



CORTEC
CORPORATION

Environmentally Safe VpCl®/MCl® Technologies



Cortec® VpCl® and MCl® Technologies for Corrosion Protection of Wastewater Treatment Plants



PROTECT THE WASTEWATER TREATMENT INDUSTRY



Corrosion is a relentless enemy at wastewater treatment plants. Constant moisture and high levels of contaminants such as H_2S work to eat away metal, reinforced concrete, and equipment of all types by causing rust and corrosion. Even corrosion-resistant metals such as aluminum and galvanized steel are at risk. Treatment plants in coastal conditions face additional attacks from salt spray.

The effects of corrosion can be drastic, leading to the deterioration of metal structures and walkways, electricals, concrete structures, ventilation systems, and more. The results at best are increased maintenance and replacement; at worst: downtime, leakage, and equipment failure.

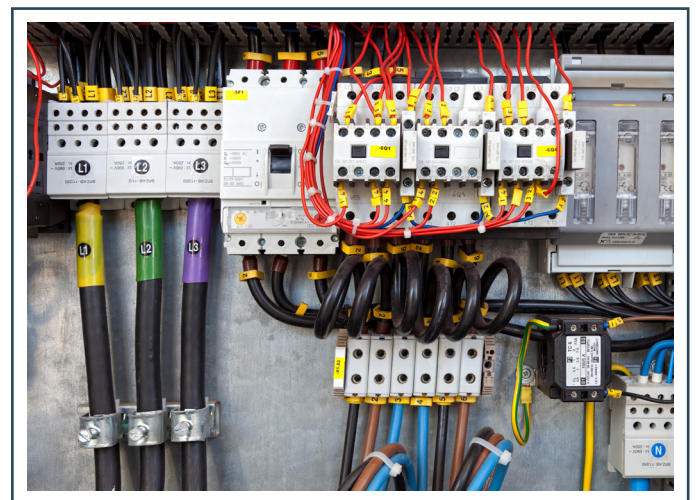
CORTEC® VpCI® AND MCI® TECHNOLOGY FOR WASTEWATER TREATMENT

Cortec® VpCI® and MCI® Technology offer practical solutions for minimizing corrosion in wastewater treatment plants. By integrating solutions for electronics, metal surfaces, concrete structures, and MRO (Maintenance, Repair, and Operations), wastewater treatment facilities can implement corrosion protection strategies that save on downtime, labor, and material costs in the long run.

►►► PROTECTION OF ELECTRONICS AND ELECTRICALS

Cortec's flagship Vapor phase Corrosion Inhibitor Technology is an important key to protecting electricals and electronics that run the power, lights, and controls at a wastewater treatment plant. By placing small VpCI® Emitters inside control panels and junction boxes, the frequency of electrical or electronic repairs and replacements prompted by corrosion can be reduced.

VpCI® Emitters release corrosion inhibiting vapors that form a protective molecular layer on all accessible metal surfaces of electronics or electricals inside an enclosure. This VpCI® shield does not alter metal properties. Instead, it blocks the ability of oxygen, moisture, and other corrosive elements to attack the metal surface and make it rust. Additional safeguards include ElectriCorr® VpCI® spray-applied coatings for electrical panels and Corrosorber® cups strategically placed to absorb corrosive gases like H_2S .



►►► MRO AND PROCESS EQUIPMENT

MRO (Maintenance, Repair, and Operations) is an important part of a corrosion protection strategy. Cortec® MRO solutions include several USDA Certified Biobased Products for cleaning and degreasing, rust removal, paint removal, and general lubrication. Cortec® also offers VpCI® solutions for scale removal, hydrostatic testing, and lay-up of process equipment. Contact Cortec® for details.



►►► MCI® PROTECTION FOR CONCRETE STRUCTURES



Tanks, floors, and other structures made of reinforced concrete deteriorate more quickly when exposed to harsh chemicals and contaminants at a wastewater treatment plant. Cracks and spalling concrete accelerate the deterioration process by making it easier for corrosive elements to reach the embedded reinforcement.

Migrating Corrosion Inhibitors (MCI®) applied as admixtures or surface treatments delay corrosion and reduce corrosion rates once started, helping extend the service life of reinforced concrete structures. MCI® travels through concrete pores to form a protective molecular layer on the surface of embedded rebar. The technology can be used on new or existing concrete; on tanks, walls, floors, or overhead surfaces; and for new construction, maintenance, or repair.

►►► VpCI® COATINGS FOR METAL STRUCTURES AND EQUIPMENT



Cortec® anti-corrosion coatings may be applied to tanks, walkways, junction box exteriors, electrical conduits, and other metal structures or equipment constantly exposed to corrosive attacks at wastewater treatment plants. The VpCI® system chosen depends on the target application: epoxy systems for immersion applications, UV-resistant urethane systems for harsh outdoor environments, and thin water-based clear coats for inconspicuous application over equipment surfaces. These coatings typically contain a complex mix of organic corrosion inhibitors and offer protection that competes with most paints and zinc-rich primers. Cortec® also simplifies surface prep on previously rusted surfaces with CorrVerter® rust converting primer—an easy alternative to sandblasting.

►►► IMPROVE WASTEWATER TREATMENT EFFICIENCY WITH BIONETIX® BIOLOGICALS










Wastewater treatment plants use biological methods to degrade waste and lower BOD and COD levels. Bionetix® International, a subsidiary of Cortec® Canada, supplies bioaugmentation solutions that improve the wastewater treatment process efficiency. Bionetix® supplies a quality range of specialized microorganisms and nutrients that help speed up the degradation of target contaminants, reduce sludge and odor, and avoid plant upsets. Visit <http://bionetix-international.com/> for more information.





▶▶▶ PRODUCT SELECTION GUIDE FOR WASTEWATER TREATMENT PLANTS

Electronics and Electricals		
Product	Description	Application
VpCI®-105	Cortec® VpCI®-105 emitters are unique devices designed to provide corrosion protection for metal components and parts enclosed in non-ventilated control boxes, cabinets, or tool boxes.	Stick inside enclosures of up to 5 cubic feet (0.14 m³).
VpCI®-111	VpCI®-111 emitters are unique devices designed to provide corrosion protection for metal components and parts enclosed in non-ventilated control boxes, cabinets, or tool boxes.	Stick inside enclosures of up to 11 cubic feet (0.31 m³).
ElectriCorr® VpCI®-238	A cleaner/protector for electrical/electronic equipment and components (e.g., circuit boards, electrical contacts, electric motors, generators, junction boxes). Forms a thin film of Vapor phase Corrosion Inhibitors. Does not alter the electrical resistance or magnetic properties of metal substrates. No CFC or 1,1,1-Trichloroethane.	Spray a very light mist over area needing protection. Dry time is approximately 1-2 hours at 70 °F (21 °C) and 50% relative humidity.
ElectriCorr® VpCI®-239	A cleaner/protector for electrical/electronic equipment and components (e.g., circuit boards, electrical contacts, electric motors, generators, junction boxes) stored outdoors. Forms a thin film of Vapor phase Corrosion Inhibitors. Does not alter the electrical resistance or magnetic properties of metal substrates. No CFC or 1,1,1-Trichloroethane.	Spray a very light mist over area needing protection. Dry time is approximately 1-2 hours at 70 °F (21 °C) and 50% relative humidity.
ElectriCorr® VpCI®-286	Acrylic-based conformal coating designed to extend long-life performance of new and repaired electronic assemblies, especially in corrosive conditions such as high heat and atmospheric humidity.	Spray a very light mist over area needing protection. Dry to touch in 5-10 minutes.
Corrosorber®	Corrosorber® absorbs hydrogen sulfide and other corrosive gases. It will not interfere with VpCI® protection but will instead absorb the gases that cause corrosion.	Stick inside enclosure of up to 10 ft³ (0.28 m³). Replace when color changes from off-white to black.
Structural Steel		
CorrVerter®	A fast drying, water-based one coat system (primer) that converts rusted surfaces to a hydrophobic passive layer and prevents further rusting through the unique formulation of chelating agents and PVC resins. User-friendly alternative to sand-blasting. Use alone or with topcoat for extended performance.	Recommended DFT: 3.0-5.0 mils (75-125 microns).

VpCI®-373	A water-based wash primer for bonding other primers and coatings such as VpCI®-386 and VpCI®-395 to a variety of metal substrates.	Prep surface to NACE #3 or SSPC SP2. Spray, brush, roll, or dip for 2.5 mils (62.5 microns) WFT and 0.5 mil (12.5 microns) DFT.
VpCI®-384	A solvent-based 2K urethane one coat system (topcoat) that provides protection in harsh, unsheltered applications. Excellent UV resistance.	Recommended DFT: 1.5-3.0 mils (37.5-75 microns).
VpCI®-386	A fast drying, water-based acrylic one coat system (topcoat) that can be applied DTM (Direct to Metal) and provides protection in harsh, outdoor, unsheltered applications. VpCI®-386 is weldable and can be used to keep surfaces corrosion-free prior to welding.	Recommended DFT: 1.5-3.0 mils (37.5-75 microns).
VpCI®-395	A fast drying, 2K water-based epoxy one coat system (primer) that can be applied DTM (Direct to Metal) and provides protection in harsh, outdoor, unsheltered applications. Excellent for immersion type conditions. Can be used as topcoat indoors (away from UV light). Certified to meet ANSI/NSF Standard 61.	Recommended DFT: 1.5-3.0 mils (37.5-75 microns).
VpCI®-396	A fast drying, solvent-based moisture cure urethane one coat system (primer and topcoat) that can be applied DTM (Direct to Metal) and provides protection in harsh, outdoor, unsheltered applications.	Recommended DFT: 2.0-3.0 mils (50-75 microns).
VpCI®-2026	A 2K, solvent-based 100% solids novolac epoxy system (topcoat) that provides protection in harsh, outdoor, unsheltered applications.	Recommended WFT/DFT: 11-13 mils (275-325 microns).
Concrete Structures		
MCI®-2005	 A water-based, organic, corrosion inhibiting admixture for protection of metallic reinforcement in concrete structures. Contains 67% USDA certified biobased content. Certified to meet ANSI/NSF Standard 61 for use in potable water structures. Meets all requirements of ASTM C1582. Earns credit toward LEED certification.	Add MCI®-2005 to concrete mix or repair mortars at 1 pt/yd³ (0.6 L/m³).
MCI®-2005 NS	Normal set (not delayed) version of MCI®-2005. Certified to meet ANSI/NSF Standard 61. Biobased: 27%. Meets all requirements of ASTM C1582. Earns credit toward LEED certification.	Add MCI®-2005 NS to concrete mix at the rate of 1.5 pt/yd³ (1L/m³).
MCI®-2006 NS	A normal set, powder corrosion inhibiting admixture for protection of metallic reinforcement in concrete structures. Certified to meet ANSI/NSF Standard 61.	Add to concrete mix at the rate of 1 lb/yd³ (0.6 kg/m³).
MCI®-2018	 A 100% silane water repellent containing Migrating Corrosion Inhibitors (MCI®). Penetrates into concrete providing corrosion protection to reinforcing steel from carbonation, chlorides, and other contaminants. Certified to meet ANSI/NSF Standard 61. Also available as MCI®-2018 V/O for easier application on vertical and overhead surfaces. Certified under EN 1504-2 (2+ system) for superficial protection of concrete.	Apply by airless sprayer, roller, or brush. Approximate coverage rate is 125-175 ft²/gal (3-4.3 m²/L).
MCI®-2019	 A 40% silane, solvent-based concrete sealer containing Migrating Corrosion Inhibitors (MCI®). Provides water repellency and delays/reduces corrosion. Certified under EN 1504-2 (2+ system) for superficial protection of concrete.	Apply by airless sprayer, roller, or brush. Approximate coverage rate is 125-175 ft²/gal (3-4.3 m²/L).
MCI®-2020	A surface-applied Migrating Corrosion Inhibitor™ designed to penetrate through cementitious materials including concrete, mortar, and limestone. Migrates in liquid and vapor phase to form a protective molecular layer on embedded reinforcement. Certified to meet ANSI/NSF Standard 61. Available in high viscosity MCI®-2020 V/O version for vertical and overhead areas.	Horizontal surfaces: Single coat at 150 ft²/gal (3.68 m²/L). Vertical surfaces: Two coats at 300 ft²/gal (7.36 m²/L).
MCI®-2021	 A concrete sealer that combines a blend of reactive silicates, surface-active agents, and Migrating Corrosion Inhibitors (MCI®). Certified under EN 1504-2 (2+ system) for superficial protection of concrete.	Approximate dosage: 150-250 ft²/gal (3.7-6.1 m²/L) for all coats combined.

MCI®-2026 Floor Coating	A 100% solids, 2-component novolac epoxy coating designed for environments that require a high degree of chemical or temperature resistance.	For optimum results, prime concrete floor first with MCI®-2020 and MCI®-2026. Apply at 250-300 ft²/gal (6.14-7.36 m²/L). Rougher and shot-blasted floors: 225-250 ft²/gallon (5.52-6.14 m²/L). Dry thoroughly before applying topcoat.
MCI®-2241/ MCI®-2242	A flexible, breathable water-proofing membrane based on a unique combination of acrylic emulsion, Portland cement, and fine fibers. Use to waterproof all types of above- or below-grade concrete and masonry.	Apply only to sound and clean, dry, properly prepared frost-free surfaces in a 1/16 inch (1.6 mm) thick coat using a stainless-steel trowel or a spray device. Immediately trowel the product level.
MCI®-2039	A single-component, fiber-reinforced repair mortar containing Migrating Corrosion Inhibitors, fibers, and polymers. Provides a high level of adhesion, durability, and impermeability to water and carbonation attack.	Mix 55 pound (25 kg) bag with 0.8-0.9 gallons (3.02-3.41 L) fresh water at 400-600 rpm for 3-5 minutes. One bag covers 12 square feet (1.11 m²) at 1/2 inch (12.7 mm) thick.
MCI®-2701	A single-component, polymer-modified, cement-based trowel-grade repair mortar designed for structurally repairing deteriorated concrete. Contains Migrating Corrosion Inhibitors to protect embedded steel rebar. Use on horizontal surfaces for repairs from 1/4 to 2 inches (6-51 mm) thick.	Mix with 6-6.5 pints (2.83-3.08 L) water per 60 pound (27 kg) bag. One bag covers 20-25 square feet at 1/4 inch thick (1.9-2.3 m² at 6 mm thick).
MCI®-2702	A single-component, polymer-modified, cement-based repair mortar for structurally repairing deteriorated concrete. Specifically designed for vertical and overhead repairs from 1/4 to 2 inches (6-51 mm) thick.	Mix with 6-6.5 pints (2.83-3.08 L) water per 50 pound (23 kg) bag. One bag covers 20-25 square feet at 1/4 inch thick (1.9-2.3 m² at 6 mm thick).
Process Equipment/MRO		
VpCI®-126	High technology Vapor phase Corrosion Inhibitor film that protects metal objects from all types of corrosion including rust, tarnish, stains, white rust, and oxidation during storage or domestic and overseas shipments. Recyclable. Available in roll stock and bags.	Use to package anything from small nuts and bolts to spares or large equipment on standby.
CorrLube™ VpCI® Lithium EP Grease	A lithium complex grease formulated with premium quality, severely hydrotreated base stock. Provides excellent resistance to oxidation and has high temperature stability. Suitable for operating and lay-up conditions.	Apply to lubricating sleeves, bearings, fans, and other metal contact areas that require NLGI grade 2 grease by brushing, grease gun, or automatic application at a temperature range of -22 ° to 226 °F (-30 ° to 130 °C).
EcoLine® Biobased Grease powered by Nano VpCI® 	A multipurpose biobased grease with superior corrosion protection properties. Contains 86% USDA certified biobased content. Broad range of operating temperatures.	Apply to metal-to-metal contact areas such as lubricating sleeves, ball and roller bearings, and vehicle/equipment chassis.
EcoLine® 4320 & 4330 	Heavy-duty green chemistry paint strippers designed to remove coatings, inks, and resins from metals, concrete, and wood surfaces. Contains 50% USDA certified biobased content. Includes flash rust protection. No California Prop 65 components that cause cancer, birth defects, or other reproductive harm.	Apply by dip, brush, spray, or rolling. Allow to penetrate and soften coating before scraping off and/or pressure washing surface.
EcoLine® Cleaner/ Degreaser	A heavy-duty, water-dilutable cleaner/degreaser for tough cleaning jobs in industrial and commercial applications.	Ideal for cleaning machinery, shop tools, hoods, parts in-process, office equipment, floors, walls, and desks. Can be diluted up to a 1:20 ratio in water.
EcoLine® ELP 	A high performance biodegradable soy-based lubricant and penetrant for general purpose use. Contains 95% USDA certified biobased content.	Apply to metal parts for lubricating, loosening rusty bolts, cooling/lubricating basic metal cutting operations, or any other general lubrication need. Available in aerosol spray cans.

VpCI®-422	 <p>Environmentally-friendly biodegradable organic rust remover. Contains 92% USDA certified biobased content.</p>	Apply to rusty surface after removing loose rust; let stand for 10-15 minutes; rinse with an alkaline solution such as EcoLine® Cleaner/Degreaser. Available in EcoAir® air-powered spray cans.
VpCI®-423	 <p>Environmentally-friendly biodegradable organic rust remover for vertical or overhead surfaces. Contains 91% USDA certified biobased content.</p>	Apply to rusty surface after removing loose rust; let stand for 10-15 minutes; rinse with an alkaline solution such as EcoLine® Cleaner/Degreaser. Available in EcoAir® air-powered spray cans.
Natural Bioaugmentation for Enhanced Wastewater Treatment		
BCP12	An anaerobic digester that increases the efficiency of overloaded treatment systems by breaking down lipids, cellulose, lignin, proteins, and other complex organic molecules, mostly through hydrolysis and further through acidogenesis.	Applied to the primary digester based on volume or flow rate. Contact Bionetix® for dosage rates.
BCP22	A blend of facultative anaerobic bacteria and free bacterial enzymes for use in treatment of fats, oils, and greases (FOG). Reduces foam, sludge, and grease build-up. Controls filamentous growth.	Add water soluble pouches directly to the system. Contact Bionetix® for dosage rates and application procedures.
BCP35M	Contains aerobic and facultative anaerobic bacteria and free bacterial enzymes specially selected to digest petroleum hydrocarbons with greater resistance to the effects of organic inhibitors present in wastewaters with a higher salt content.	Apply to activated sludge systems, trickling filter beds and rotating biological contactors, and lagoons, etc. Contact Bionetix® for dosage rates.
BCP50	A blend of facultative anaerobic bacteria and free bacterial enzymes selected to biodegrade organic material in sewage wastewater. Helps reduce sludge and odors. Improves effluent and allows faster startup.	Apply to activated sludge systems. Contact Bionetix® for dosage rates.
BCP54T	Tablets containing facultative anaerobic bacteria and free bacterial enzymes, effective in aerobic and anaerobic conditions for biodegrading organic material comprised of proteins, fats, and carbohydrates. Reduces BOD, TSS, sludge, and odors. Improves overall water quality.	Apply to lagoons based on surface area. Contact Bionetix® for dosage rates.
BCP655	A blend of bacteria that removes nitrogen (i.e., amino acids, proteins, purines, pyrimidines, nucleic acids) from wastewater rather than converting it to another form. BCP655 helps reduce ammonia levels, reduce plant upsets, and increase treatment efficiency by at least 50%. This helps eliminate expensive surcharges due to high TKN discharge levels.	Apply to lagoons based on surface area. Contact Bionetix® for dosage rates.
BIOBLOC22	A slow-release block containing different bacteria together with specialty penetrants and surfactants that loosen and liquefy heavy grease deposits, thereby assisting in their biodegradation. Helps reduce odors and grease buildup; keeps floats clean; prevents emergency blockages.	Add BIOBLOC22 directly to grease traps. Five pound (2.3 kg) BIOBLOC22 lasts about one month in a 5,000 gallon (18,927 L) volume.



Cortec® Corporation



Quality Management System (ISO 9001 Certified)

World Class Product Offerings

An innovative producer of leading edge products.

World Class Customer Service

A positive, long-lasting impression through every link of our company.

World Class Environmental Commitment

Cortec® commits to continued development of processes and products that are useful, non-hazardous to the environment, and recyclable whenever possible.

An Ethical and Respectful Company Culture

Respect and treat our colleagues, customers, and vendors as we would our own family members.



Environmental Management System (ISO 14001 Certified)

Cortec's strong environmental concern is demonstrated in the design and manufacturing of products that protect materials of all kinds from environmental degradation. A strong commitment to produce recyclable products made from sustainable resources has been and will be our future policy. This brochure can be recycled.



Laboratory Accreditation (ISO/IEC 17025)

Cortec® Laboratories, Inc. is the only lab in our industry that has received ISO/IEC 17025 Certification, which ensures quality in recording and reporting data, as well as calibrating equipment within the laboratory.



LIMITED WARRANTY

All statements, technical information and recommendations contained herein are based on tests Cortec® Corporation believes to be reliable, but the accuracy or completeness thereof is not guaranteed.

Cortec® Corporation warrants Cortec® products will be free from defects when shipped to customer. Cortec® Corporation's obligation under this warranty shall be limited to replacement of product that proves to be defective. To obtain replacement product under this warranty, the customer must notify Cortec® Corporation of the claimed defect within six months after shipment of product to customer. All freight charges for replacement product shall be paid by customer.

Cortec® Corporation shall have no liability for any injury, loss or damage arising out of the use of or the inability to use the products.

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