



"Your Corrosion Inhibitor Partner"



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*VpCI Technology for*  
**A u t o m o t i v e E n d u s t r y**



# PROTECT AUTOMOTIVE INDUSTRIES

The Automotive Industry has presented difficult challenges to researchers in fighting the effects of corrosion — in economic loss and environmental safety. Cortec's capability offers highly efficient and economical corrosion protection for Automotive applications.

Cortec® products have been developed using proprietary VpCI® Technology. Cortec® VpCIs are a safe, cost-effective method for preventing and diminishing the severe damage caused by corrosive process streams.

## PROTECT THE ENVIRONMENT

VpCIs offer an environmentally safe method of treatment with low toxicity and low polluting effects. Unlike corrosion inhibiting systems of the past, many of Cortec® VpCI's do not contain chromates or other heavy metals, nitrites, or chlorinated hydrocarbons. With Cortec® VpCIs you can turn the tables on corrosion. With the support of our corrosion scientists, engineers, and testing facility, Cortec® can provide simple, environmentally friendly, cost-effective solutions to corrosion problems.

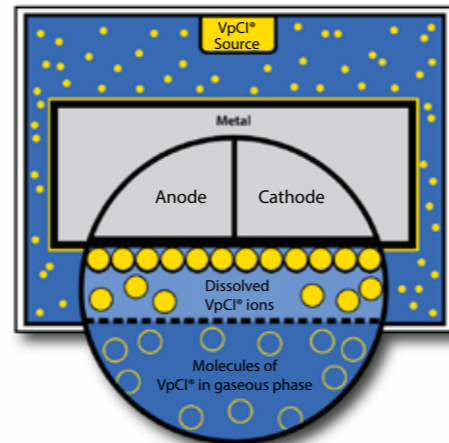


## PROTECT CONTINUOUSLY

Unlike conventional methods, such as filming amine corrosion inhibitors, you can inject Cortec® VpCIs into any part of your system. Cortec® VpCIs go to work immediately and are self-replenishing. Continuous, uninterrupted protection in the liquid phase, interphase, and vapor phase can be added at multiple points. For example, the automatic injection of Cortec® VpCIs into a system — with no attendance operator — provides protection immediately, even on pre-rusted or scaled surfaces.

## 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. VpCI® form a physical bond on the metal surface creating a barrier layer against aggressive ions.



# AUTOMOTIVE APPLICATIONS

## PPAP

The Pre Production Approval Process (PPAP) is a set of steps originally developed by the Automotive Industry Action Group. PPAP is followed by Cortec® Corporation to ensure that safety risks are removed from the product before it reaches the distributor and customer; This is accomplished by anticipating possible sites of failure, eliminating them in the design, assessing accuracy of measuring systems, assuring consistency, and the documenting and planning for success. Cortec® works with engineers to develop the most cost effective method to make sure corrosion doesn't undermine a successful new product launch.



### RAW MATERIALS

Cortec® will work with vendors of in-bound materials to make sure rust never enters your company's production process. Corrosion on raw materials often re-emerges in later processes. But with Cortec® solutions you can be assured that corrosion will not reappear.



### VpCI®-126 Blue

Transparent plastic film with VpCI® for multimetal protection. Heat sealable. Also available in Zip-Lock® bags and Shrink film varieties. Conforms to MIL-PRF-22019D, according to the Naval Air Warfare Center Aircraft Division, QPL 13600 Ser 43500B120-3/531. Recyclable. Patented.

### VpCI®-146

Multimetal VpCI® coated high quality natural base paper. Non-toxic, nitrite free, 100% recyclable/ repulpable. Excellent for single item packaging. Conforms to MIL-P-3420. Patented.



### BioPad®

Is a unique flexible corrosion inhibiting device constructed from 100% biobased nonwoven material, resulting in a finished good containing 66% biobased content. BioPad® provides an eco-friendly sustainable packaging option for corrosion inhibition and has been awarded USDA BioPreferredSM designation ([www.biopreferred.gov](http://www.biopreferred.gov)). Patent Pending.



### VpCI®-377

is a water-based concentrate designed as a complete replacement for oil-based preventives for indoor protection of equipment and components. VpCI®-377 is a corrosion preventive liquid that meets tough antipollution requirements.



### VpCI®-130 Series

Unique, flexible packaging materials that combine VpCI® protection, cushioning, and desiccant action, plus excellent antistatic capabilities all in one step! Cortec® VpCI®-130 Series Foams provide effective corrosion protection. Patented.

### BioCorr® Rust Preventative

Is a waterbased, biobased, and biodegradable rust preventative that is intended for preservation of metals in storage and during transportation. BioCorr® Rust Preventative provides multi-metal protection and is an excellent environmentally sound alternative to petroleum derived products. Also available in ATF and FT Versions. USDA BioPreferredSM designation.



### VpCI®-329 Oil-Based Concentrates

Is a vapor corrosion inhibiting concentrate for use with lubricating, hydraulic, and preservation oils. It provides excellent protection in sheltered outdoor/indoor conditions. VpCI®-329 protects in two unique ways: by offering a tenacious film which clings to metal surfaces, as well as vapor phase inhibitors into the air above the oil.



## WIP PROCESS

Cortec® will evaluate the total time required to produce a product from when the product enters the factory to when it leaves (the WIP cycle); including processing, transport, and time spent waiting in queue. Cortec® will use this information along with analyzing the work-in-progress (WIP) to implement corrosion inhibitors at the best point in manufacturing. Rust preventatives can be introduced in machining, washing, and post production

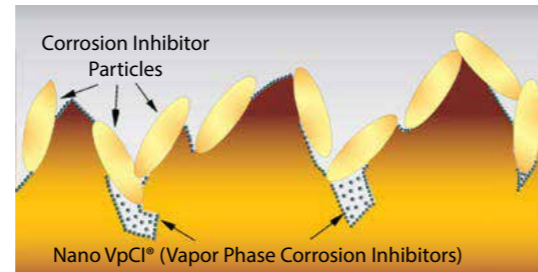
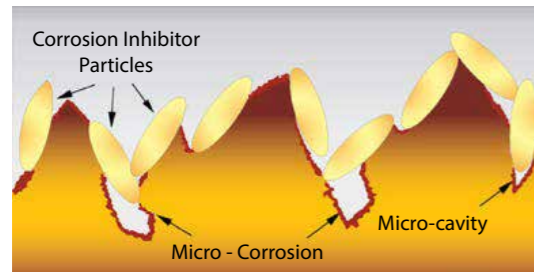
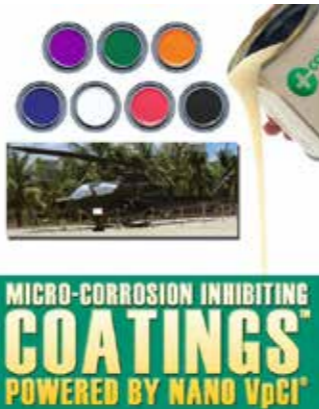


## HIGH PERFORMANCE COATINGS

The total economic loss from corrosion can approach a staggering 5% of total profit. This huge loss comes from products that must be sold as a lower grade or must be repickled, reprocessed, or scrapped due to corrosive attack while in the plant. This leads to lost productivity. The high cost of corrosion also includes rust claims and freight costs for returned goods.

Cortec® can recreate your current colors with a customized formula or simply match it from our extensive list of standard colors. Most Cortec® coatings have outstanding UV resistance and gloss retention, which is important when aesthetics are a consideration.

With environmentally safe VpCI® technology, your equipment and products will be effectively protected against humidity, saltwater, and oxidizing atmospheres as well as corrosive industrial, marine, and tropical environments.



Traditional coatings can not protect the micro-cavities due to the relative large size of corrosion inhibitor particles such as nitrate, aluminum, zinc, and so on. That's 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.

## SHIPPING

Simply wrap, shroud, or pack your products or equipment; protection is continuous for transit. A continuous self-replenishing vapor emits to protect all exposed metal surfaces regardless of temperature or humidity swings.

Cortec's VpCI® films, papers, liners, corrugated, foams and devices are made exclusively from high technology resins using proprietary extrusion techniques to ensure 100% quality of the physical, mechanical, and corrosion inhibiting properties of all products produced. Our products meet the most rigorous international quality standards for corrosion inhibiting films. Using Cortec's VpCI® films will ensure that valued assets are clean, dry, corrosion free, and ready for shipping.



## STORAGE

**Banks/Build-Aheads** – When a manufacturer makes more than standard production of parts in order to have extra on hand (a bank). Often done while transitioning to a new supplier or during re-tooling of production lines so the stream of parts is still available to feed to other processes. Also done for holiday shut downs to make sure parts are available.

**All-Time-Buys/End-of-Life** – This is the service parts requirement for up to 15 years the automotive must plan for. Once a vehicle/ engine/part is no longer going to be needed the manufacturer often prefers to make all the service parts and parts for future needs (including re-manufacturing) at one time. This allows them to avoid very costly,



## DE-RUSTING

Cortec's OEM approved de-rusting process has been utilized to de-rust millions of production parts including many different types of critical transmission components.

Cortec's rust removers easily and effectively remove rust and tarnish from steel, iron, copper, brass, chrome, and aluminum. They will not harm human skin or adversely affect most paints, plastics, wood, textiles, ceramics, or rubber. Long lasting, cost-saving solutions provide a time efficient, superior outcome that's gentle yet thorough on corroded tools, parts, and equipment.



### VpCI®-422

Organic rust removers effectively remove rust and tarnish from steel, iron, copper, brass and chrome. Non-polluting. Will not harm human skin or adversely affect most paints, plastics, wood, textiles, ceramics or rubber. USDA bioPreferredSM designation.

### VpCI®-423

Is a rust remover that is harmless to people while effectively removing rust and tarnish from steel, iron, copper, brass, chrome, and aluminum. VpCI®-423 removes corrosion from metal without creating waste disposal difficulties. USDA BioPreferredSM designation.

### VpCI®-414

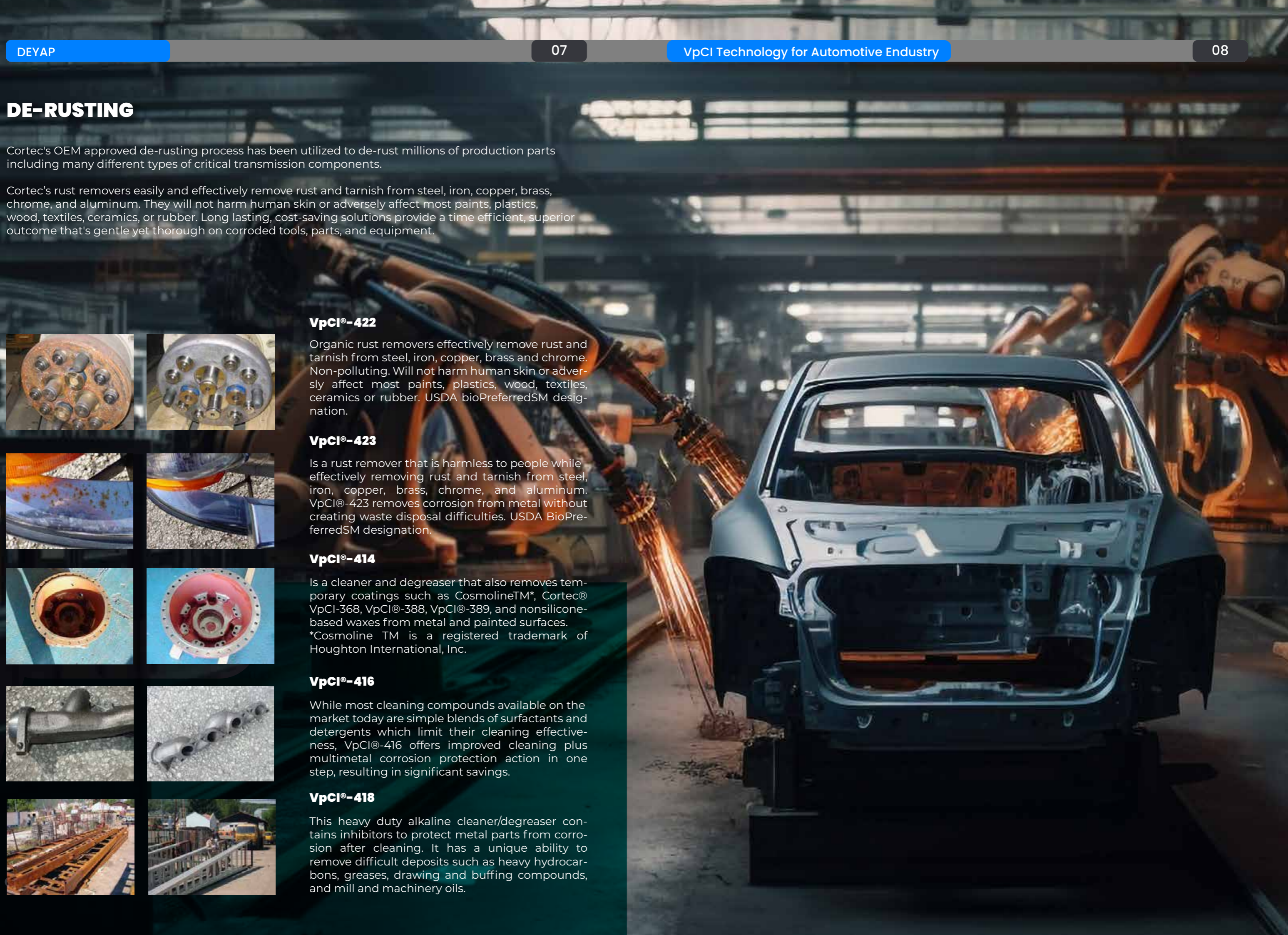
Is a cleaner and degreaser that also removes temporary coatings such as Cosmoline™\*, Cortec® VpCI-368, VpCI®-388, VpCI®-389, and nonsilicone-based waxes from metal and painted surfaces. \*Cosmoline™ is a registered trademark of Houghton International, Inc.

### VpCI®-416

While most cleaning compounds available on the market today are simple blends of surfactants and detergents which limit their cleaning effectiveness, VpCI®-416 offers improved cleaning plus multimetal corrosion protection action in one step, resulting in significant savings.

### VpCI®-418

This heavy duty alkaline cleaner/degreaser contains inhibitors to protect metal parts from corrosion after cleaning. It has a unique ability to remove difficult deposits such as heavy hydrocarbons, greases, drawing and buffing compounds, and mill and machinery oils.





"Your Corrosion Inhibitor Partner"

# DENİZ YAPI

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## DEYAP ABOUT US

*Deniz Yapi Sanayi ve Tic. A.S. in 1992 to carry out corrosion prevention and surface cleaning works, DEYAP is the Turkish distributor and licensor of Cortec Corporation and Mykal, the leading companies in the world.*

*Our company, which realized the supply (1992), production and project design (1995) of VpCI for the first time in Turkiye, provides the production of VpCI film and paper products specific to the demands of its customers in its 2500 m<sup>2</sup> production area located in Kocaeli Dilovasi and the supply of anti-corrosion chemicals, dehumidifiers, surface cleaning chemicals and auxiliary packaging materials. All of its production is carried out under ISO - 9001:2015 quality system.*

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