waterproofing systems.

Cracks/Honeycombing
The terms “watertight” and “vapour-tight” do not mean “crack-free”. Cracking can always occur in concrete in its plastic or in its hardened state due to the stresses imposed. These include the internal forces caused by temperature and water content changes. Sika has a complete range of products and systems for the repair of “cracks” and “honeycombing” in watertight concrete structures.

Sealing and Waterproofing of Cracks
Closing, sealing and flexible bridging of leaking cracks and honeycombing or voids in new and existing structures.

Sika® Injection 306
Flexible and penetrating acrylate resin with an adjustable reaction time and compatible with SikaFuko® injection hose systems.

Sika® Inject 215
Flexible, low viscosity and quick gelling polyacrylate injection gel for permanent watertight sealing. The material reacts to form a waterproof, flexible but solid gel with good adhesion to both dry and wet substrates.

SikaFix® Family of Urethanes Injection products
Polyurethane foam products used as a waterstopping injection material for the temporary sealing of cracks or voides subjected to pressing and non-pressing water. Fast reaction when in contact with water.

Waterproofing of Construction Joints
For sealing construction joints in a watertight structure, Sika provides a full range of products and systems.

SikaFuko® VT
The world’s number one injection hose system delivers Portland Cement, Microfine Cement, or other resins to seal cracks or voids and has a unique “re-injectable” design if future injections are required.

SikaFuko® Eco 1
An injection hose system for delivering cements or resins for single injection applications.

Sika® Injection 306
Flexible and penetrating Acrylate resin with an adjustable reaction time and compatible with SikaFuko® Injection Hose Systems.

Surface Sealing and Waterproofing of Concrete Structures
Remedial surface sealing by curtain injection of surface defects in below ground concrete structures.

Sika® Inject 215
Flexible, low viscosity and quick gelling polyacrylate injection gel for permanent watertight sealing. The material reacts to form a waterproof, flexible but solid gel with good adhesion to both dry and wet substrates.
Injection Pumps

(Not supplied by Sika)

**Pumps for Polyurethane, Epoxy and Polyacrylate Resins**

Single-component injection pumps designed for professional use in crack injection are suitable for Sika polyurethane, epoxy and acrylate injection resins.

**Sika® Injection 306**

Sika® Injection 306 is a very low viscosity, elastic, polyacrylic injection resin with a versatile and adjustable reaction time.

- Injection of SikaFuko® injection hoses to seal construction joints
- Cracks and voids with non-pressing water (damp)
- Surface area sealing of concrete structures
- Post-construction, external injection sealing system for limited movement expansion joints, drainage pipe or joints covered with damp or saturated soil
- Compartment injection of SikaPlan® membrane system

**Sika® Inject 215**

Sika® Inject 215 is a highly flexible, quick setting polyacrylic resin based swelling gel for waterproofing applications.

- Expansion joints with leaks
- Construction joints with single or re-injectable injection hoses
- Cracks and gaps in concrete against water pressure, especially where movement is expected
- Structures by area sealing and curtain wall grouting

**SikaFix® Family of Urethanes Injection products**

Polyurethane products used a waterstopping injection material for the temporary sealing of cracks or voids subjected to pressing and non-pressing water. Fast reaction when contacted by water.

- Cracked concrete or construction joints
- Actively leaking joints with flowing water

**Pumps for Polyacrylate Gels**

A two-component injection pump is required for fast-reacting acrylate gels. The individual resin components should be introduced to the mixing head separately.

**Mixers and Pumps for Microfine Cement Suspension**

A colloidal mixer designed for complete and thorough mixing of Sika microfine cement suspensions is required. A pump capable of providing a continuous pumping of the suspension without separation is required.

**Injection Packers**

Injection packers are used as connection pieces between the injection pump and the structure. Mechanical packers are for high and low pressure injection where injection hole drilling is possible. Surface packers are for low pressure injection where drilling is not possible.
Internally applied protective coatings for increased waterproofing, chemical and mechanical resistance

Chemical, Mechanical and Water Resistant Coatings

Wastewater Treatment Plant

Problem
- Concrete erosion due to acidic environment
- Concrete erosion due to swelling from sulphates
- Loss of alkaline protection and corrosion of reinforcement steel

Sika Solution
- Application of Sikagard® EpoCem® as a pore sealer and as a temporary moisture barrier
- Application of Sikagard® protective coating

Secondary Containment for Groundwater Protection

Problem
- Legal responsibility and environmental legislation
- Groundwater protection zones
- Aggressive chemicals in storage

Sika Solution
- Application of Sikagard® EpoCem® as a temporary moisture barrier
- Application of Sikagard® as a protective coating against aggressive chemical attack

Underground Parking Deck

Waterproofing Systems

Problem
- Water brought in by cars and other vehicles
- Concrete attack from de-icing salts
- Abrasion resulting from vehicle movement

Sika Solution
- Application of Sikalastic® DuoDeck waterproofing membranes
- Applications of vapour-tight or vapour-diffusible Sikalastic® DuoDeck wearing surfaces

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Sika Solution
- Application of Sikalastic® DuoDeck waterproofing membranes
- Applications of vapour-tight or vapour-diffusible Sikalastic® DuoDeck wearing surfaces
Meet Individual Project Requirements
Concrete Structures

Externally applied protective coatings to prevent aggressive water ingress to the structure

Flexible Slurry Coating for Filling and Sealing Surface Defects

- **Problem**
  - Surface defects and blowholes (bugholes) etc.

- **Sika Solution**
  - Application of **SikaTop® Seal 107**, the cement-based, polymer-modified protective and waterproof slurry.

### Summary - Sika® Waterproofing Products

<table>
<thead>
<tr>
<th>Category</th>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admixtures</strong></td>
<td><strong>Sika® 1+ or Sika® Watertight Concrete Powder</strong></td>
<td>Highly effective hydrophobic pore blocking admixtures</td>
</tr>
<tr>
<td></td>
<td><strong>Sika® ViscoCrete® or Sikament® series</strong></td>
<td>Polycarboxylate-based high range water reducing admixtures for use in conventional or Self-Consolidating Concrete (SCC)</td>
</tr>
<tr>
<td><strong>Jointing systems</strong></td>
<td><strong>Sika® Greenstreak® Waterstop</strong></td>
<td>PVC waterstops for the sealing of both movement and construction joints, plus producing watertight compartments with Sikaplan sheet membranes</td>
</tr>
<tr>
<td></td>
<td><strong>Elastic joint sealing system</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Sikadur® CombiFlex® SG</strong></td>
<td>Movement and construction joint sealing, plus crack sealing system consisting of flexible membrane strips and epoxy adhesives</td>
</tr>
<tr>
<td></td>
<td><strong>Elastic joint sealing system</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Hydrotite or SikaSwell®</strong></td>
<td>Hydrophilic swelling joint profiles for the sealing of construction joints</td>
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<tr>
<td></td>
<td><strong>Swelling joint sealing profiles</strong></td>
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<tr>
<td><strong>Joint sealing hose system</strong></td>
<td><strong>SikaFuko® injection hose systems</strong></td>
<td>Injectable and re-injectable joint hoses for the sealing of construction joints</td>
</tr>
<tr>
<td><strong>Injection</strong></td>
<td><strong>Sika® Injection resins and micro-cements</strong></td>
<td>Solutions for remedial waterproofing of leaking concrete, joints and membranes including compartment systems</td>
</tr>
<tr>
<td><strong>Mortars</strong></td>
<td><strong>Sika® MonoTop®, SikaTop® and EpoCem®</strong></td>
<td>Polymer or epoxy modified cementitious repair mortars, or waterproof slurry coatings coatings for restoring and protecting the concrete surface</td>
</tr>
<tr>
<td><strong>Membranes</strong></td>
<td><strong>SikaProof®, SikaPlan® and Sarnafil® membranes</strong></td>
<td>Single, double or compartment systems based on PVC or TPO membranes and external to the concrete structure.</td>
</tr>
</tbody>
</table>
Sika Canada Inc., as a member of the international Sika Group, is a recognised leader in the field of products for the construction industry. We supply what are recognised as standard-setting and value-added systems.

Over the last 100 years, Sika’s systems have earned the confidence of construction professionals everywhere thanks to their cost-effective quality, reliability and durability. An essential element in our “roof-to-foundations” capability, is our diverse range of materials which provide long-lasting performance and accommodate a wide variety of service conditions, in new-build as well as renovation. Our materials are employed in most sectors of construction, including virtually all forms of buildings, such residential, commercial, industrial, leisure, healthcare and educational structures and, likewise, in many forms of infrastructure, from transportation to utilities.

Furthermore, as part of our environmental policy, considerable attention has been devoted to ensuring that these products are as climate-friendly as possible and contribute to a sustainable future. Sika is an ISO 9001 certified company and its Pointe-Claire facility has received the ISO 14001 certification for its environmental management systems.

With Sika products, the construction industry and the built environment can count on a century of experience and the highest level of service to provide a sound foundation for partnership and successful construction projects.

Also available:

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, within their shelf life. 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 recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under www.sika.ca.