



vapor
phase CORROSION

inhibiting

additives

Environmentally Safe
Alternatives for
Water Treatment
Formulations



VCI Advantage to Your Formulations

Three level protection – liquid phase, vapor phase and the interface.

Enhance Your Product Line with Cortec's Environmentally Sound Additives

Cortec's corrosion inhibiting additives enhance your water treatment product line with VpCI products suitable for wet or dry lay-up of equipment. Cortec's revolutionary VpCI technology is an environmentally safe alternative to traditional corrosion inhibitor formulations. Cortec liquids and powders do not contain nitrites, molybdates, hydrazine or heavy metals. Each of Cortec's product additives has minimal toxicity for maximum environmental protection.

Versatile, Continuous Corrosion Inhibitors

Cortec VpCIs can be formulated into your products to give them temporary, extended or long term protection capabilities. When your products are enhanced with VpCI technology, they defend against corrosion immediately, even on pre-rusted or scaled surfaces. VpCIs are self-replenishing for uninterrupted protection through direct contact, the interface and vapor phase.

Cost-Effective Solutions

Cortec additives give your products added market value without drastically increasing their cost. Your customers will be able to eliminate expensive alloys, platings, stainless steel and other corrosion resistant materials simply by purchasing your VpCI enhanced products.

Uniquely Formulated Additives for a Broad Range of Industrial Applications

Cortec researchers and engineers will help you formulate an economical additive suited to the exact chemical specifications of your product line. We use a rigorous assessment, analysis and testing process to ensure the highest quality and scientific accuracy for your water treatment products with applications such as cooling towers, boilers and condensate lines. With Cortec's full range of corrosion inhibiting additives, your products will protect ferrous, non-ferrous and dissimilar metals in water process and piping systems.

A Tradition of Total Corrosion Control™

Cortec is a world leader in corrosion protection technology and one of the only ISO 9001 and ISO 14001 certified VpCI manufacturers in the world. Cortec creates innovative, environmentally sound and cost-effective products for a variety of industries worldwide. We value products and technologies that save money as well as the environment. We are committed to continual research and development of new technologies that will greatly enhance your products' capabilities.

Cortec products:

- Protect the environment
- Offer complete package solutions
- Dissolve completely in water
- Formulate easily
- Protect multimetals
- Require only low dosages
- Remain compatible with biocides
- Ship safely

applications

With Cortec water chemistry, you can replace:

- Nitrites
- Molybdates
- Phosphonates
- Morpholine
- Hydrazine

Use Cortec S-10 as a boiler treatment to keep steam condensate lines safe from pitting, cavitation-erosion, aggressive scaling and oxygen corrosion.

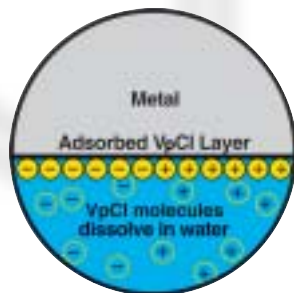
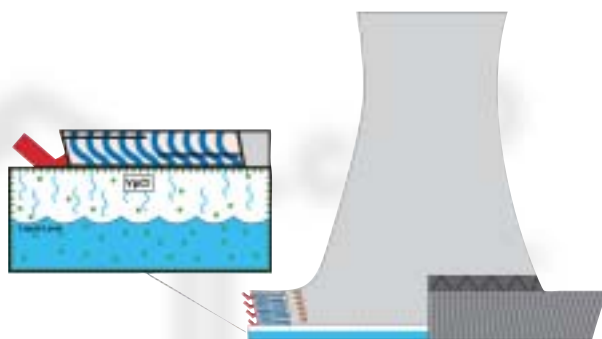
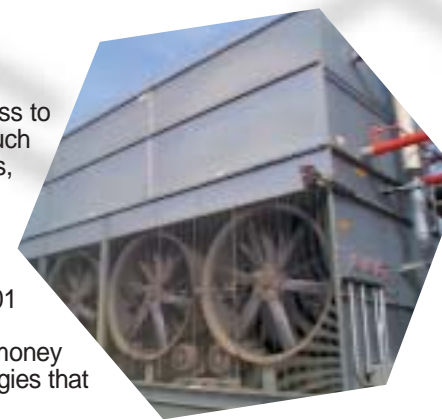
Add Cortec S-69 as a building block to your water treatment formulations to protect cooling tower components.

Use Cortec VpCI-617 as a finished boiler formulation to prevent mineral scaling, corrosion and reduce dissolved oxygen content in low to medium pressure boilers.

Cortec VpCI-645 is suitable for wet lay-up of boilers as a replacement for hydrazine. In addition, VpCI-645 is formulated for protection in sea and salt water.

Cortec VpCI-649 multi metal and niche applications such as injection molding, closed loops and fire sprinkler systems. VpCI-649 provides long-term protection and is effective as a replacement for nitrite and chromate based formulations.

Add M-640/640L to automotive, locomotive, industrial ethylene glycol, propylene glycol, water and glycol/water cooling systems.



VpCI technology is a revolutionary, environmentally safe and cost-effective option for corrosion protection. Cortec products protect with a thin, monomolecular protective film. The barrier re-heals and self-replenishes, and can combine with other functional properties for added protective capabilities.



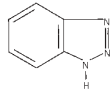
building block

Synthetically produced by Cortec®

CHEMICALS

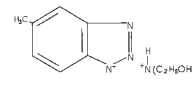
Cortec S-69

is a complete package of multimetal corrosion inhibitors, and all-organic VpCI™ replacement for azole/nitrite/ molybdate based compounds.



G-6

Benzotriazole: Synthetic reagent. Corrosion inhibitor for the protection of copper, brass and silver. Powder. Cas. No: 95-14-7 TSCA



G-29

Tolyltriazole, Amine Salt: Corrosion inhibitor for the protection of copper, brass, bronze and ferrous metals. Viscous liquid. Oil soluble. Cas. No: 29385-43-1 + 102-71-6 TSCA

Seasonal Lay-Up

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
Cooling Loop Gator®	Powder for wet and dry lay-up premeasured in a PVA(polyvinyl alcohol) bag.	Cooling tower system lay-up	Ferrous metals or aluminum	4 water soluble bags per carton, 2.2 lbs. per bag (1 kg)
Boiler Lizard™	Powder for wet or dry lay-up in premeasured PVA bags.	Boiler lay-up	Ferrous metals or aluminum	1 water soluble bag per carton, 3.3 lbs. per bag (1.5 kg)
Closed Loop Toad®	Powder for wet or dry lay-up in premeasured PVA bags.	Closed loop system lay-up	Ferrous metals or aluminum	4 water soluble bags per carton, 2.2 lbs. per bag (1 kg)

Building Block

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
S-69/ S-69G S-69 Powder	Organic liquid additives that contain a unique combination of contact and vapor phase inhibitors.	Designed for low level concentration applications.	Ferrous and non-ferrous metals, S-69 G enhanced for galvanized steel applications.	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk. 100 lbs (45.4 kg) 50 lbs (22.7 kg) 5 lbs (2.31 kg)
G-6	Corrosion inhibitor for copper and copper- based alloys, BTA (Benzotriazole).	Designed for direct treatment, circulating cooling systems, functional fluids, and cleaners.	Yellow metals	100 pound (45.4 kg)
G-29	Corrosion inhibitor formulation for the protection of copper, brass, bronze and ferrous metals.	Primarily designed for metalworking fluid formulations. 50% solution of tolyltriazole in alkanolamine.	Multi metals	5 gallons (19 liters) 55 gallons (208 liters)

Cooling Water

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
VpCI-646	Water-soluble treatment protects cooling and industrial process water systems against corrosion, scale and fouling. Environmentally safe.	Cooling and industrial process applications	Ferrous and non-ferrous metals	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.
VpCI-647	Water-soluble inhibitor for multimetals. Recommended for closed loop cooling systems. Effective at low dosages.	Open loop cooling water systems	Ferrous and non-ferrous metals	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.
VpCI-649	Water- soluble inhibitor for multimetals. Recommended for closed loop cooling systems. Effective at low dosages. Available in powder or liquid.	Closed loop cooling and hot water systems and fire sprinkling systems	Multimetal protection	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk. 100 lbs (45.4 kg) 50 lbs (22.7 kg) 5 lbs (2.31 kg)
S-14 Antiscalant	General purpose water treatment antiscalant. Nonflammable and nontoxic.	Effective on scale formation on surfaces in contact with water.	Multimetal protection	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.
S-16 Defoamer	Defoamer for aqueous and non-aqueous systems. Specially selected for use in combination with Cortec® water-based and oil-based inhibiting systems. Stable under both acidic and basic conditions.	Applications where foaming is a concern.	Multimetal protection	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.

Boiler Water

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
S-7 Oxygen Scavenger	Oxygen scavenger designed to protect boiler systems against oxygen corrosion (hydrazine-free).	Areas with high oxygen content	Multimetal protection	5 lb. (2.3 kg), 50 lb. (23 kg), 100 lb. (45 kg).
S-10 Corrosion Inhibitor	Corrosion inhibitor for steam condensate lines in boiler systems.	Boiler systems	Multimetal protection	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.
VpCI-615	Proprietary corrosion inhibitor for boiler water systems.	Boiler systems	Ferrous metals, aluminum alloys and galvanized steel	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.
VpCI-617	Water soluble, provides long-term protection against corrosion and scale formation.	Suitable for low to medium pressure boilers	Steel and copper	5 gallons (19 liters), 55 gallon (208 liters), totes and bulk.

Engine Coolant Additives

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
M-640 Powder & M-640 L (Liquid)	Corrosion inhibiting additive for water and ethylene glycol-based, heat exchanger fluids.	Add to antifreeze/coolant fluids to replace nitrites, phosphates, amines and other restricted corrosion inhibitors	Protects ferrous and non-ferrous metals, including cast iron	Powder packaged in 5 lb., 50 lb., 100 lb. containers. Liquid available in 5 gallons (19 liters) plastic containers, 55 gallon (208 liters) metal drums, liquid totes and bulk.

Petroleum Industry

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
VpCI-629 /VpCI-629SC	Concentrated additive forms a persistent inhibitive layer to protect internal surfaces. Also available in a Super-concentrated version (VpCI-629 SC).	Pipelines, tanks, valves, etc. Used for transportation and storage of hydrocarbons and corrosive fluids.	Ferrous and non-ferrous metals	5 gallons (19 liter) plastic containers, 55 gallon (208 liter) metal drums, liquid totes and bulk.
VpCI-637/ 637GL Inhibitor for Gas Flow and Transmission Lines	Provides internal corrosion protection for gas flow and gas transmission lines. Effective against water, corrosive gasses and chloride contamination.	Corrosion protection for gas flow and transmission lines.	Ferrous and non-ferrous metals	5 gallons (19 liter) plastic containers, 55 gallon (208 liter) metal drums, liquid totes and bulk.
S-11, S-11 O	Protects from corrosive effect of acids on metals during pickling, process equipment cleaning and oil well acidizing operation.	Acid pickling, plant cleaning, oil well acidizing	Ferrous and non-ferrous metals	5 gallons (19 liter) plastic containers, 55 gallon (208 liter) metal drums, liquid totes and bulk.

Hydrotesting Fluid Additives

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
VpCI-609	Powder for wet or dry lay-up.	Tubular structures, pipes and vessels. Steam condensate lines, closed circuit heating and cooling systems. Tubulars during and after hydroblasting. Additive to standing water, cleaners and rinsing water.	Ferrous metals, aluminum, alloys	5 lbs. (2.3kg), 50 lbs. (23kg), 100 lbs. (45kg) moisture barrier bags packed in fiber-lined drums.
VpCI-611	Water-based rust preventive concentrate. Leaves a very thin, transparent, tack free film on the metal surface. Weldable and paintable film is non-toxic, pro-environmental and contains no nitrite or phosphate inhibitors.	For water blasting or wet abrasive blasting.	Aluminum, carbon steel, mild steel, stainless steel and other ferrous metals	5 gallons (19 liter) plastic containers, 55 gallon (208 liter) metal drums, liquid totes and bulk.
VpCI-641	Water-based rust preventative for the protection of ferrous or non-ferrous metals in industrial waters.	Fresh water cooling systems and hydrotesting.	Ferrous and non-ferrous metals	5 gallons (19 liter) plastic containers, 55 gallon (208 liter) metal drums, liquid totes and bulk.

Brine/Salt Water Additives

PRODUCT	DESCRIPTION	APPLICATIONS	METALS PROTECTED	PACKAGING
VpCI-605/ 605L Deicing Salt Additive	A non-toxic, environmentally friendly corrosion inhibitor designed specifically as a de-icing salt additive to prevent corrosion due to chlorides.	Additive for deicing salts	Ferrous and non-ferrous metals	5 lb. (2.3 kg), 50 lb. (23 kg), 100 lb. (45 kg) lined drums.
VpCI-644	Corrosion inhibiting additive for water containing inorganic salts, including chlorides.	Cooling/heating systems, hydrotesting applications	Ferrous and non-ferrous metals	5 gallons (19 liter) containers, 55 gallon (208 liter) metal drums, liquid totes and bulk.
M-645 Float Coat	Corrosion inhibiting additive to salt waters and brine.	Hydrotesting	Ferrous and non-ferrous metals	5 gallons (19 liter) containers, 55 gallon (208 liter) metal drums, liquid totes and bulk
VpCI-645 Marine Use Corrosion Inhibitor	A non-toxic, biodegradable concentrate designed to provide long-term effectiveness in fresh water, salt water, brine and other highly corrosive solutions containing dissolved sulfide and halogens.	Fresh water, salt water, brine and other highly corrosive solutions containing dissolved sulfide and halogens.	Ferrous and non-ferrous metals	5 gallons (19 liter), 55 gallon (208 liter), liquid totes and bulk

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.

BEFORE USING, USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND USER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH. No representation or recommendation not contained herein shall have any force or effect unless in a written document signed by an officer of Cortec Corporation.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. IN NO CASE SHALL CORTEC CORPORATION BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

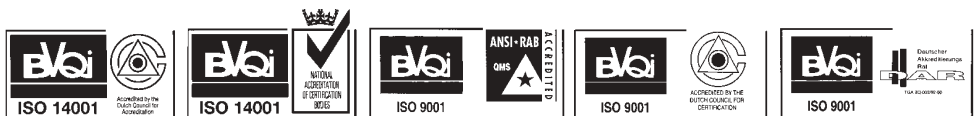


Visit Us At: www.CortecVCI.com

Distributed by:

4119 White Bear Parkway, St. Paul, MN 55110 USA
 Phone (651) 429-1100, Fax (651) 429-1122
 Toll Free (800) 4-CORTEC, E-mail info@CortecVCI.com
 Internet <http://www.CortecVCI.com>

Revised 5/02- 5M. Cortec®, Migratory Corrosion Inhibitors™ and Total Corrosion Control™ are trademarks of Cortec Corporation. © Cortec Corporation 2001. All rights reserved.



Certificate No. 70781