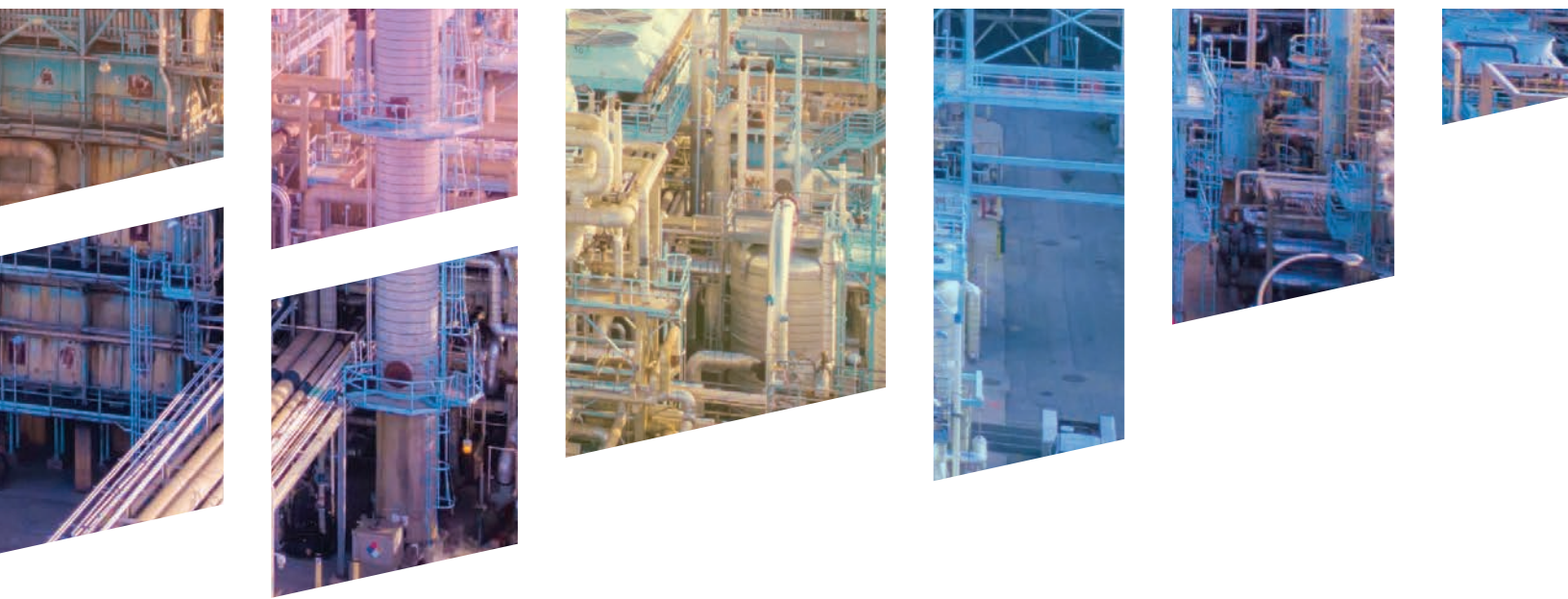




SOLUTIONS TO CORROSION

For Industrial Water Applications



CORTEC
CORPORATION

Environmentally Safe VpCI®/MCI® Technologies

Cortec®
VpCI® Technology





Asset Preservation

Corrosion is a threat to the integrity, value, and efficient operation of common industrial assets such as boilers, closed loops, and evaporative cooling water systems. Proper preservation of these assets during layup is critical to ensuring long service life and smooth operations when bringing the equipment back online. Cortec's highly effective corrosion solutions help keep your assets in good condition while minimizing downtime and labor costs.

Short-Term/Long-Term Layup

Whether your equipment will be offline for two weeks or two years, Cortec® offers outstanding layup strategies for keeping your equipment corrosion-free and making it easy to bring back into operation. Many of Cortec's products contain Vapor phase Corrosion Inhibitors that offer multi-phase protection—forming a self-replenishing molecular barrier below the surface of the water, in void spaces above water, and at the air-water interface. This allows the flexibility of protection in either dry or wet layup—for the long-term, on standby, and sometimes even during operation.

Safer, Simpler Alternatives

Cortec® offers a wide range of corrosion solutions that are much safer and/or simpler to use compared to standard protection methods. With Cortec® strategies, you can replace the cumbersome use of desiccants and avoid the hazards associated with nitrogen blanketing and hydrazine. Cortec's broad range of organic corrosion inhibitors are also generally easier to discharge into municipal wastewater systems than traditional inorganic inhibitors that do not biodegrade. Cortec® water chemistry allows you to replace nitrites, molybdates, phosphonates, and phosphates.

Boilers

Cortec's Boiler Lizard® is a prime example of how Cortec® has revolutionized the protection of boilers. A Boiler Lizard® is extremely easy to use. There is no special need to dry the boiler and apply silica gel or quicklime before layup or ensure constant pressure is maintained as for nitrogen blanketing. Simply slit open the water-soluble bag of Vapor phase Corrosion Inhibitors, place into the boiler, and shut the boiler openings. In many cases, the boiler can be recommissioned simply by filling with water and allowing the Boiler Lizard® to dissolve. In addition to several boiler treatment options, Cortec® also offers corrosion protection for steam condensate lines.

Closed Loops

Cortec® offers excellent options for protecting closed loop systems with a range of high and low temperature heat exchange fluids. Special inhibitors are available for brine systems, low sodium applications, and hydrostatic testing.

Cooling Water

Evaporative cooling water systems also require protection especially during idle periods of operations. Products like the Cooling Loop Gator® or the Cooling Tower Frog® are easy to add to a system, dissolve, and circulate through, leaving behind a protective barrier against corrosion.

Additives

In addition to many highly effective, practical ready-to-use products, Cortec® also supplies additives for water treatment formulators to use as building blocks in their own formulations. Formulators can choose from corrosion inhibitor, defoamer, or anti-scalant agents to add the desired characteristics to their own ready-to-use products.

Specialty/Multi-Use Applications

Cortec® offers a variety of water treatment corrosion inhibitors for specialty or multi-use applications. These include a flash corrosion inhibitor for food can processing, a biobased scale remover for system maintenance, a float coat for seawater ballast tanks, and versatile products that can be used for wet or dry layup across multiple assets (boilers, closed loops, and cooling systems).





Product Selection Guide

Boilers		
Product	Description	Application
Boiler Lizard®	A water-soluble PVA bag of Vapor phase Corrosion Inhibitors for dry layup of boilers. An excellent alternative to nitrogen blankets, silica gel, and hydrazine.	Protects ferrous metals and aluminum. One Boiler Lizard® protects up to 1,000 gallon (3785 L) capacity systems (5 yd ³ or 3.8 m ³).
S-15	Total replacement for hydrazine programs in medium to high pressure boilers.	Add separately to deaerator storage section or feedwater line, or directly inject into steam drum of medium to high pressure boilers.
S-10 Series	Proprietary blends of corrosion inhibitors for steam condensate lines. S-10 and S-10 F contain FDA compliant ingredients (see PDS for details). Filming and neutralizing versions available.	Protection of steam condensate lines.
VpCl®-615	A complete corrosion and scale inhibitor liquid concentrate for use in low to medium pressure boilers.	Protects ferrous metals, aluminum alloys, and galvanized steel in low to medium pressure boilers.
VpCl®-617	Water-based corrosion inhibitor to protect low to medium pressure boilers during operation. Contains an antiscalant for high mineral waters. Neutralizes acids in condensate systems and depletes oxygen to prevent boiler damage.	Protects steel and copper. Low to medium pressure boilers.

Closed Loops		
Product	Description	Application
Closed Loop Toad®	A water-soluble PVA bag of Vapor phase Corrosion Inhibitors for corrosion protection in closed loop cooling systems during operation or layup. Also contains organic-based scale inhibitors.	Protects iron, aluminum, copper (contact only), and galvanized steel. Four bags treat up to 1,000 gallons (3.8 m³) of water.
M-605 Series	M-605 is a series of corrosion inhibitor additives to prevent corrosion due to chlorides. M-605 PS contains 96% USDA certified biobased content.	Protects carbon steel. Additive to deicing salts or closed loop cooling systems containing brine solutions.
M-640 Series	High-temperature corrosion inhibitor for water and glycol-based closed-loop systems. An excellent replacement for silicates and phosphate/nitrite-based/amine compounds. Contains contact and Vapor phase Corrosion Inhibitors. Available in liquid or powder.	Protects copper, brass, solder, carbon steel, cast iron, and aluminum. Designed for heat exchange fluids, antifreeze, and coolants. Effective with systems operating up to 302 °F (150 °C).
S-69 Series	A series of liquid and powder corrosion inhibitor building blocks for use in operation and layup applications. Contact and vapor-phase protection.	Protects ferrous and non-ferrous metals. Typical treatment rates: 0.3-1.0%. Effective in chill and hot water systems up to 176 °F (80 °C) degrees. Compatible with glycol and other high-polarity solvent systems.
VpCI®-641 Series	A liquid water-based rust preventive based on all organic components that can protect at extremely low concentration levels. Contains no nitrates or phosphates.	Protects carbon steel, stainless steel, aluminum, copper, and brass. Hydrostatic testing and some fresh-water closed-loop cooling systems. Not for long-term post-application protection.
VpCI®-645	Proprietary blend of water-soluble contact corrosion inhibitors for protection in corrosive solutions containing chlorides.	Protects ferrous and non-ferrous metals. Low dosage effectiveness for a wide variety of marine and process applications requiring economical corrosion inhibition for fresh and salt water (e.g., layup, hydrotesting). Offers best protection in alkaline system.
VpCI®-648	Organic water treatment for corrosion protection in deionized or reverse osmosis water. Does not contain nitrites or halogen counter ions.	Protects ferrous metals and copper. Specifically intended for water-cooled generator stators in the power industry. Also applicable to other low conductivity/low sodium cooling systems or cutting operations.
VpCI®-649 Series	Combines contact and Vapor phase Corrosion Inhibitors along with anti-scalants. Does not contain nitrites, phosphates, chromates, or heavy metals. Minimizes disposal problems. Available in several versions for different application needs.	Protects ferrous and non-ferrous metals. Hydrotesting, layup, closed loop systems, fire extinguishing systems.
VpCI® Coolant Antifreeze	Thermally stable corrosion inhibitor for a wide range of temperatures. Nitrite-, chromate-, heavy metal, and silicate free. Contains contact and Vapor phase Corrosion Inhibitors.	Protects copper, brass, solder, carbon steel, cast iron, and aluminum. Applications include engine coolants and low temperature closed-loop systems. Effective with systems operating from -60 °F to 280 °F (-50 °C to 140 °C).

Cooling Water		
Product	Description	Application
Cooling Loop Gator®	A water-soluble PVA bag of Vapor phase Corrosion Inhibitors for corrosion protection during cooling tower wet or dry layup.	Protects multi-metals, including galvanized steel and yellow metals (copper, brass). One Gator treats up to 88 gallons (0.33 m ³) water. Add bag to water, and circulate 10-12 hours before shutdown. Shut off all valves.
Cooling Tower Frog®	A water-soluble PVA bag of Vapor phase Corrosion Inhibitors for protection during cooling tower dry layup.	Protects steel, copper, aluminum, and galvanized steel. Two bags treat up to 1,000 gallons or 3,800 L (133.7 ft ³ or 3.8 m ³) of enclosed space.
VpCI®-646	Highly water-soluble proprietary blend of contact and Vapor phase Corrosion Inhibitors. Protects against corrosion, sludge, and scale deposits.	Ferrous metals, yellow metals, aluminum, and stainless steel. Open-evaporative cooling water systems where corrosion, scale, or sludge may be a problem. Also use in standby systems needing protection in head space.
VpCI®-647	A complete corrosion and scale inhibitor liquid concentrate for use in open recirculating cooling water systems. Contains organic phosphorous compounds, polymers, aromatic azoles, and proprietary components. Contact and vapor-phase protection.	Protects ferrous and non-ferrous metals. Open loop cooling water systems up to 167 °F (75°C).
BioClean 612	A powerful aliphatic amide based organic penetrating agent and organic deposit dispersant for use in industrial applications. Not a biocide, but works synergistically with many biocides to improve system cleanliness.	Water treatment applications susceptible to microbiological contamination.
Additives		
Product	Description	Application
G-6	Proprietary triazole blend additive reacts with copper oxides to form strong, insoluble polymeric complex. This creates a protective layer 10-20 molecules thick.	Protects copper and copper-based alloys. Incorporate into liquids at 0.1-2.0% concentration.
G-29	Alkanolamine salt of tolyltriazole corrosion inhibitor additive primarily for metalworking fluid formulations.	Protects copper, brass, bronze, and ferrous metals. Incorporate into lube oils, hydraulic fluids, and steam turbine lubricating oils at 0.005-0.1% concentration.
M-95	A basic biodegradable corrosion inhibitor additive that protects in both the contact and vapor phases. Nitrite and phosphate-free. Soluble in water, glycol, alcohol; insoluble in hydrocarbon-based solvents; dispersible in oils.	Protects steel, copper, brass, magnesium, aluminum, bronze, galvanized steel, and other ferrous/non-ferrous metals. Can be added to almost any water-based product requiring contact and Vapor phase Corrosion Inhibitors. Use in operating systems up to 180 °F (82 °C) with intermittent peaks up to 200 °F (93 °C).
S-14 Series	Multi-functional anti-scalant. Very efficient in preventing formation of precipitates. Formulated for use in conjunction with corrosion inhibitor formulations.	Anti-scalant building block for water treatment formulations.
S-16 Defoamer	Silicone-based anti-foaming agent for tankside defoaming of metalworking fluids or alkaline/acid-based cleaners. Water-soluble and designed for use with Cortec® VpCI® products.	Standalone product or building block for water treatment formulations requiring foam control.

Specialty/Multi-Use Applications

Product	Description	Application
VpCI®-308 Series	Water-soluble corrosion inhibitor powder for yellow metals. Also available in pouch form for dry layup. Provides contact and vapor-phase protection.	Protects ferrous metals, aluminum, copper, and bronze. Dry layup of boilers, heat exchangers, and closed- and open-loop cooling systems. Protects equipment after hydrostatic testing.
VpCI®-309 Series	Water-soluble corrosion inhibitor powder not aggressive to yellow metals. Also available in pouch form for dry layup. Provides contact and vapor-phase protection.	Protects ferrous metals. Not aggressive to yellow metals. Designed for extended layup of boilers, heat exchangers, and closed- and open-loop cooling systems where systems will be flushed before recommissioning. Protects equipment after hydrostatic testing.
VpCI®-609 Series	Biodegradable, water-soluble Vapor phase Corrosion Inhibitor powder for wet or dry corrosion protection of ferrous metals and aluminum. Provides liquid-phase, vapor-phase, and interface protection. Also available in breathable EcoPouch® form for dry application.	Protects ferrous metals and aluminum (do not use with yellow metals). Steam condensate lines, closed circuit heating, and cooling systems. Hydrostatic testing.
VpCI®-611	Water-based rust preventive concentrate. Contains contact and Vapor phase Corrosion Inhibitors. Does not contain nitrite or phosphate.	Protects aluminum, carbon steel, stainless steel, mild steel, and other ferrous metals. Water blasting, hydrotesting, and ballast tank preservation.
S-8	Corrosion inhibitor for washing or sterilization of packed food cans. Forms a thin protective layer that will not cause sticky deposits. Contains FDA compliant ingredients (see PDS for details).	Corrosion protection of food cans during washing and sterilization.
S-11 Series	Corrosion inhibitors for organic or inorganic acids. Suitable replacements for propargyl alcohol.	Aqueous systems with low pH levels, such as acid pickling and chemical cleaning.
M-645	Float coat corrosion inhibitor additive for seawater or brine. Displaces water and adsorbs as an oily protective film on metal surface.	Seawater ballast tanks, hydrotesting of pipelines/vessels.
EcoClean® Bio-degradable Scale and Rust Remover Powered by Nano VpCI®	A heavy duty, fast-acting biodegradable scale and rust remover. Contains 100% USDA certified biobased content. Contains powerful corrosion inhibitors to protect treated metals from flash rust.	Effective and safe to use on iron, carbon steel, stainless steel, copper, aluminum, magnesium, and their alloys. Offline cleaning of heat exchange equipment or pipes affected with rust or scale.



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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