ENGINEERED REFURBISHMENT DURABLE CONCRETE PROTECTION COATING FOR HARSH ENVIRONMENT

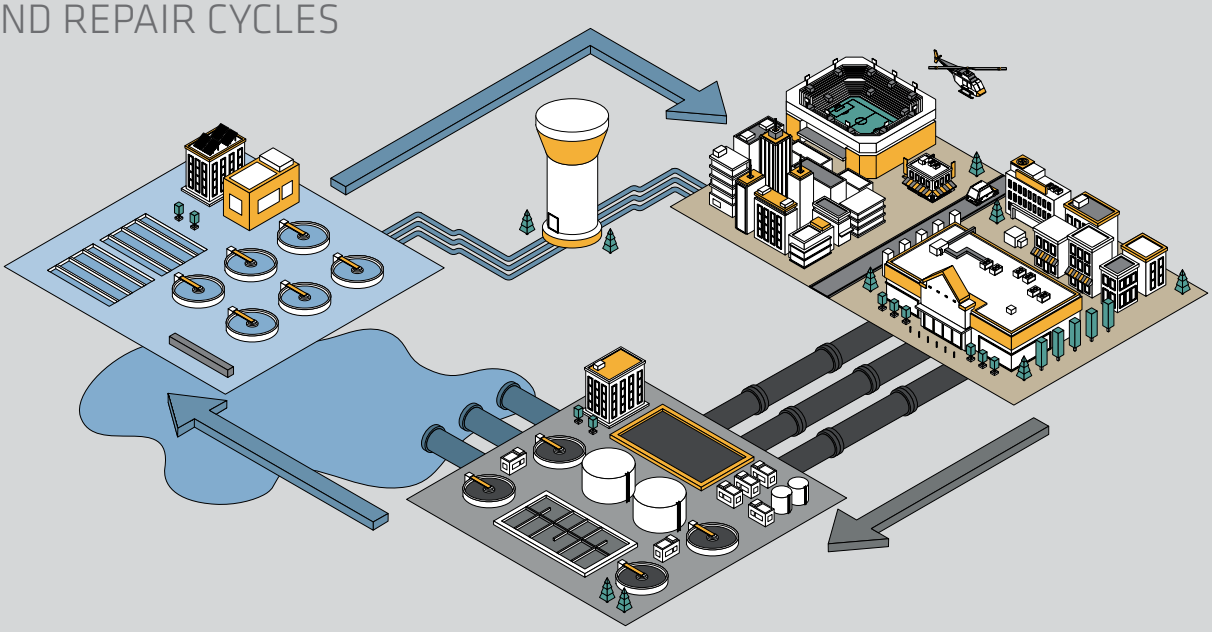
Sikagard®-7000 CR FOR WASTE WATER TREATMENT FACILITIES

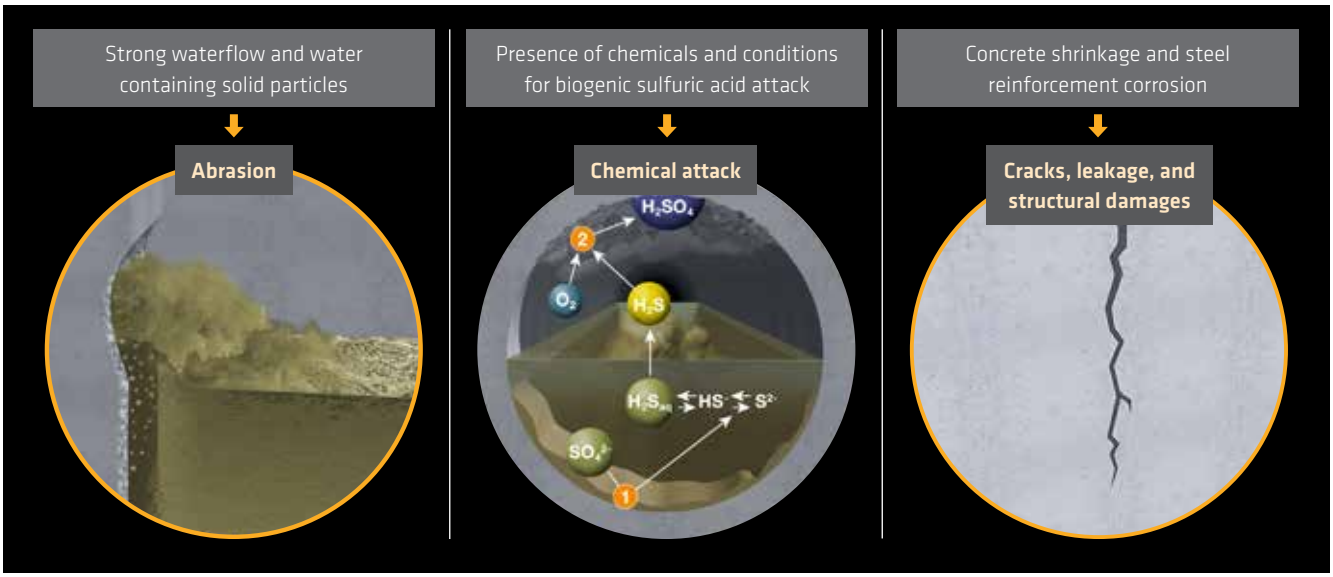
BUILDING TRUST

CHALLENGES IN WASTEWATER TREATMENT ENVIRONMENTS

WASTEWATER TREATMENT PRESENTS a demanding environment where assets must maintain integrity to prevent leaks and disruptions in critical processes. The concrete infrastructure of wastewater systems faces a multitude of physical and chemical attacks that can compromise its longevity. Sikagard®-7000 CR stands out as a purpose-built solution to address these challenges and ensure maximum durability.

ABRASION, CRACKS, AND CHEMICAL ATTACKS REDUCE THE LIFE CYCLE OF STRUCTURES, INCREASING MAINTENANCE AND REPAIR CYCLES

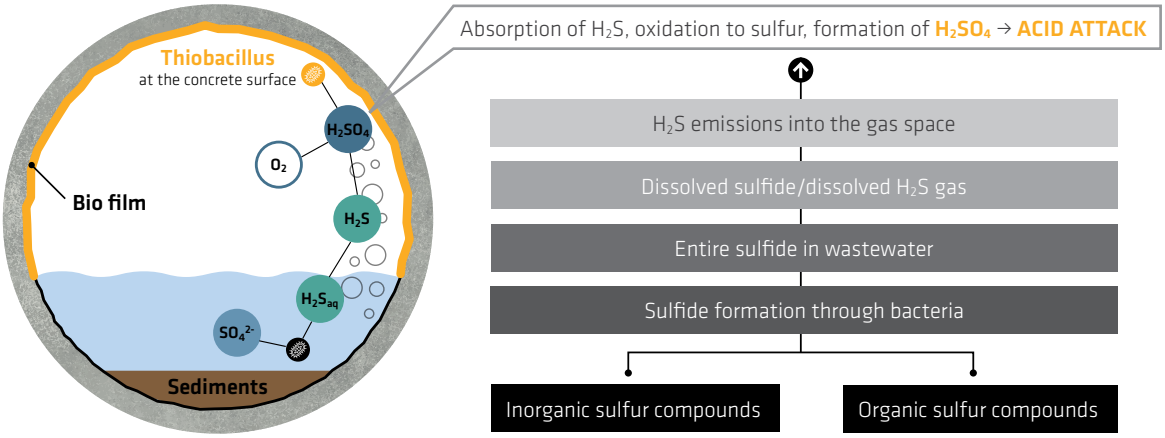




THE SPECIFIC BIOGENIC SULFURIC ACID ATTACK CAN HAPPEN IN CLOSED AREAS OF WATER STRUCTURES

BIOGENIC SULPHURIC ACID CORROSION

Development of Biogenic Sulphuric Acid Corrosion in sewage environment.



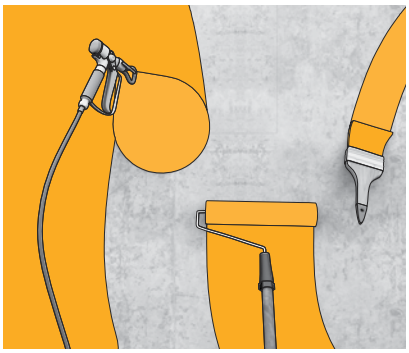
The intricate nature of wastewater treatment and its degradation processes pose significant challenges to the surrounding infrastructure. The rate of chemical attack is determined by a range of factors related to both the wastewater and its environmental conditions. These factors can even lower the pH level below 1 in extreme cases. Uncoated concrete is particularly susceptible to so-called biogenic sulfuric acid corrosion (BSA). BSA corrosion is caused by bacteria present in wastewater. These bacteria metabolize hydrogen sulfide (H_2S) into sulfuric acid. The sulfuric acid then deposits directly onto the concrete, causing chemical attack. This attack is particularly aggressive because the sulfuric acid lowers the pH of the concrete, making it more susceptible to corrosion. The resulting erosion of the concrete surface can be rapid and damaging.

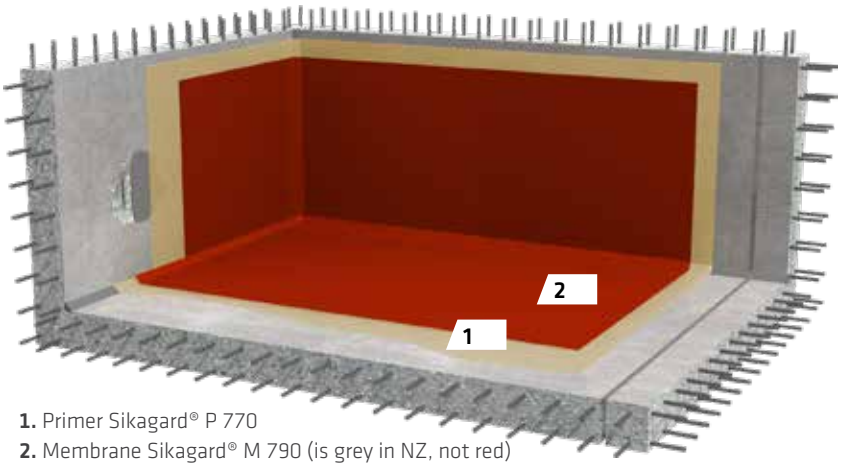
BIOGENIC SULFURIC ACID CORROSION CAN LEAD TO SEVERE STRUCTURAL DAMAGE TO CONCRETE COMPONENT STRUCTURES.

Sikagard®-7000 CR DURABLE PROTECTIVE COATING

Sikagard®-7000 CR IS A DURABLE PROTECTIVE COATING engineered for the preservation of concrete structures in water management applications, particularly water supply infrastructure and tanks within wastewater treatment facilities. Its unique blend of attributes renders it a trustworthy and robust system throughout its application and a durable solution for an extended service lifespan.

Sikagard®-7000 CR IS FAST TO APPLY AND CONSISTS OF:
One primer Sikagard® P 770 and a **membrane** Sikagard® M 790 for an overall thickness of 1 to 1.2 mm.





1. Primer Sikagard® P 770
2. Membrane Sikagard® M 790 (is grey in NZ, not red)

HIGH CHEMICAL RESISTANCE WITH CRACK BRIDGING

Sikagard®-7000 CR boasts high chemical resistance to solvents and organic acids. It shows remarkable resilience against biogenic sulfuric acid corrosion. Extensive testing against biogenic sulfuric acid corrosion at the Fraunhofer Institute yielded no signs of degradation even after 18 months of exposure (equivalent to 15 years in real-world conditions). Additionally, it can bridge cracks up to 0.5 mm, striking a harmonious balance between chemical resistance and crack-bridging capabilities.

MOISTURE TOLERANT

The primer Sikagard® P 770 can be applied to substrates with high internal humidity, provided the concrete substrate appears visually dry. No specific measurement of concrete humidity is required. Application can be performed without limitations on relative humidity, enabling a rapid and reliable application process.

SHORT DOWNTIME

The Sikagard® P 770 primer can be overcoated with the membrane after 6 hours at 20°C and approximately 11 hours at 5°C. Contact with water is permitted after 24 hours at 20°C.

APPLICATION TEMPERATURE FROM +5 TO +35°C

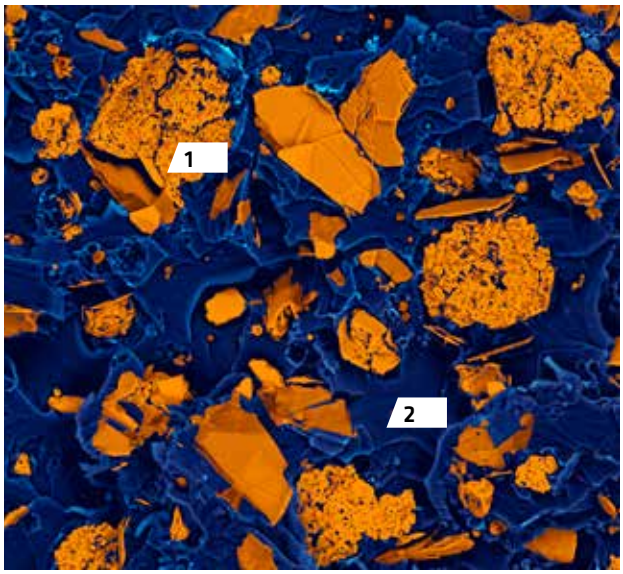
Application can be effective across a wide temperature range, from 5°C to 35°C, enabling application in various regions and seasons. This broad operational range reduces dependence on specific weather conditions, making scheduling more flexible.

SOLVENT FREE, VERY LOW VOC & ODOUR

Sikagard® P 770 and Sikagard® M 790 are solvent-free products with very low VOC content and odor during application. This makes them ideal for use in confined spaces without compromising application safety or ease of use.

UNIQUE SIKA TECHNOLOGY

Sikagard®-7000 CR IS BASED on unique Sika Technology. By optimizing the intermolecular interactions between the resin building blocks, it forms an enhanced cross-linked polymer network (XPN), which imparts the remarkable properties described below.



1. Densely embedded inorganic components
2. Highly cross-linked polymer network

UNIQUE COMBINATION OF COMPLEMENTARY CHEMISTRIES

Interphase interactions between the resin blocks and the inorganic fillers were optimized.

As a result, a high-density organic-inorganic material with outstanding characterictics is created, which consists of:

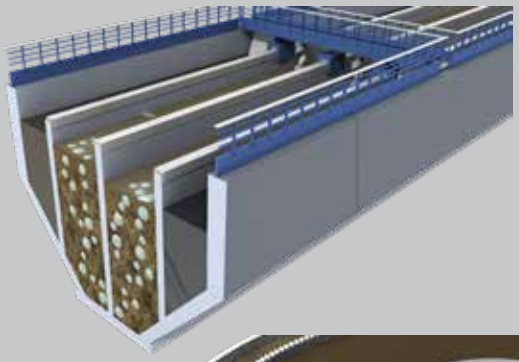
- High cross-linked polymer network
- Densely embedded inorganic components

TYPICAL APPLICATIONS

THE UNIQUE PROPERTIES OF Sikagard®-7000 CR make it highly suitable in water management and industrial applications as concrete protection coating. It protects concrete from chemical attacks and mechanical abrasion.

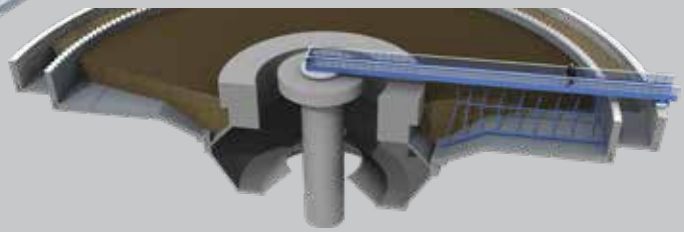
URBAN AND INDUSTRIAL WASTEWATER TREATMENT TANKS

- pH and alkalinity of the wastewater
- Chlorides, nitrates, ammonia, sulphates, salts, grease that wastewater may contain
- Biogenic sulfuric acid attacks in covered containers
- Humidity that increases concrete degradation by reinforcement corrosion
- Specific chemical attacks in industrial environment
- Abrasion and erosion caused by particles and suspended solids in the wastewater
- Abrasion and erosion due to strong water flow in aeration tanks
- Thermal and freeze-thaw cycling

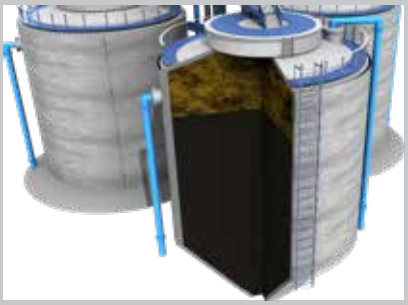


– Sewer lift station
– Screening
– Oil and grease removers
– Primary sedimentation tanks

– Secondary treatment
– Aeration
– Sedimentation tanks



SLUDGE TREATMENT TANKS, DIGESTERS IN BIOGAS PLANTS



- Organic acids
- Ammonia
- Biogenic sulfuric acid attacks
- Erosion due to digestate movements
- Low pH

SEWER PIPES / TUNNELS

- Biogenic sulfuric acid attacks
- Erosion and abrasion of water and particles
- Corrosion of steel reinforcement
- Chemical attack of wastewater

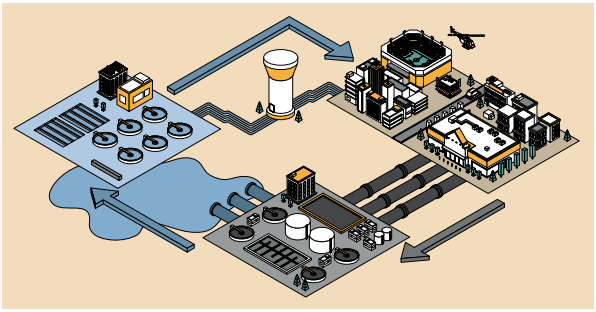
SECONDARY CONTAINMENT FOR CHEMICAL STORAGE

- Chemical attack of chemical substances stored in case of leakages
- Increase of chemical attacks level when storage of chemical at high temperature
- Thermal and freeze saw cycling

SIKA OFFERS FULL SOLUTIONS FOR WATER INFRASTRUCTURE

SIKA OFFERS A COMPREHENSIVE RANGE of solutions for water structures. Each project is unique and requires specific solutions depending on the conditions of the jobsite and service life expectation.

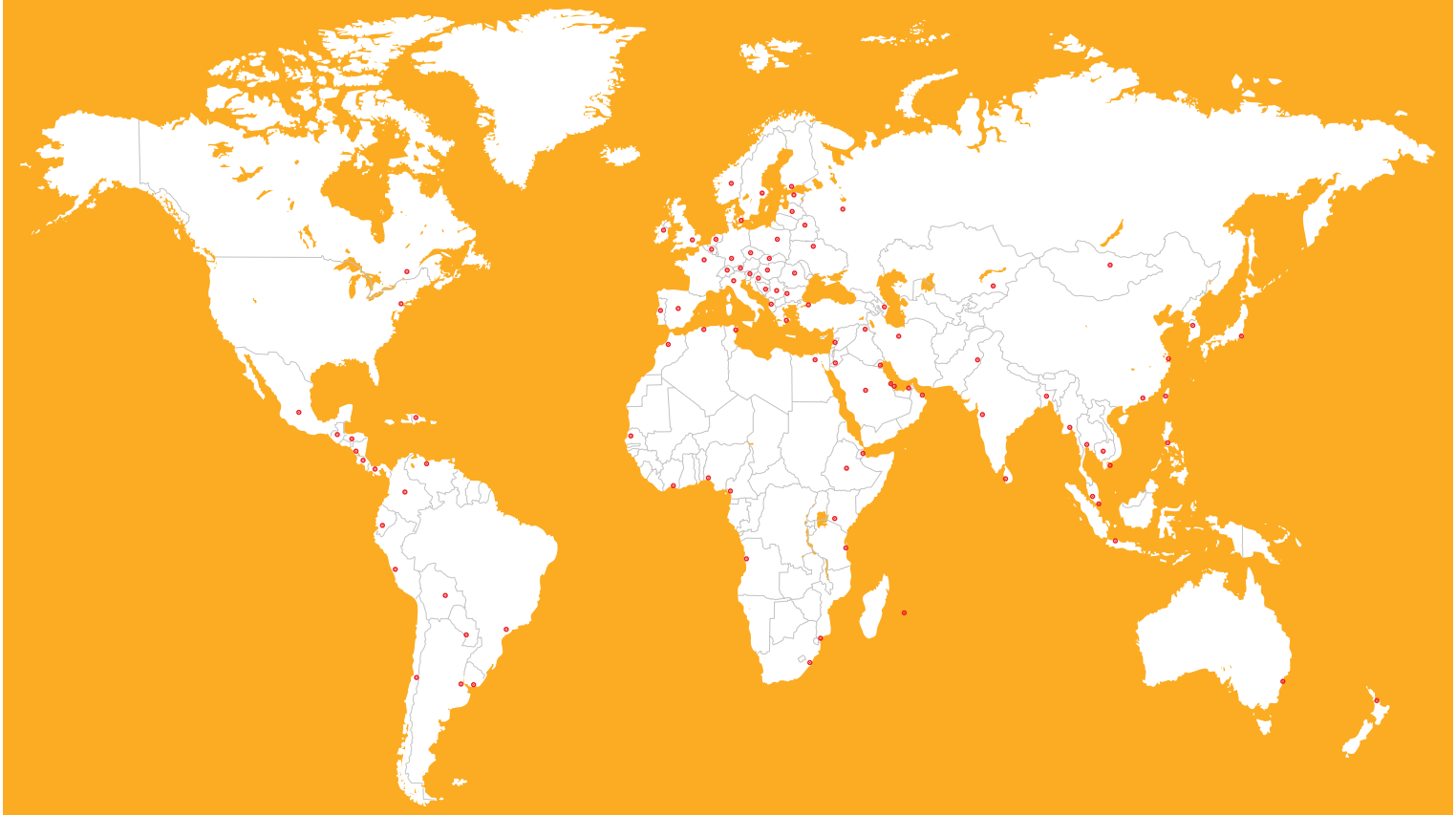
Sika's full solutions portfolio comprises concrete admixtures, waterstop joints, repair mortars, concrete protection products, joint sealing, roof waterproofing systems, and floors, demonstrating its adaptability to the specific requirements of new and refurbished wastewater infrastructure projects.
Please find below some Sika solutions suitable for water infrastructure. Feel free to contact our local experts for tailormade specifications and advice.



Product Group	Product Type	Product Example	Drinking Water Plant / Reservoir	Desalination Plants	Sewer and Manhole	Wastewater Treatment Plant
Admixtures	Waterproofing Admixture	**Sika® WT-200 P**	✓	✓	○	○
Concrete Repair - Cementitious	Rebar Protection/Bonding	**Sika MonoTop®-910 N***	○	✓	○	✓
	Patch Repair	**Sika MonoTop®-412 N***	○	✓	○	✓
	Repair/Recasting	**Sika MonoTop®-438 R***	○	✓	○	✓
Concrete Repair - Epoxy	Rebar Protection/Bonding	**Sikadur®-32**	✓	✓	✓	✓
	Patch Repair	**Sikadur® UA / Sikadur®-31/ Sikadur®-41**	✓	✓	✓	✓
	Repair/Recasting/Grouting	**Sikadur®-42**	○	✓	✓	✓
Protective Mortars	Moisture barrier and protection	**Sikagard®-720 EpoCem®**	○	✓	✓	✓
	Reprofiling and levelling mortar	**Sikagard®-720 EpoCem® / Sika MonoTop®-723 N**	✓	✓	✓	✓
Waterproofing Mortars	Dual component WP Mortar	**SikaTop®-107 Seal / Sikalastic®-152**	✓	×	×	○
	Single component WP Mortar	**Sikalastic®-1K**	✓	×	×	○
Multi-Layer Epoxy Resin	Protective coating	**Sikagard®-62**	✓	✓	×	×
	Digester coating	**Sikagard®-7000 CR**	×	○	✓	✓
	Reinforcement	**Sika® Reemat Premium**	✓	✓	×	✓
Joint Waterproofing	Waterstops	**Sika Waterbar® PVC, SikaSwell® A & S2**	✓	✓	✓	✓
	Joint Tapes	**Sikadur® Combiflex® SG**	✓	✓	✓	✓
Sealants	Concrete Joint Sealant	**Sikaflex® PRO-3 PURFORM**	○	○	×	×
	Concrete & Metal Joint Sealant	**Sikaflex®-403 Tank & Silo**	×	✓	✓	✓
Anchoring	Chemical Anchoring	**Sika AnchorFix®-3030**	✓	✓	✓	✓
Outer Tank Waterproofing	Sheet membranes	**SikaProof® A+ / SikaProof® Bentonite**	✓	✓	×	✓
Repair Injection	PU flexible injection	**Sika® Injection-201 CE / Sika® Injection-101 RC**	✓	✓	✓	✓
	Epoxy rigid injection	**Sikadur®-52 / Sikadur® Injectokit LV & TH**	○	✓	✓	✓
Roofing	Membrane roofing - Liquid	**SikaRoof® i-Cure System**	✓	✓	✓	✓
	Membrane roofing - Sheet	**Sika Sarnafil® System**	✓			✓

✓ Approved application ○ Possible application - refer to the Sika NZ Technical Dept × Not recommended *Used with protective coating

GLOBAL BUT LOCAL PARTNERSHIP



WE ARE SIKA

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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