

The **LEADING** Edge

February 2008

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A Productive and Successful 2007

2007 was one of the most productive and successful years for Cortec® and for our laboratory team as well. We were busy this year, working on the testing requests from distributors and customers, developing new products, providing customer support, working on scientific presentations and papers, creating technical documentations, etc. As a result, more than 360 technical test reports were issued, more than 25 new products were developed and modified, 5 papers were presented at different conferences, and a lot of new Product Data Sheets were created.

We are proud to say that the sales of the products introduced in the last five years amounted to 40-45% of the 2007 total sales. We would like to thank all of you for your dedication and hard work.



We are introducing many new products in this newsletter that cover a wide range of applications and means of delivery. They are readily available for sampling and sale. As we develop new technologies that combine performance and environmental responsibility; we also consider real-world factors such as ease-of-use and cost.

Safe sensible way to eliminate stubborn industrial & commercial wastes.

Environmental pressure on industry to provide safe solutions to the problem of elimination of various pollutants in soil and water is enormous. Concern by both the public and the private sectors demands that business and industry find a way to use our nation's natural resources and yet return them quickly to environment, free of chemical contaminants. Bioremediation, the application of biological treatment for cleanup of hazardous chemicals, has grown from an unknown technology to one of the major treatment technologies to enhance these cleanups. It is very cost effective compared to other treatment technologies like incineration and containment. Furthermore, biological treatment destroy most organic wastes leaving only harmless end products thus eliminating any future environmental risks or liabilities.

New Products

S-607 Bioremediation Additive

S-607 Bioremediation Additive works to degrade petroleum, crude oil, and other stubborn organics. S-607 is comprised of naturally occurring strains of bacteria (*Pseudomonas*) that work to digest pollutants. During the bioremediation process the microorganisms will use available oxygen to convert the organic components into carbon dioxide, water, biomass, and inorganic salts. The biological treatment destroys most organic waste, leaving only harmless end products, thus eliminating any future environmental risks or liabilities. S-607 is a great addition to Cortec's product line because it meets Cortec's standards for biodegradability and safety. S-607 Bioremediation Additive is EPA approved and was developed in partnership with Osprey Biotechnics.



MCI®-2061 Bioremediation Concrete Cleaner

An exciting addition to the MCI® line. This unique product combines chemistry and biology to remove problematic oil stains and improve the appearance of concrete. It contains biodegradable surfactants that can quickly and effectively clean oil stains and bacteria (spore forming Bacillus microbes) that remain after the concrete has been cleaned to degrade residual hydrocarbon constituents of the stain that weren't removed during the initial cleaning process. Spores that are rinsed away may also germinate and work to purify the rinse water. Oily stains on concrete surfaces are often complex mixtures of automotive or maintenance products. This product cleans parking lots and garages, factory floors, maintenance garages, etc. MCI®-2061 is a safe alternative to harsh caustic or acidic cleaners, it has a neutral pH, contains virtually no (< 1%) VOCs, and is a non-corrosive and non-irritating formulation which is safe for users and the environment.

1. Garage floor doorway before



2. Garage floor doorway 12 hours after cleaning; MCI®-2061 was applied to the right side.



Being Green

Being Green, sustainable resources, bio-fuels, bio resins, and biodegradable are some of the buzz words in today's environmental community.

Cortec® fits in this process and is also committed to the policy of developing new corrosion control products derived from agricultural products. We now sell twenty-one products derived from a sustainable resource base with several more in the development process. Since the program was started over 200,000 lbs of sustainable resource materials have been purchased for this program.

“Today there is no question that we are not just on track; we are on board the train and helping to drive it.”

–Governor Tim Pawlenty



Minnesota Governor Tim Pawlenty (right) and Cortec® President Boris Miksic (left).

Environmentally Friendly Products

To extend our line of Rust Preventative products based on sustainable resources, two new products were developed: EcoLine® 3690 and EcoLine® 3220.

Both of these products have canola oil as a carrier. What are the advantages of using canola oil?

- From the health standpoint this is one of the healthiest oils, because the molecules of it contain the smallest amount of saturated acids.
- Canola oil doesn't attack painted surfaces.
- Biggest advantage-low freezing point, which is -18 to -20°C (-0.4 to -4°F). Compare to soybean oil methylester 2 to -1°C (35.6 to 30.2°F).
- The flash point is greater than 250°C (482°F).



EcoLine® 3690: Open Air Corrosion Inhibitor

EcoLine® 3690 is a biodegradable ready-to-use temporary coating designed for use in severe marine and high humidity conditions. When applied on the surface, this product leaves an oily film, which provides excellent outdoor protection. The film is self-healing and moisture-displacing.

Based on canola oil, EcoLine® 3690 is 70-75% biobased, very safe for people and environment.

Right: Wall in high humidity condition without EcoLine® 3690 applied.



EcoLine® 3220

This product is another exciting addition to our biodegradable line of products made with renewable resources. EcoLine® 3220 is 100% biobased ready-to-use temporary coating. This canola oil-based product offers a tenacious film which clings to metal surfaces, providing excellent contact corrosion protection in storage and shipment. In addition EcoLine® 3220 provides long lasting vapor corrosion inhibition.

Made from renewable materials and containing canola oil as a carrier, this product is very environmentally safe, has excellent thermostability and doesn't affect rubber or plastics.

Right: EcoLine® 3220 a 100% biobased ready-to-use temporary coating was applied to this metal roof.



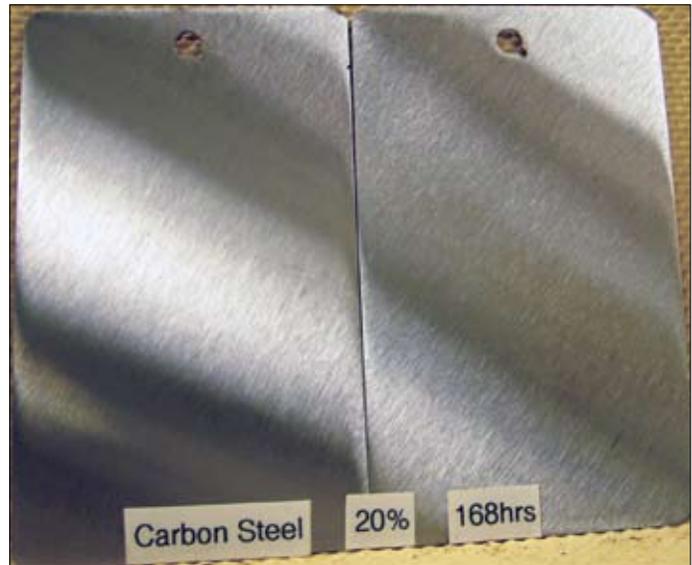


What is new in Coatings.

VpCI™-440

We are very proud to announce the new surface treatment product VpCI™-440. This water-based product can be used as a pretreatment for steel, aluminum, copper, and other metals. VpCI™-440 is specifically designed to replace phosphating and chromating systems.

This non-toxic, non-hazardous product provides better adhesion for hard-to-adhere-to surfaces. For example, VpCI™-440 helps to increase adhesion of a powder coating to aluminum. The extensive experiments with VpCI™-440 show that the use of this product improved the adhesion up to 20%! In addition, VpCI™-440 inhibits flash rusting on multi-metals, providing short term protection. VpCI™-440 is very economical, self-preserving, and does not require the use of biocides.



S-8: Corrosion inhibitor for metal food cans

Metal food containers used in canning processes undergo a multitude of procedures, including washing and sterilization prior to food contact. These procedures can cause corrosion to the cans, even tin-plated steel or aluminum. Because corrosion inhibitors for the food industry are severely limited by FDA regulations, cost-effectiveness, and high concentration levels required for application forming a possible solution to this corrosion problem was extremely difficult. S-8 satisfies all these requirements. 100% formulated from FDA approved ingredients, it can be used at very low concentration levels and still provide complete corrosion protection for cans submerged in water, exposed to vapors, or in interface areas.



VpCI™-149 Corrosion Inhibiting Paper

Cortec® VpCI™-149 is a new and unique corrosion inhibiting paper for the protection of a wide variety of metals. Formulated to provide extra protection for sensitive metals such as copper, aluminum, and cast iron. VpCI™-149 is an excellent product for virtually all packaging needs. Manufactured using a neutral, natural kraft paper, the coating provides a very soft and conformable feel to the paper. It wraps easily around metal parts, making it simple to use during packaging. Because it is not a saturated paper, it will not tear.

Designed specially to provide a superior level of VpCI™ protection compared to other VpCI™ papers VpCI™-149 can be used for a variety of applications. The soft feel makes it easy to use when individually wrapping parts while the strong vapor phase protection provides a great product for interleaving and protecting void spaces.



VpCI™-340 CLP: *Military Application*

Cortec® VpCI™-340 CLP is a unique formulation performing a multiplicity of functions; cleaning, water displacement, freeing stuck mechanisms, superior lubrication, and metal protection. It penetrates to undercut contaminants, rust, salt, and moisture which are then easily brushed or wiped away. Cortec® VpCI™-340 CLP also forms a thin, longlasting lubricating film, which dramatically reduces friction and wear. Parts that are moving work smoother and will last longer.

Cortec® VpCI™-340 CLP can be used for indoor and outdoor applications. Its superior water displacing characteristics make it an ideal choice for applications on equipment and components that are exposed to outside weather. The product conforms to MIL-L-63460 specification for "Lubricant, cleaner, and preservative for weapons and weapons systems."



Cortec® Eco Line® provides a historical bridge with needed protection in Hawaii

On the northeast side of Hawaii is a historical two tower steel truss railway bridge that was used to haul sugar cane in the early 20th century. The bridge was converted by the Hawaiian State Department of Transportation to the main roadway leading from Hilo to the Hamakua coastal communities and to historic Kamuela. The bridge sits in the proximity of two tropical rain forest waterfalls and the rocky coastline. Since the location is on the northeast shore, the area is hit daily by trade winds. These winds can reach speeds of 20 miles per hour or more causing constant Pacific Ocean wave activity resulting in continuous salt fogging to the structure surfaces.

In 1995-96 the bridge had a lead abatement program performed and was exposed to the elements without protection. Heavy corrosion activity required cross members to be replaced, however due to budget constraints, this will take years to complete. The Hawaiian State DOT Bridge Engineers and the State Health and Environmental Department reviewed petroleum based corrosion inhibitors and Cortec's soy oil based inhibitors. The Hawaiian DOT and Hawaiian Department of Health's decision was to accept, approve, and specify the use of Cortec's Eco Line® Long Term Rust Preventative which would provide the historic structure with needed protection and leave the sensitive rain forest and coastal environment without a petroleum foot print.

Weather permitting, spraying will begin at the end of February and continue in two phases. The process will consist of an initial inhibitor application, including time allowed for saturation to counter the buildup of corrosion scale, followed by a second application within hours of the first. The specification is to spray the bridge annually until the budget allows for the complete replacement of components, after which a conventional coating system will be put into place.



Applications of Cortec's MCI[®] products in Russia



The ingress of chlorides and other aggressive ions is common in harsh environments. It leads to accelerated corrosion of concrete reinforcement which causes cracking followed by disbandment and further deterioration. Presented technology was utilized for the rehabilitation of a shipyard on the Black Sea next to Novorasisck city in 1998.

1. Removal of the deteriorated concrete.

2. Removal of the loose corrosion products from the reinforcement and other embedded metal parts.

3. Application of MCI[®] 2020 on the concrete surface, usually it is impossible to remove the concrete from the inner side of the reinforcement. Because of that, treatment around the reinforcement was thorough.

4. Application in layers to the mortar containing polymer and MCI[®] 2000.

5. Application of the finishing mortar with high content of acrylic polymer.

6. Application of the sealer which penetrates concrete up to 5 mm deep.

All corrosion measurements were done before repair and every two years after. The regular inspections show that the repaired concrete remained in perfect condition for ten years! This technology has been adapted for concrete repair work in different environments. To date 40,000 sq. meters of concrete construction has been repaired by using this technology

1. Before any application was applied to the shipyard on the Black See next to Novorasisk, Russia in 1998.



2. Here is the shipyard ten years later.



3. This was the application process of Cortec's MCI® products to the concrete of the shipyard.



New Faces

Kristy McNitt

Kristy was born and raised in Spooner, Wisconsin. In 2005, she obtained a Bachelor of Science Degree in chemistry at the University of Wisconsin-Eau Claire; then completed her masters degree with a major in organic chemistry and minor in materials chemistry at Indiana University, Bloomington. She enjoys the outdoors (fishing and hiking), playing with her dog, and cooking.



News Alert

Cortec® Corporation's VpCI™-415 Conforms to Stringent Boeing Specifications!

September 28, 2007

Cortec® Corporation proudly announces the recent conformance of VpCI™-415 to Boeing's commercial specifications (D6-17487 Revision P). VpCI™-415 is a highly concentrated, non-toxic, heavy-duty, biodegradable cleaner/degreaser. In addition, VpCI™-415 provides up to six months protection against corrosion.

Cortec's VpCI™-415's synergistic blend of surfactants and corrosion inhibitors makes it the perfect choice for commercial aircraft maintenance. VpCI™-415 is the best choice for customers who require a multi-purpose, multi-surface cleaner and who are concerned with environmental compliance and worker safety.

Environmental Attributes:

- Biodegradable
- Non-Toxic
- Non-Corrosive
- Low Emulsifying
- No VOC's
- No Hazardous Air Pollutants
- No Ozone Depleting Substances
- Non-Flammable, Non-Combustible
- No Carcinogens
- No Ketones

Product Features:

- Exceptional resistance to pitting corrosion
- Provides excellent cleaning action at low temperatures
- Exhibits hard water tolerance
- Stable during freeze/thaw cycles
- Effectively used with pressure washers, foamers, dip tanks, steam cleaners, or mopping applications

NEWS ALERT

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NACE
INTERNATIONAL

New Orleans, LA
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Presentations

Assessment of the Effect of Volatile Corrosion Inhibitors on the Operational Efficiency of Electrical Motors

Presenting: Eric Uutala, Cortec® Corporation

PIXE Spectroscopy for Determination of Volatile Corrosion Inhibitor Concentration in Anticorrosion Polymer Films

Presenting Ivan Rogan, CorteCros Co., Ltd; Irina Pucic and Milko Jaksic, Ruder Boskovic Institute; Tadija Madzar, MORH; Margarita Kharshan, Cortec® Corporation

Galvanic Liquid Applied Coating for the Protection of Concrete Reinforcement

Andrea Hansen, Marlin Hansen, Angel Green, Jessica Meyer, Alla Y. Furman, Cortec® Corporation

Modern Packaging Materials for Electronic Equipment: Biodegradable and Vapor phase Corrosion Inhibitor Treated

Robert Berg, Cortec® Corporation

BRIEFLY...IMPORTANT!!!

MCI®-2018: New product, low VOC version of MCI®-2019-silane based sealer.

MCI®-2019 AG, MCI®-2018 AG: These are special versions of MCI®-2019 and MCI®-2018 containing a green fugitive dye, which fades with time to confirm even application.

VpCI™-647: This product is slightly modified and is now non-hazardous for shipment.

S-14 Bio, Biobased antiscalant / corrosion inhibitor: This unique product is available now in liquid form, which makes it easy for users.

VpCI™-637 and VpCI™-639 are now available in HF (High Flash) version which is non-hazardous for transportation.

What would you like to see in the next Leading Edge?
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