



**CORTEC**  
CORPORATION

Environmentally Safe VpCl™ MCI Technologies

# VpCl<sup>®</sup> Technology For Desalination Industry



# The Cortec® VpCI® Technology

## PROTECT THE DESALINATION INDUSTRY

By its very nature, desalination is an extremely corrosion-prone industry. With saltwater coursing through pipelines in plants that are often located in harsh coastal environments, the desalination process is at risk for corrosion within and without. This could pose safety risks along with the potential of process interruption or, in extreme cases, plant shutdown.

At a minimum, protecting plant infrastructure from corrosion is a good maintenance practice that promises to improve plant performance and extend service life. Preservation of critical spares is also important in the interest of having ready to use replacements in the case of equipment failure. In some cases, direct water treatment may be an option for protecting systems that handle saltwater, brine, or process water.

## PROTECT THE ENVIRONMENT

Vapor phase Corrosion Inhibitors (VpCIs) and Migrating Corrosion Inhibitors (MCIs) offer environmentally safe methods of treatment with low toxicity and low polluting effects. Unlike corrosion inhibiting systems of the past, many Cortec® products do not contain chromates or other heavy metals, nitrites, or chlorinated hydrocarbons. Cortec® VpCIs and MCIs help you turn the tables on corrosion. With the support of our corrosion scientists, engineers, and testing facility, Cortec® can provide simple, environmentally friendly solutions to corrosion problems.

## PROTECT CONTINUOUSLY

VpCIs and MCIs can be applied at multiple points to form continuous chemical bonds over metal surfaces. Liquid and vapor phases (as well as the VpCI® interphase) allow Cortec® technologies to travel through different media for more effective and uninterrupted protection. For example, VpCIs injected into a process system can immediately go to work on pre-rusted or scaled surfaces and are self-replenishing. MCIs can be added directly into new concrete mixtures or applied onto hardened concrete surfaces, migrating in to protect embedded rebar at both the anode and cathode.



**Vertical Integration and ISO Total Quality to Reduce Risk**



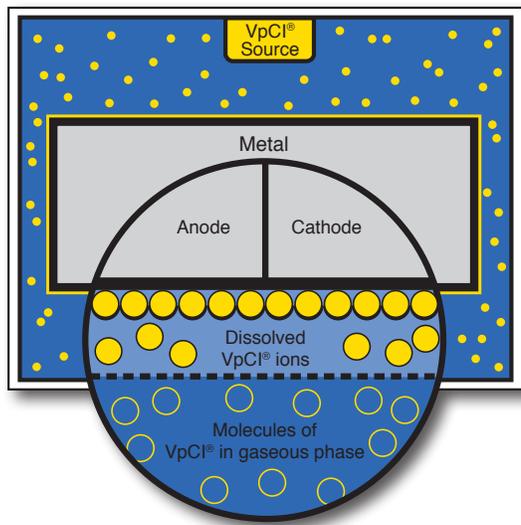
**ISO Accredited Laboratories for Validation Testing**



**Trusted Global Manufacturing and Technical Service in 90+ Countries**



# Vapor phase Corrosion Inhibitors (VpCI®)



## Vapor phase Corrosion Inhibitors (VpCI®)

VpCI® Technology is an innovative, environmentally safe, cost-effective option for corrosion protection. Cortec® products protect with a thin, mono-molecular protective barrier. The barrier re-heals and self-replenishes and can be combined with other functional properties for added protective capabilities.

Cortec's VpCI® additives offer excellent corrosion protection for process industries. While conventional corrosion inhibiting treatments for the internal surfaces of fluid systems protect only in the liquid phase, Cortec® VpCI® Technology can provide corrosion protection in the liquid phase, interphase, and vapor phase. Partial pressure capabilities allow Cortec VpCIs to continually replenish in the void space above the liquid.

Cortec® VpCIs can be added into your system at single or multiple points. For example, inject VpCIs automatically into a system – without any operator attendance – and immediately start protecting hundreds of feet of piping. As the pro-environmental corrosion treatment of the century, our organic formulations give an environmentally acceptable way to protect and extend the life of equipment.

## Cortec® Products Summary and Benefits

Cortec® provides unique patented Vapor phase Corrosion Inhibition that:

- Saves costly time and labor
- Protects the environment
- Offers complete package solutions
- Disperses in water, oils, solvents
- Formulates easily
- Protects multi-metals
- Remains compatible with biocides
- Can be used in all process industries
- Comes in multifunctional products
- Does not alter emulsion properties
- Protects against SCC (Stress Corrosion Cracking) and HE (Hydrogen Embrittlement)
- Requires little or no surface preparation
- Prevents further corrosion of ferrous surfaces
- VpCI® layer does not have to be removed prior to processing or use
- Does not interfere with operation of mechanical components

## Cortec® Products Safely Replace

- Nitrites
- Molybdates
- Phosphonates
- Morpholine
- Hydrazine

Unprotected Steel Wool in Water

VpCI® Protected Steel Wool in Water



# Desalination Industry Solutions

Corrosion is a persistent problem that threatens to interrupt or shut down desalination plant operations if not kept under control. To preserve desalination equipment at peak efficiency requires ongoing maintenance to correct and prevent the corrosive effects of brine, salt spray, or process fluids. Challenges are extensive and ongoing—from maintaining critical spares to protecting pumps and bolting. If left unchecked, corrosion issues can raise operating and labor costs or incur high equipment replacement expenses.

Cortec® offers innovative, environmentally friendly, and cost-effective solutions to address a range of repair, protection, and maintenance challenges in the desalination industry. Cortec® products can provide simple, reliable ways to enhance the safety and durability of your equipment.

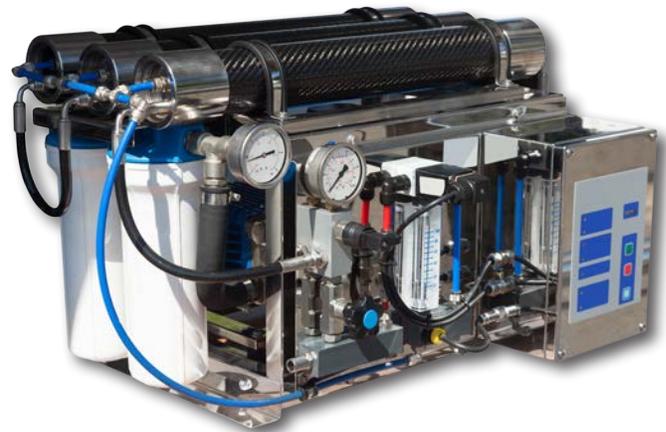


## INFRASTRUCTURE

Constructing a desalination plant requires an enormous infrastructure investment prior to plant operation. These sunk costs, not to mention high subsequent operational costs, call for extra precautions to prolong plant service life as long as possible. Since many desalination plants are located in marine conditions, reinforced concrete surfaces and metal structures, bolts, tanks, and piping are often under severe attack from humidity and salt spray. This corrosive environment may be amplified by the harsh nature of the saltwater being processed. Cortec® provides both MCI® and VpCI® Technologies to help desalination plants protect infrastructure and extend plant service life.

## LAYUP OF CRITICAL SPARES

As with any large operating plant, it is important to have critical spares ready for immediate replacement use. The difficulty comes in maintaining critical spares in peak condition during layup, especially in corrosive seaside environments. Cortec's products help keep spare parts corrosion-free and ready to use, so that downtime is minimized and rust claim costs are as low as possible.



## EQUIPMENT OPERATIONS

In addition to raising costs and interrupting operation, corrosion of essential desalination equipment poses safety hazards. Corrosion on a multitude of motors and electrical controls could result in dangerous equipment malfunctions. Cortec® can help stem corrosion problems to keep equipment functioning safely and smoothly with VpCI® lubricant additives, emitters for electrical enclosures, and selected VpCI® water treatment solutions.

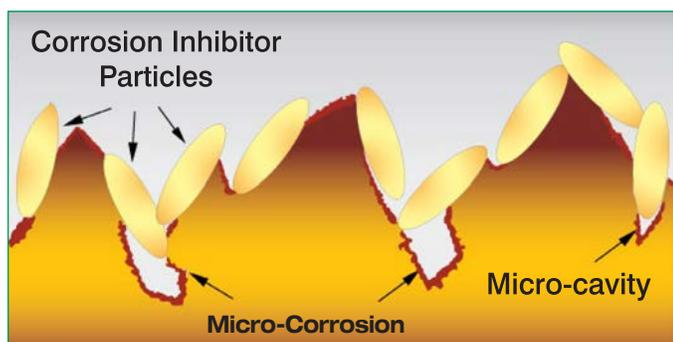
## HIGH PERFORMANCE COATINGS, ADDITIVES, AND EMITTERS FOR THE DESALINATION INDUSTRY

Cortec® can match your corrosion protection needs with its versatile product lines of high performance coatings for metal structures, additives for oil and water, and emitters and sprays for electronics.

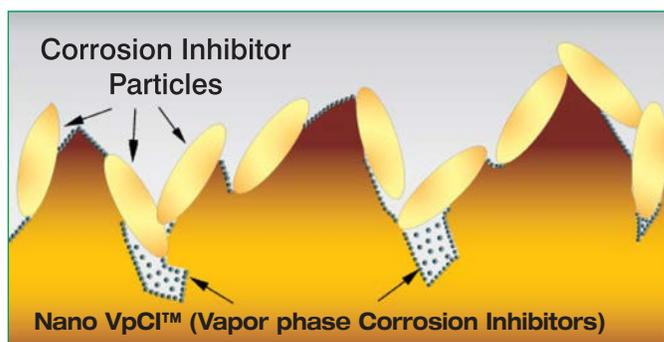
With our environmentally safe VpCI® Technology, your equipment and infrastructure will be effectively protected against humidity, saltwater, and oxidizing atmospheres as well as corrosive industrial, marine, and tropical environments. Traditional treatments rely on contact inhibitors to prevent corrosion and are therefore limited in their ability to protect hard to reach surfaces.

Cortec VpCI® products have both contact and vapor phase protection capabilities for more effective corrosion inhibition. Cortec® Nano VpCI™ coatings use the patented VpCI® Technology to protect the metal substrate with a tight bonding molecular structure. This system eliminates the gaps which occur with traditional inhibitors and prevents corrosion from starting.

### TRADITIONAL COATINGS VS. CORTEC® MICRO-CORROSION INHIBITING COATINGS™ WITH NANO VPCI™



Traditional coatings can not protect the micro-cavities due to the relative large size of corrosion inhibitor particles such as nitrate, aluminum, and zinc. These cavities are where micro-corrosion starts when using traditional coatings.



Cortec® Coatings are unique because the Nano VpCI™ (Vapor phase Corrosion Inhibitors) penetrates and protects the micro-cavities against micro-corrosion.

## WASTE WATER TREATMENT

Cortec® VpCI® Water Treatments provide continuous protection from corrosion in process systems. Boilers, heat exchangers, cooling towers, and steam condensate lines need Cortec® VpCI® Water Treatments to prevent the harmful effects caused by fresh and salt water, brine, and various dissolved halogens. Strong chloride concentrations in these environments dramatically increase the risk for corrosion and failure. This could pose safety hazards due to the high pressure of water coursing through process systems. Cortec's full range of corrosion inhibiting additives will protect ferrous, non-ferrous, and dissimilar metals in water process and piping systems.

Cortec's ability to automatically inject VpCI's at any time into multiple parts of your process system makes it versatile and easy to use. Even pre-rusted or scaled surfaces are guarded as self-replenishing VpCIs go to work in the liquid phase, interphase, or vapor phase for continuous, immediate protection.

Bionetix® International, a subsidiary of Cortec®, also offers products that treat chemicals in waste water and reduce the accumulation of petroleum products in sumps and drains. Benefits from these treatments have included improved water quality, better odor control, and reduced cost of cleaning and maintenance. For more information, visit [www.bionetix-international.com](http://www.bionetix-international.com).



## FACILITY AND ASSET PROTECTION WITH GLOBAL SERVICES

### CORTEC® GLOBAL SERVICES

Cortec® offers innovative turnkey solutions to mitigate corrosion on plant equipment and infrastructure. Available services include evaluation and treatment of trouble spots to keep plant operations at highest possible performance. When asset preservation is required, VpCl® cleaning and packaging products provide low-cost, easy-to-apply solutions for long term results, whether maintaining ready-to-use spares or mothballing. From our experience providing zero defect, low-cost preservation across various industries, Cortec® is able to transfer knowledge of best-in-class solutions to the sector at hand.

### TOTAL SOLUTION PROVIDER

Global Services is focused on providing our customers with optimum corrosion control solutions to meet their everyday needs. The scope for Cortec® Global Services includes a variety of corrosion control design, engineering, and field applications to serve Cortec® customers worldwide. Our group is committed to providing a cost-effective service designed to ensure our customers receive the correct products, technologies, and applications the first time, every time.

Training and Supervision	Advisory and Consultancy	Engineering and Design (CEFS)	Turnkey Application Services	Laboratory Testing and Product Design
Cortec® Certified Applicator Training	Subject Matter Expert Liaison with Client Engineering	Full Service System Design	Single Purchase Order Full Service Preservation Execution	ISO/IEC 17025 Certified Independent Laboratory
On-the-job-training (OJT) Modular Programs	Application Method and Specification	Corrosion Monitoring and Inspection	Value-Added, Turn-Key Solutions	Technical Specification
Supervision of Client Crews Including Short and Prolonged Deployment	Onsite Liaison: Including Short and Prolonged Deployment	Onsite or Offsite	Assistance Through Entire Project Life-Cycle	Product Design

### Certified Applicator Training

Applicator Training - Crew	Cortec® supplied training to provide short-duration training on key asset/task
Applicator Training Individual Certification	Cortec® supplies training services and individually certifies attendees on demonstrated competencies
Applicator Training – OJT Modular	Cortec® provides supervisory training services onsite using OJT modules pertinent to job scope

### Advisory Services

Specification Review	Cortec® supplies SME (subject-matter-expert) remotely or onsite to review and assist in writing or reviewing preservation specifications
Onsite Liaison	Cortec® supplies SME onsite or in back-to-back rotator format or similar in office setting to advise and consult on preservation issues and plan preservation resources
Project Manager	Cortec® supplies PMs for duration of project to plan and execute preservation resources
Scoping Visit	Cortec® supplies Preservation Advisor for initial scoping visits

### Engineering, Design and Monitoring Services

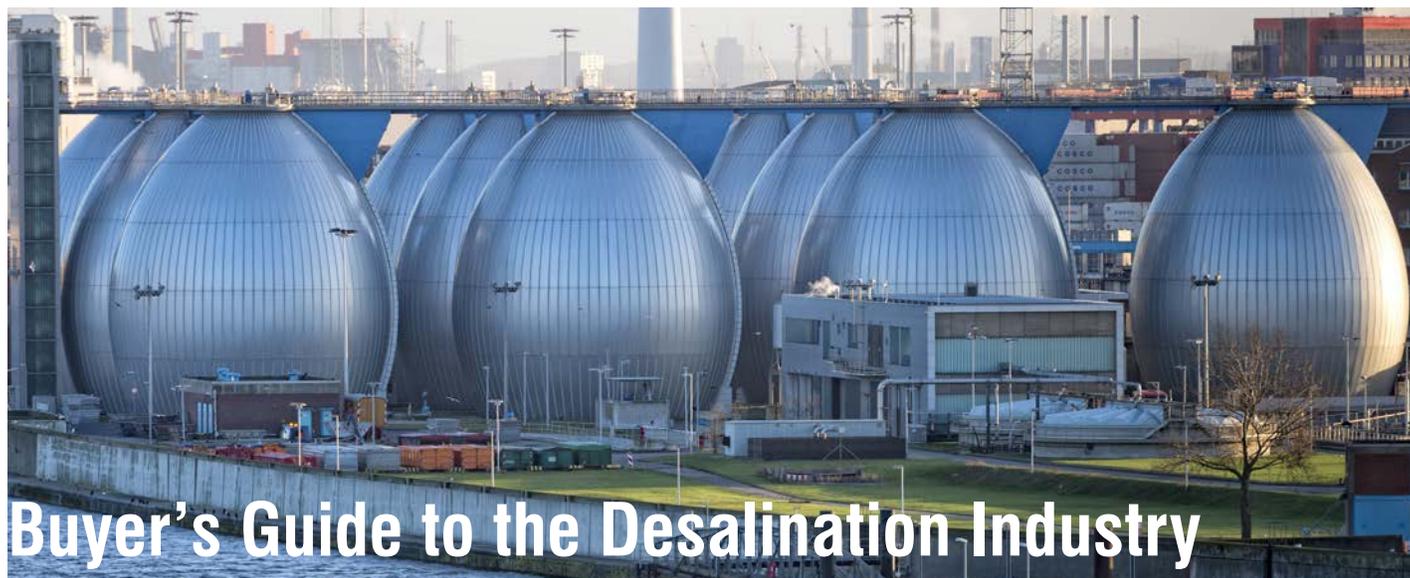
Corrosion Monitoring	Cortec® supplies SME onsite for comprehensive monitoring of all critical components of industrial objects, assets, facilities and plants for signs of corrosion based on project specifications
Corrosion Inspection	Cortec® supplies SME to onsite for inspection of asset integrity and suitability of service. Can also evaluate, design, and implement robust corrosion inspection program
Engineering Design Services	Cortec® supplies a corrosion engineer to build a product and/or process with a specified performance goal
Maintenance Services	Cortec® supplies SME for maintenance of preservation application and projects

### Full Service Preservation Services

Supervisory	Cortec® supplies a Preservation Supervisor to oversee preservation application and/or training of Company crews
Full Crew	Cortec® supplies trained crews to complete preservation projects
Skilled Labor	Cortec® supplies labor to preservation projects to work with Company team

### Laboratory and Corrosion Testing Services

Technical Liaison	Cortec® supplies primary technical expert in the use and application of Cortec® products and preservation methods
Technical Service	Cortec® supplies technical service contact to assist with product and application clarification



# Buyer's Guide to the Desalination Industry

Product	Description	Application	Dosage
BioEmitter™	BioEmitter™ is an environmentally and user safe corrosion preventative made with a high bio-based content.	The BioEmitter™ provides a clean and dry corrosion prevention method for a variety of metals: carbon steel, galvanized steel, copper, brass, silver, aluminum, and others.	One BioEmitter™ stops rust and corrosion in an enclosed space up to 50 ft <sup>3</sup> (1.4 m <sup>3</sup> ).
Corrologic® VpCl-658	Corrologic® VpCl®-658 provides corrosion protection for metals under thermal insulation during idle cooling periods.	Metals and alloys including carbon and stainless steels, aluminum and copper-based alloys.	10 cc per ft <sup>3</sup> (330 cc/m <sup>3</sup> )
Corrverter®	CorrVerter® is a water-based primer recommended for application to rusty or poorly prepared steel surfaces where further corrosion protection is required and good surface preparation is difficult to achieve.	Outdoor storage, aircraft, elevators, storage tanks, vehicles, pumps, cargo holds, marine equipment.	Brush, roll, or spray CorrVerter® with no surface show-through at 3-5 mils (75-125 microns) wet film thickness.
ElectriCorr® VpCl®-239	ElectriCorr® VpCl®-239 provides corrosion protection on electrical components indoors or in covered outdoor conditions.	Circuit boards, bus bars, electrical connections.	Apply a light spray evenly over the metal surface. Do not spray until product is dripping.
M-528	Seawater-compatible hydraulic fluid additive with contact and vapor phase protection.	Additive for water-miscible, synthetic hydraulic oils in pumps and moving parts.	Please contact Cortec® for an application guide.
M-531	M-531 is an oil-based package of corrosion inhibitors for petroleum and synthetic lubricants.	M-531 can be used in a wide variety of industrial lubricant applications where excellent rust protection, filterability, and water resistance are required.	M-531 can be dosed at 2-5% for operational protection or layup preservation.
MCI®-2018	MCI®-2018 is a silane based concrete sealer, containing time-proven Migrating Corrosion Inhibitors (MCI®).	MCI®-2018 offers a time proven corrosion inhibiting technology that will extend the life of all reinforced concrete structures.	Coverage: 125-175 ft <sup>2</sup> /gal (3-4.3 m <sup>2</sup> /L)
MCI®-2020	Clear MCI® surface treatment for existing concrete. Designed to penetrate and migrate throughout the concrete structure. Patented. ANSI/NSF Standard 61 Approval for structures containing potable water.	Provides MCI® corrosion protection for rebar in existing structures such as bridges, buildings, garages, decks, and lanais.	Coverage: One coat at 150 ft <sup>2</sup> /gal, or two coats at 15 ft <sup>2</sup> /half gal.
MCI®-2026 Floor Coating	A 100% solids, 2-component, novalac epoxy coating designed for environments requiring a high degree of chemical or temperature resistance. Meets all USDA guidelines for use in federally inspected poultry and meat plants.	Recommended as a high performance coating in areas subjected to heavy traffic, chemical spillage, and/or elevated temperatures.	For optimum results, prime prepared concrete floor first with MCI®-2020 and MCI®-2026. Apply at a rate of 250-300 ft <sup>2</sup> /gal (6.14-7.36m <sup>2</sup> /L). Reduce to about 225-250 ft <sup>2</sup> /gal (5.52-6.14m <sup>2</sup> /L) on rougher areas and shot-blasted floors.

VpCI®-111 Emitter	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 up to 11 cubic feet (312 L). Accepted by FDA for corrosion protection of electrical and electronic equipment within food processing plants.	Operating, packaged, and stored electrical equipment; marine navigation and communication equipment; electric motors; switching equipment; fuse boxes; electrical wireways; terminal boxes; scientific and measuring instruments; telecommunications equipment; control panels for manufacturing and processing equipment.	1 emitter/11 ft <sup>3</sup> (0.31 m <sup>3</sup> )
VpCI®-126 EM UV Film	Cortec® VpCI® EM UV Film combines high strength resins with ultraviolet light stabilizers (UV) and Vapor phase Corrosion Inhibitor (VpCI®) Technology. VpCI®-126 is FDA approved for indirect contact with food and meets applicable MIL-PRF-22019, NACE TMO208-2008, and RPO487-2000 standards.	This state-of-the-art film construction provides multi-metal protection for parts, equipment, and vehicles for up to three years, even in aggressive outdoor conditions.	Please contact Cortec® for an application guide.
VpCI®-322	Provides corrosion protection to lubricating or hydraulic oils in indoor or open air conditions.	Corrosion protection to ferrous and non-ferrous metals.	Fog: 1 oz/ft <sup>3</sup> (0.9 L/m <sup>3</sup> ). Mix: 1 part VpCI®-322 to 9 parts oil.
VpCI®-386	Clear water-based acrylic primer/topcoat for corrosion protection in harsh, outdoor, unsheltered conditions.	Protects structures and parts made of carbon steel, stainless steel, galvanized steel, copper, aluminum, and cast iron.	Spray, roll, brush, or dip to 1.5-3.0 mils (37.5-75 µm) dry film thickness per coat.
VpCI®-395	Long-term resilient water-based epoxy primer for surfaces exposed to aggressive chemicals and environments. UL Classified in accordance with ANSI/NSF Standard 61 for potable water (applies only to RAL 7046).	Corrosion protection for steel and aluminum surfaces. Chemical stability and low moisture permeability ideal for coating tanks.	Mix Part A w/ Part B at 4:1 ratio. Spray or brush to dry film thickness of 1.5-3 dry mils (37.5-75 µm).
VpCI®-609	Water-soluble Vapor phase Corrosion Inhibiting (VpCI®) powder for wet or dry corrosion protection of ferrous metals and aluminum. Conforms to MIL-I-22110C.	Tubular structures, pipes and vessels; internal surfaces of compressors, turbines, engines, tanks, boilers, heat exchangers; steam condensate lines, closed circuit heating and cooling systems; equipment during and after hydrostatic testing; parts, components and completed assemblies during shipping and storage; additive to shot-blasting media, wet blasting; additive to standing water; voids, cavities and tanks.	Use 0.3-0.5 ounce (8.5-14 grams) of VpCI®-609 per 1 cubic foot (28 liters) of enclosed space (300-500 g/m <sup>3</sup> ).
VpCI®-641	Water-based liquid additive with contact and Vapor phase Corrosion Inhibitors (VpCI®) for partly filled spaces.	Rust preventive for ferrous or nonferrous metals in industrial waters. Can be used in heat exchangers.	Please contact Cortec® for an application guide.
VpCI®-643	Concentrated combination of biodegradable corrosion inhibitors and oxygen scavengers for protection in chloride-containing solutions.	Corrosion protection of ferrous and non-ferrous metals in fresh water, salt-water, brine, and other highly corrosive solutions containing dissolved halogens.	400-500 ppm for chloride concentration of 3% or more by weight.
VpCI®-645	Non-toxic, biodegradable concentrate for long-term effectiveness in fresh water, salt water, brine, and other highly corrosive solutions containing dissolved sulfide and halogens.	Protects ferrous and non-ferrous metals in desalination plant systems and during wet layup of boilers, pipelines, vessels, etc.	Cooling/Heating Systems: 0.5-0.75% by volume in chloride concentrations of 3% or more by weight. Hydrostatic Testing: 0.75-0.075% by volume depending on time.
VpCI®-649 Liquid	This product is designed to provide long-term protection in fresh water and glycol closed loop systems.	Protects ferrous and non-ferrous metals from corrosive solutions in closed loop cooling systems, etc.	Please contact Cortec® for an application guide.

# BioPreferred® Products Buyer's Guide

Product	Description	Application	Dosage
BioCorr® Rust Preventative	Ready-to-use water based, biodegradable, VOC-free, and 64% biobased rust preventative. An excellent environmentally sound alternative to petroleum products.	Preservation of multi-metals in storage and during transportation. Good indoor protection. Leaves a very thin film easily removed with water.	A bio-based thin-film rust preventative for metal parts in dip tank applications. Equivalent to BioCorr SC diluted to 5% BioCorr® SC in 95% water.
BioCorr® SC	Multifunctional biodegradable concentrate for metal cutting operations. Cools work pieces and tools during metalworking with excellent corrosion protection and lubrication. Environmentally friendly and 64% biobased. USDA BioPreferred® designation for Metalworking Fluids for Federal preferred purchasing.	Hydrostatic testing; preservation of hot-rolled, cold-rolled, galvanized, and aluminumized steel during operation, storage, and shipment; machining coolant; heavy-duty rolling, grinding, extruding, stamping, and cutting lubrication.	Super concentrated version of BioCorr®. Can be diluted from 5% up to 50% depending on the application. Mix well with water prior to use.
Bio-Pad®	Flexible corrosion inhibiting device constructed from biobased non-woven material. Up to two times as much corrosion inhibiting action as related foam products. No isocyanates, nitrites, or chromates. 66% biobased content.	Corrosion inhibitor for packaged metal parts. No degreasing or coating removal required after use.	Bio-Pad® 2"x 6" for up to 1.5 ft³ (0.042 m³). Bio-Pad® 8"x 8" for up to 8 ft³ (0.23 m³). Bio-Pad® Roll for up to 15 ft³ per material ft² (4.5 m³/m²).
EcoAir® 422 Non-Toxic Rust Remover	USDA 92% Certified Biobased Product. Water-based, non-toxic rust remover for multimetal protection. Removes rust and stains without polluting and is packaged in an air-powered spray can.	Multimetal protection and rust removal from steel, iron, copper, brass, and chrome.	Apply to the metal surface as needed to remove rust.
EcoAir® 423	91% biobased rust remover harmless to people. Packaged in an air-powered spray can.	Removes rust and corrosion from ferrous and non-ferrous metals, prevents flash rusting, and loosens rust-frozen parts. Acceptable for use as an acid cleaner in food plants (indirect contact with food). Can be used on interior and exterior surfaces of tanks and vessels.	Use as needed to coat the surface of metal parts for rust removal.
EcoClean® 423 Rust Remover	Water based, non-toxic, non-polluting product uses natural organics to remove rust, scale, and oxides. 91% biobased.	Removes rust from steel, iron, copper, brass, and chrome. Ideal for hard to reach or vertical surfaces.	Use as needed to coat the surface of metal parts for rust removal.
EcoClean® Dispersant 600	A biodegradable, non-toxic, dispersant-emulsifier that prevents oil/petroleum filming on water, so oxygen exchange is not hindered on water-air interface. 81% biobased.	Apply to water covered with oily film after bulk cleanup of oil/petroleum-based product spill.	Apply as is or pre-dilute with sea or fresh water (1:10 ratio). Use splashing machine to mix the treated area.
EcoLine® 3220	Environmentally safe 99% biobased ready-to-use temporary coating with canola oil carrier. Tenaciously clings to metal surfaces for excellent contact corrosion protection and vapor corrosion inhibition in storage and shipment.	Multimetal protection and lubricity on machines and equipment, wire, sheet metals, pipes, flanges, gears, fabricated or machined parts, and ballast tanks.	When used as an oil additive, dilute as much as 1:20 with base oil for corrosion protection. Can be fogged for void space protection at 1L/m³ (1 qt/35 ft³)
EcoLine® 3680	Temporary wax-like film coating formulated with renewable and biodegradable materials. 72% biobased.	Corrosion protection of equipment where incidental contact with food is possible.	Brush or spray to film thickness of 5-6 mils (125-150 microns) for outdoor use, 2-3 mils (50-70 microns) for indoor use. Remove with alkaline cleaner like VpCl®-414.
EcoLine® 3690	Biodegradable, 76% biobased, ready-to-use temporary coating leaves oily film for excellent outdoor protection on metal surfaces in severe marine and high humidity conditions. Self-healing and canola-oil based. Meets MIL-PRF-16173E (Grade 2, 3).	Long-term (5+ years) equipment layup; pipes, couplings, pumps, cylinders, and cables; sheltered outdoor coating; gear protectant/lubricant; working/moving parts.	Normal DFT is 2 mils (50 microns). Used in brush/spray applications.

EcoLine® All-Purpose Lubricant	Environmentally friendly lubricant with friction modifier, extreme pressure additive, and VpCl® corrosion protection. Based on soybean derivatives and methyl esters. Biodegradable and 93% biobased.	In-plant machining, bar and chain oil, flange lubricant, locks and hinges, nuts and bolts, office machinery, penetrating oil/lubricant. Excellent mold release.	Dilute from 1:10 to 1:40 with water when used as cutting fluid.
EcoLine® CLP	“Green” version of a multifunctional penetrant/lubricant leaves behind persistent protective layer against corrosion. Biodegradable and 89% biobased with canola oil/canola methyl ester carrier.	In-plant machining, bar and chain oil, flange lubricant, locks and hinges, nuts and bolts, office machinery, penetrating oil/lubricant. Excellent mold release.	Use as needed.
EcoLine® Cutting Fluid	Multifunctional biodegradable concentrate for metal cutting operations. Cools work pieces and tools during metalworking with excellent corrosion protection and lubrication. Environmentally friendly and 64% biobased. USDA BioPreferred® designation for Metalworking Fluids for Federal preferred purchasing.	Hydrostatic testing; preservation of hot-rolled, cold-rolled, galvanized, and aluminumized steel during operation, storage, and shipment; machining coolant; heavy-duty rolling, grinding, extruding, stamping, and cutting lubrication.	Squirt top application from pre-diluted ready-to-use bottle. Bulk concentrate can be diluted 1:40 to 1:20 with water and mixed 5-10 minutes using high dispersion mixing blade.
EcoLine® Food Machinery Lubricating Grease	High-quality 92% biobased corrosion inhibiting lubricant formulated with American-grown natural seed oil. Conforms to USDA H-2 criteria and FDA regulation 21CFR. USDA BioPreferred® designated Food Grade Grease for Federal preferred purchasing. Meets EPA EPP criteria.	Excellent corrosion protection and superior lubricity for ferrous and colored metals in operating and mothballed equipment.	Use as other lubricating greases.
EcoLine® Long Term Rust Preventative	Biodegradable temporary coating for protection against corrosion and oxidation in severe marine, high humidity, and chloride-containing environments. 85% biobased with soybean methyl ester solvent carrier.	VpCl® multimetal protection for machines and equipment, wire, sheet metals, pipes, flanges, gears, fabricated or machined parts. Loosens frozen or rusted parts. Serves as temporary coating for storage and shipment.	Spray as needed to coat surface needing protection.
EcoLine® Cleaner & Degreaser	Heavy-duty water-dilutable cleaner/degreaser for tough industrial cleaning. Safe to handle, non-flammable 59% biobased product. USDA BioPreferred® designation as Industrial Cleaner and Grease Remover for Federal preferred purchasing.	Ideal for cleaning machinery or engines coated with grease or oil deposits and maintaining office equipment, floors, walls, and restrooms. Removes temporary coatings like VpCl®-368, VpCl®-369, and VpCl®-389.	Dilute 5-50% in water for general cleaning. Apply full strength for tougher cleaning.
EcoOcean®	Fully marine biodegradable (per ASTM D7081) film and bags constructed from latest biobased polymer technology. Heat, moisture, and chemical resistant with 77% biobased content. USDA BioPreferred® certified packaging material. BPI certified to meet ASTM D6400 for compostable plastics. 100% anaerobically digestible per ASTM D5511.	Ideal for compostable bags and many flexible film packaging applications.	Available in various sizes and constructions. Please contact a Cortec representative for additional information.
Eco Works® AD	Environmentally friendly film and bags. Marine biodegradable per ASTM D7081 standard specification and 100% anaerobically digestible per ASTM D5511 standard test method without compromising flexibility and strength. 77% biobased content. USDA BioPreferred® certified packaging material. BPI certified to meet ASTM D6400 for compostable plastics.	Ideal film for community organic waste diversion and anaerobic digestion programs. Provides technological safety net for coastal areas to support coastal and marine preservation goals.	Available in various sizes and constructions. Please contact a Cortec representative for additional information.
M-605 PS	Corrosion inhibitor additive designed specifically to prevent corrosion due to chlorides. Non-toxic and environmentally friendly with no chromate, nitrite, or phosphate inhibitors.	Protection to ferrous and aluminum-based alloys in closed loop cooling systems containing brine solutions.	As brine inhibitor in closed loop cooling systems: 3000-5000 ppm/0.3-0.5% weight. As deicing salt additive: 4-5% by weight.

MCI®-2005/ MCI®-2005 NS	Water based, organic corrosion inhibiting admixture for the protection of metallic reinforcement in concrete structures. NSF Standard 61 approved for use in potable water tanks (UL certified). Earns LEED credits to user. Safe, environmentally friendly, and 67% biobased content. Meets ASTM C1582 requirements.	Admixture recommended for all reinforced concrete including precast, prestressed, and post-tensioned structures in corrosive environments exposed to saline groundwater, airborne chlorides, and carbonation.	Add MCI®-2005 to concrete mix or repair mortars at 1 pt/yd <sup>3</sup> (0.5 l/m <sup>3</sup> ). Dosage is fixed and independent of chloride levels.
MCI® Cortecure®	Water based, membrane-forming, curing compound containing Migrating Corrosion Inhibitors (MCI®). Made of 62% biobased content. VOC compliant per European and California regulations. ASTM C-309 Compliant.	Recommended as a convenient, excellent initial cure for all reinforced, precast, prestressed, post-tensioned, or marine concrete structures exposed to corrosive environments.	Apply at rate of 200-250 ft <sup>2</sup> /gal (4.9-6.1 m <sup>2</sup> /l) by roller, squeegee, or paint brush.
S-14 Bio	Unique “green” water treatment building block for scale inhibition and corrosion protection. Non-toxic, non-hazardous, readily biodegradable, and 84% biobased. Contains natural polymer, GRAS (Generally Recognized As Safe by CFR) substances, and food approved preservatives.	Powerful scale inhibitor with multimetal corrosion protection for cooling towers and open-loop, recirculating cooling systems.	Add to make-up water at rate of 100-200 ppm (20-50 ppm of active ingredients). Effective at 6.0-9.0 pH.
VpCI®-411 Cleaner/ Degreaser Liquid	Heavy-duty, water-dilutable, D-Limonene-based cleaner/degreaser liquid. Designed for extra tough industrial and commercial cleaning jobs. Safe to handle, pleasant odor, biodegradable, and 81% biobased. USDA designated industrial cleaner and grease remover for Federal preferred purchasing.	Use on machinery or engines coated with grease or oil deposits; sheet metal covered with oil or waxy films prior to painting; machined parts coated with waxes or greases prior to assembly; and castings coated with temporary protective oils or wax sealers. Excellent for removing adhesives. Useful for washing oils from hands during machining operations.	Heavy-duty cleaning: 20% to 50% VpCI®-411 in water. Medium-duty cleaning: 10% to 20% VpCI®-411 in water. Light-duty cleaning: 1% to 5% VpCI®-411 in water.
VpCI®-422 Liquid Organic Rust Removers	Completely organic, 100% biodegradable, 92% biobased rust remover. Non-toxic, non-flammable formulation with no pungent acid or caustic fumes. NSF (A3) registered. Passes ASTM F-519-05 “Mechanical Hydrogen Embrittlement Evaluation of Plating/Coating Processes and Service Environments.”	Removes rust and corrosion from ferrous and non-ferrous metals, prevents flash rusting, and loosens rust-frozen parts. Acceptable for use as an acid cleaner in and around food processing areas (indirect food contact). Especially helpful for outdoor and marine applications where chemical waste disposal can be a problem.	Use in dip tanks as concentrated liquid or diluted up to 1:20 with water.

••BioPreferred® is a registered trademark of the USDA



# 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.



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4119 White Bear Parkway, St. Paul, MN 55110 USA  
Phone (651) 429-1100, Fax (651) 429-1122  
Toll Free (800) 4-CORTEC, E-mail [productinfo@cortecvci.com](mailto:productinfo@cortecvci.com)  
[www.CortecVCI.com](http://www.CortecVCI.com)

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