Waste & Potable Water Facilities
Waterproofing & Restoration of Concrete Tanks

The key problems of wastewater and potable water facilities:

New Construction

- Leaking due to cracks formed in concrete
- Some chemical protection may be required

Restoration

- Leaking due to cracks and leaking joints
- Corrosion of the reinforcing steel and delaminations
- Chemical attack
- Freeze/thaw deterioration

Gemite Products Inc. offers a complete line of products for waterproofing, restoration, structural rehabilitation and chemical protection of sanitary manholes from the top to the bottom.

Product Name	Description and Use	Features and Benefits
Fibre-Prime	Brush applied, cement based, corrosion protective coating, containing migrating corrosion inhibitor. It is used to protect exposed steel.	• Excellent corrosion protection • Excellent adhesion • Simple application
Fibre-Patch WP	Fast setting hydraulic cement for stopping active water leaks prior to application of the lining and waterproofing materials	• Fast set and strength development • High chemical resistance • High freeze/thaw durability
Fibre-Patch OV 12 – 20 mm (1/2 – 3/4 in)	Hand applied, fast setting fibre reinforced, micro-silica enhanced structural waterproofing mortar. For lining of manhole walls, inverts and other deteriorated areas of the manhole.	• Fast strength • Structural waterproofing • High chemical resistance • Low drying shrinkage
Spray-Con WS ST 12 – 20 mm (1/2 – 3/4 in)	Spray-applied, fibre reinforced, micro-silica enhanced wet shotcrete for a structural rehabilitation and waterproofing of manholes.	• Structural waterproofing • High chemical resistance • Low drying shrinkage • Easily pumpable and sprayable
Cem-Kote CW Plus 6 – 12 mm (1/8 – 1/4 in)	Brush or spray applied, polymer modified, micro-silica enhanced, fibre-reinforced material for waterproofing of brick manholes. ANSI/NSF Standard 61 APPROVED	• Negative side waterproofing • High chemical resistance • Easy application • Pumpable and sprayable
Cem-Kote Flex ST 2 mm (80 mils) in 2 coats	Flexible and chemical resistant cement coating. When sealing the precast segment joints, it is reinforced with the Reinforcing Fabric HD. ANSI/NSF Standard 61 APPROVED	• Negative side waterproofing • High chemical resistance • Easy application • Pumpable and sprayable
Gem-Cote EP 100 1 mm (40 mils)	Epoxy resin system that can be applied to wet concrete substrate. Provides superior chemical resistance.	• Negative side waterproofing • High chemical resistance • Easy application • Pumpable and sprayable

PROBLEM	SOLUTION
Corrosion of Steel & Concrete Delamination The low concrete cover of the reinforcing steel, poor concrete consolidation, high water-cement ratio combined with carbonation and chemical attack results in corrosion of the reinforcing steel. The products of corrosion (the rust) are expansive and cause cracking and deterioration of concrete. (see below).	All exposed steel is treated with cement based corrosion protective coating *Fibre-Prime* containing migrating corrosion inhibitors.
Cracks & Joints Restrained drying shrinkage, temperature induced movement, settlement and the water head pressure cause cracking in concrete. The expansion, control and construction joints often leak. The resulting leaks need to be stopped for environmental reasons and to protect the reinforced concrete structure from further deterioration	All cracks must be treated with *Cem-Kote Flex ST* reinforced with the *Reinforcing Fabric HD.* In areas exposed to sub-zero temperatures, *Cem-Kote Flex Plus* and the *Reinforcing Fabric HD* are used. Delaminated, non-cracked areas, up to 6 mm (1/4 in) thick, are repaired with hand or spray applied *Cem-Kote CW Plus*. The sections over 6 mm (1/4 in) are repaired using hand applied *Fibre-Patch OV* or spray applied *Spray-Con WS ST*.
Freeze/Thaw Damage Concrete freeze/thaw deterioration occurs when the concrete is exposed to wetting and drying under freeze/thaw cycling. High WC ratio, lack of entrainment and poor consolidation often contribute to problems. The deterioration could be from 1.5 - 3 mm (1/16 – 1/8 in) to a complete destruction of the concrete section.	Thin sections, up to 6 mm (1/4 in) are repaired with hand or spray applied *Cem-Kote CW Plus*. Sections thicker than 6 mm are repaired using hand applied *Fibre-Patch OV* or Spray applied *Spray-Con WS ST*.
Delamination & Peeling of Existing Coating Poor surface preparation, osmotic pressures and normal breakdown of the coating with time, as well as incorrect coating application, may result in its failure. The failing coating system must be removed and replaced.	Remove the existing coating and sandblast to clean sound concrete. Apply *Cem-Kote Flex ST* with the *Reinforcing Fabric HD* over any existing cracks, and then *Cem-Kote CW Plus* throughout.
Chemical Attack & Protection The harshest attack in digesters at the liquid level and in the concrete roof (slab) is caused by acidic liquids, oxidation as well as the acid gas attack. The deterioration, based on the chemical composition, pH and other conditions, can be 12 mm (1/2 in) and deeper after 20-30 years of exposure. The areas exposed to flocculating chemicals may also be highly deteriorated. Concrete tanks past the primary filtration station are usually exposed to chemical attack but only at the liquid level. The presence of sulfates in the liquid (sludge) may result in forming expansive compounds in concrete (ettringite), resulting in cracking and deterioration of concrete.	If only a thin coating, up to 6 mm (1/4 in) thick, is required, use *Cem-Kote CW Plus*. If a higher thickness is required, use hand applied *Fibre-Patch OV* or machine (shotcrete) applied *Spray-Con WS ST*. Then apply two coats of *Gem-Cote EP 100*. Application of the coating directly over the deteriorated concrete is not recommended.

Please contact Gemite's Technical Service for diagnostics and specification assistance.

Gemite Products Inc. has an extensive experience in a wide variety of repair, maintenance and protection of concrete structures. Gemite Group offers effective and economical solutions, including technical support, material selection and site support worldwide through its network of associated companies.

Gemite Group of Companies

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