



steel / cast iron / aluminum

copper / brass

galvanized / bronze

# VpCI

corrosion inhibiting powders

VAPOR PHASE CORROSION INHIBITORS



interior cavities  
recessed areas  
COMPLEX GEOMETRICS



V A P O R P H A S E C O R R O S I O N I N H I B I T O R

corrosion inhibiting powders

# VpCI®

What are VpCI® Powders and why are they used?

### VpCI®s protect metals electrochemically.

Corrosive agents attack metals at every opportunity – especially in crevices, cavities and voids where paints and coatings are rendered useless. Now there is a way to defend against corrosion at a molecular level – Vapor phase Corrosion Inhibiting (VpCI®) powders from Cortec® Corporation.

Cortec® VpCI® powders shield metals unlike any other protective substance. Cortec® manufactures VpCI® powders with moderate vapor pressure so they volatilize easily. VpCI® powders sublime directly to a vapor that seals metals with a chemically adsorbed monomolecular film.

## uses OF powder

### Immediate results. Constant protection.

VpCI® powders stop the corrosion process electrochemically. Application is easy, with little or no surface preparation required. Cortec VpCI®s even prevent further corrosion of previously corroded, painted or coated surfaces.

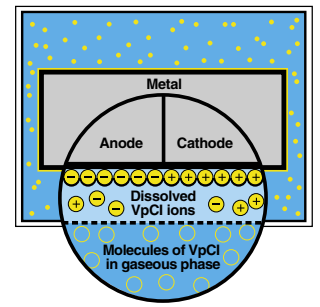
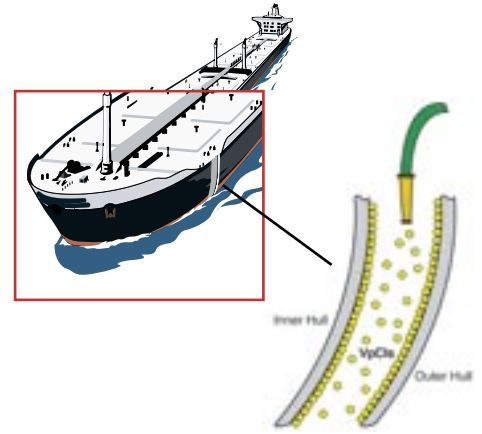
Once applied, Cortec powders protect both ferrous and non-ferrous metals for a minimum of 24 months without deterioration – and no need for regeneration. VpCI® powders are not consumed by the protective action. If the VpCI® layer is disturbed, it replenishes itself automatically with continuous vapor deposition.

When used for short- or long-term storage, the VpCI® layer need not be removed prior to start-up of equipment. However, removal – if necessary – is just as easy as application. Any low pressure air gun or simple water rinse will work.

Cortec® VpCI®s are environmentally safe. They do not contain nitrites, silicones, phosphates, heavy metals or other harmful chemicals.

VpCI® powders can be sprayed or blown into cavities or interiors having complex geometries. Certain VpCI® powders are water soluble for wet applications such as hydrotesting. For pumps, heat exchangers, generators and piping, a VpCI® powder solution may be circulated through the system to assure contact with all surfaces. Drying is not necessary.

Powder may also be sprinkled or dispersed into small volumes, but should be fogged with a blower for volumes greater than 36 cubic feet (one cubic meter).



Cortec® products protect with a thin, monomolecular film. The barrier re-heals and self-replenishes and can combine with other functional properties for added protective capabilities.



# VpCI®



ferrous  
metals

**TO BE** protected

**Protect all metals against corrosion.**

**VpCI®-307** offers multimetal protection for ferrous and non-ferrous metals including: copper, brass, galvanized steel, aluminum, zinc and cast iron.

**VpCI®-309** is an excellent all-purpose powder for ferrous and stainless steel alloys. With its strong vapor carrying power, it is suitable for protection of tank interiors.

**VpCI®-605** is designed to prevent chloride corrosion. It protects ferrous and non-ferrous metals and is suitable for closed loop cooling systems that contain brine solutions or as a deicing salt additive.

**VpCI®-609** protects ferrous metals and aluminum. An excellent low cost water soluble powder, VpCI®-609 is optimal for wet and dry lay-up of equipment.

applications  
**OF** powder

**VpCI® powders in action.**

**Babcock & Wilcox.** VpCI®-309 powder. Heat exchangers and boiler tube assemblies.

**Combustion Engineering.** VpCI®-309 powder. Protection of power plant equipment.

**General Electric.** VpCI®-309 powder. Steam turbine assemblies.

**New Hybernia, Canada.** VpCI®-609 powder. Hydrotesting of piping and various assemblies in offshore platform applications.

**Shell.** VpCI®-309 and VpCI®-609 powders. For lay-up of refineries.

**Conoco.** VpCI®-307 and VpCI®-609 powders. Double-bottom tanker hulls and for bottom protection of crude oil storage tanks.

**Smithsonian Air Space Museum.** VpCI®-307 powder. Protection of internal cavities of historic aircraft.

## Metal Protection Guide

	Carbon Steel	Stainless Steel	Cast Iron	Aluminum Alloys	Galvanized Steel	Brass (<30%Zn)	Copper
VpCI®-307	1	1	1	1	1	1	1
VpCI®-309	1	1	1	1			
VpCI®-605	1	1	1	1	1	1	1
VpCI®-609	1	1	1	1			

## Exposure Limitations

**1. Enclosed.** For use when in non-ventilated equipment housings, tanks, voids, tubular structures, etc.

KEY:  Recommended  
 Consult Cortec® For Specific Usage  
 Not Recommended or Test Data Not Available

## Typical Dosages

For continuous protection in humid and contaminated atmospheres, a dosage range of 5-30 g/f<sup>3</sup> (.14-.85 g/m<sup>3</sup>) is recommended. The exact dosage is a function of the length of protection (2+ years) and the level of corrosivity of a specific environment.

features  
**AND** benefits

## Why Cortec? Why now?

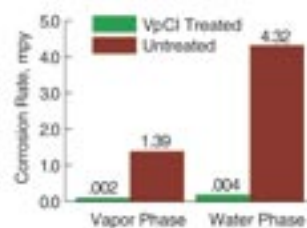
### Key VpCI® Features:

- Three-phase protection at the molecular level
- Versatile chemistry allows wet or dry application
- Contains no nitrites, phosphates or silicones
- Unlike desiccants, VpCI® powders do not require regeneration
- Self-replenishing VpCI® technology
- Near neutral pH levels

### Resulting Benefits:

- One step, durable protection
- Easy application, easy removal
- Safe for the environment
- Cost effective corrosion protection
- Constant protection against all types of corrosion
- Does not increase alkalinity in systems

## VpCI® Protection Greatly Reduces Corrosion



VpCI® treated metal versus untreated metal in mils/year (mpy) – both vapor and water phase.



# buyer's guide

PRODUCT	DESCRIPTION	PACKAGING	APPLICATIONS
VpCl®-307	Vapor phase corrosion inhibitor powder for ferrous and non-ferrous metals.	5 lbs. (2.27 kg) 50 lbs. (22.7 kg) and 100 lbs. (45.4 kg)	Tubular structures, pipes, vessels, steam condensation lines, boilers, cooling towers, double bottom tanker hulls, rudder cavities, ballast tanks, bilges, heat exchangers, voids and all other cavities of ships, airplanes, vehicles, etc. Internal surfaces of compressors, turbines, engines, tanks, boilers, air tanks and valves.
VpCl®-309	Vapor phase corrosion inhibitor powder for ferrous metals.	5 lbs. (2.27 kg) 50 lbs. (22.7 kg) and 100 lbs. (45.4 kg)	
VpCl®-605	A non-toxic, pro-environmental corrosion inhibitor especially formulated for high chloride environments.	5 lbs. (2.27 kg) 50 lbs. (22.7 kg) and 100 lbs. (45.4 kg)	Deicing salt additive, also inhibits corrosion by sea water and brines.
VpCl®-609	Water soluble vapor phase corrosion inhibitor powder for ferrous metals and aluminum.	5 lbs. (2.27 kg) 50 lbs. (22.7 kg) and 100 lbs. (45.4 kg)	To protect equipment during and after hydrostatic testing. Ideally suited for longer cavities, tanks, heat exchanges, etc. Higher evaporation rate than VpCl®-307/309. Shorter protection span.

## packaging and storage information

Products are packaged in fiber drums with a moisture barrier liner. VpCl® powders should be stored in their original containers under dry conditions not exceeding 100°F (38°C).

### TOTAL CORROSION CONTROL™

Cortec® Corporation is dedicated to controlling corrosion at all stages of a product life cycle. Cortec® Corporation has developed a diverse range of corrosion protection products including cleaners, metalworking fluids, water- and oil-based coatings and corrosion inhibitors, rust removers, paint strippers, emitters, powders, packaging foams, paper, films, as well as surface treatments and admixtures for concrete. Contact Cortec for additional brochures and information.

Visit our website for more information on Cortec® Vapor phase Corrosion Inhibitors™.

## CortecVpCl.com

### 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.**



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@CortecVCl.com  
Internet http://www.CortecVCl.com

Distributed by:

printed on recycled paper 10% post consumer

Revised 1/04- 10M. Cortec®, and Total Corrosion Control™ are trademarks of Cortec Corporation.  
© Cortec Corporation 2004. All rights reserved.

