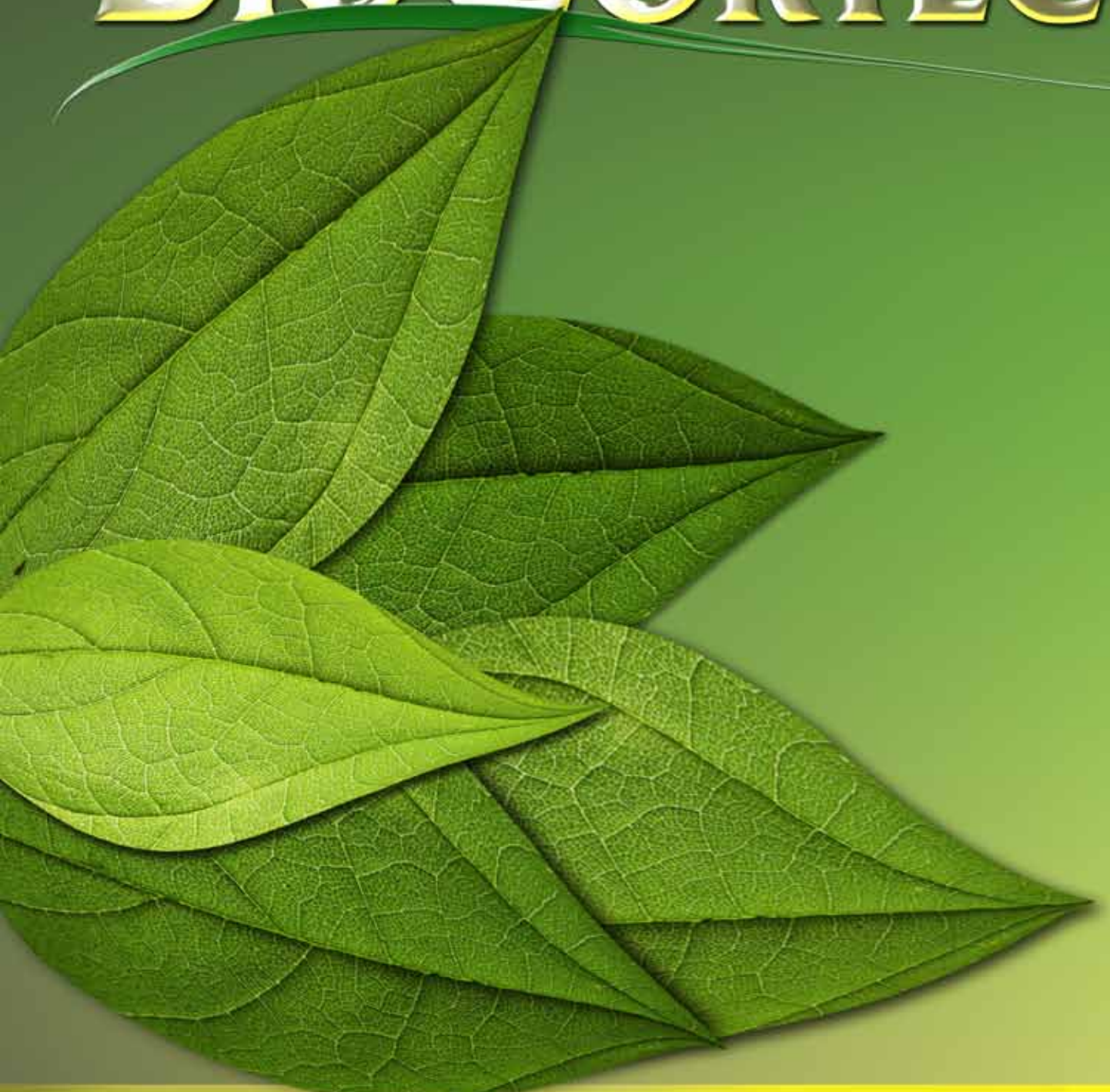
BioCortec®



YOUR SOURCE FOR SUSTAINABLE , ENVIRONMENTALLY FRIENDLY PRODUCTS

COMPOSTABLE

COMPOSTABLE

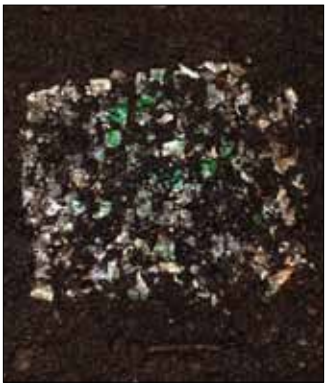
CORTEC CORPORATION

Biodegradable Packaging Material

EcoWorks®, Patented

Biodegradable & Compostable Films and Bags are specifically designed to replace LDPE, LLDPE, and HDPE films used in a wide variety of applications ranging from protective industrial films, retail packaging and agricultural films to high performance organic collection bags. EcoWorks® has properties superior to traditional non-biodegradable plastics without sacrificing biodegradability or compostability.

EcoWorks® fully biodegrades into carbon dioxide and water.



EcoWorks® Resin

This biomass derived resin is a proprietary blend of aliphatic and aromatic polyesters for biodegradable film extruding applications which also contains an annually renewable resource derived from plant sugars. It can be processed on traditional blown or cast film extrusion equipment for industrial or consumer applications. EcoWorks® Resin provides an environmentally conscious alternative to polyethylene and polypropylene sheet materials. EcoWorks® Resin is customizable; it can be used as is or blended with other biodegradable materials and process additives to obtain desired properties.

Films produced from Cortec® EcoWorks® Resin can be certified as 100% compostable per ASTM D6400 and DIN EN 13432 and is composed of materials approved by the FDA for food packaging. The exact time needed for EcoWorks® products to naturally decompose is dependent upon the conditions and activity of the disposal environment (temperature, soil quality, activity of microorganisms). When placed in a typical commercial composting environment, films produced from EcoWorks® Resin will fully biodegrade into carbon dioxide and water within a matter of weeks. There is no eco-toxicity to soil, plants, or microorganisms involved in this process. Films produced from EcoWorks® are shelf stable and will not degrade prematurely until placed in a proper composting environment.

Eco Film®

A DIN V 54 900 and BPS certified 100% biodegradable and compostable film designed to replace non-degradable as well as starch and polyethylene-based films.

Eco Film Cryogenic®, Patented

A certified biodegradable and compostable polyester film specifically formulated for extreme Cryogenic. Available with and without corrosion inhibiting properties.

EcoFilm®

100% COMPOSTABLE

Eco Film® Biodegradable and Compostable bags are designed specifically for the unique demands of community compost programs.

Eco Wrap®

A unique combination of certified compostable polyester film and biodegradable cling coating. Superior strength allows down-gauging and fewer required wraps for many palletizing/protective wrap applications.

EcoWrap®

100% COMPOSTABLE

BioCushion®

A certified biodegradable air cushion for protective packaging applications and provides an environmentally friendly alternative to traditional void fill materials.

BIO-CUSHION®
www.cortecvci.com

100% Biodegradable
Product and Trademark of Cortec® Corporation
St. Paul, MN, USA

Eco-Corr®, Patented
Biodegradable VpCI® Film – Aliphatic-aromatic co-polyester, VpCI® film. Degrades 100% into carbon dioxide and water once composted. Provides multi-metal corrosion inhibition and eliminates waste. Conforms to DIN TL 8135-0002 method for vapor phase corrosion inhibitors on combined multi-metals.

Eco-Corr® ESD , Patented
Biodegradable VpCI® ESD Film – Fully compostable polyester film with multi-metal corrosion and ESD protection. Meets MIL -PRF- 81705D (Static Dissipative Packaging Material).

COMPOSTABLE

COMPOSTABLE
Biodegradable Products Institute | US COMPOSTING COUNCIL

Cortec's compostable films are certified per ASTM D 6400 and EN13432, the standard specifications for commercially compostable plastics. These products are designed to be disposed of in well run commercial facilities where they exist.

Papers

Total multi–metal protection in a simple, economical application.
Cortec® multi–metal VpCI® papers eliminate the need to inventory a variety of papers for each of the metals you need to protect, and prevent package contamination by utilizing only the highest quality neutral/natural kraft paper. Cortec® VpCI® papers are simple to use. There are no chemical concentrations to calculate or application systems to maintain, and your products can be used immediately – no surface preparation or cleaning is required.

All Cortec® VpCI® papers are environmentally safe: **Fully recyclable and repulpable**. They provide an excellent alternative to oil coatings or other VCI/VPI papers that may contain hazardous chemicals.

AntiSkid Liner Board
Cortec® VpCI® Anti-Skid Linerboard is designed to prevent corrosion as well as slippage of cases, cartons and bags up to a twenty degree slide angle.

Cor-Pak® Linerboard, Patented
Exceptionally light (25 microns/1 mil) and strong HDPE film for foam-in-place as well as for other wrapping and interleaving applications. Multimetal, recyclable, excellent barrier, tear and moisture resistance.

CorrTainer®
VpCI® and moisture resistant container all in one box. The inside of the box is coated with Cortec's Vapor phase Corrosion Inhibitor and a barrier coating which integrates safe, effective, multi-metal corrosion protection.

EcoShield® Linerboard, Patented
Neutral, natural linerboard that also provides a moisture and oil barrier protection. Recyclable and repulpable per TAPPI Useful Method 253.

VpCI®-144
Multimetal VpCI® barrier coated paper. Excellent moisture barrier. Replaces polyethylene coated papers, recyclable, repulpable, and non-toxic.

VpCI®-145
A static dissipative corrosion inhibiting paper combines corrosion inhibiting and static-dissipative properties to provide a complete packaging paper for your valuable items.

VpCI®-146
VpCI® kraft paper protects ferrous and non-ferrous metals. Nitrite and chromate free. Fully recyclable.

VpCI®-148
In addition to its excellent corrosion inhibiting properties, VpCI®-148 also provides resistance to greases, oils, and solvents.

VpCI®-149
A corrosion inhibiting paper for the protection of a wide variety of metals. Formulated specifically to provide superior protection for sensitive metals such as copper, aluminum, and cast iron.

VpCI®-146

VpCI®-149

CorrTainer®

Foams

Bio-Pad®
A unique flexible corrosion inhibiting device constructed from 100% biobased non-woven material. It provides an ecofriendly and sustainable packaging option for corrosion inhibition.

Ecorfoam VpCI™
A foam produced from soy vegetable oil that provides effective corrosion protection, cushioning, and desiccant action all in one step.

EcoEarth™ Line of Products

Cortec® announces EcoEarth™ product line, EcoEmitter®, and a glimpse of the future in corrosion protection.

EcoEmitter®

Introducing Cortec's newest product line, EcoEarth™, created to illustrate our continually committed resolve to make the most advanced biodegradable and compostable products, made from bio-based or sustainable resources, for your corrosion prevention needs. Thanks to continuing research, study, and experimentation, Cortec® knows more than ever before about producing ecologically harmonious corrosion control products. As technology advances, we continue to expand our unique earth friendly offerings.

Cortec's first product in this exciting new EcoEarth™ line is the EcoEmitter®, designed with the environment in mind to reduce our carbon footprint. EcoEmitter® is a highly engineered device that provides corrosion protection for your most sensitive assets such as electronic and optical equipment and components. The polymeric cup has been redesigned to replace polyethylene and is constructed from OK Biobased 3-star rated resins containing 60-80% renewable carbon content. The active corrosion inhibiting powder is nontoxic and biodegradable; each emitter is individually packaged in certified compostable film, and placed in a box containing 30% post consumer recycled content. This economical, easy to install, non-toxic device is designed to provide corrosion protection for metal components and parts enclosed in nonventilated cabinets and tool or control boxes. Each compact space saving EcoEmitter® is powered by NANO VpCI™ corrosion inhibiting technology conditioning the space and adsorbing onto metal surfaces providing a microscopic molecular layer of corrosion protection. Vapor phase molecules sublimate from the solid phase and emit through the 100% biobased breathable membrane to provide continuous long-term multimetal protection, even in the harshest conditions, for up to twenty four months during operation and/or shutdown. EcoEmitters are free of nitrites, halogens, phosphates, and the VOC values meet Southern California Clean Air Act and other National and local regulations.

EcoEarth™

Awards

Minnesota 2000 Governors Award

Connecticut College Inherit The Earth Award; 1997

2005 Frost and Sullivan; Specialty Plastic Films Technology Innovation Award

EcoAir® Air Powered Technology

EcoAir®, an air powered aerosol replacement to traditional chemical propellants. This innovative technology uses a four-layer EcoPouch inserted into a can, the pouch is filled, and the can is pressurized with compressed air. As the valve is depressed during use the surrounding pressure expels the bag's internal fluids.

The major advantages of EcoAir® technology are:

Nonflammable / Spray in any direction, even upside down / No product contamination by propellant / Safer to ship and store / Low environmental impact / Recyclable as any aluminum can

Cortec® Corporation's line of EcoAir® products lead the way in environmentally safe corrosion protection technology. Cortec's Vapor phase Corrosion Inhibiting (VpCI®) products protect not only where directly applied, but also the surrounding metal areas of initial application. Attack the toughest maintenance duties with respect for the environment with non-toxic, biodegradable products formulated with annually renewable, biodegradable, and nonpolluting ingredients that are fast-acting, dependable, and safe to handle.

EcoAir® products are specially formulated to improve safety for the consumer as well as the environment. These safety improvements are reflected in the HMIS ratings for each product shown (see chart below). The products do not contain 1,1,1 trichloroethane, methylene chloride, or chlorinated solvents.

HMIS RATINGS	324	337	377	414	422	423
HEALTH	1	1	1	1	1	1
FLAMMABILITY	1	1	1	0	0	0
REACTIVITY	0	0	0	0	0	1
PERSONAL PROTECTION	B	B	B	B	B	B

EcoAir® Food Grade Lubricant

Light penetrating oil that contains only food grade USDA H-1 approved ingredients. It can be used on equipment in sanitary areas where there is the exposure to edible products.

EcoAir® BioClean Spray

It eliminates existing microbiological contamination and prevents future growth.

EcoAir® BioCorr®

A waterbased, biodegradable rust preventative that is intended for preservation of metals in storage and during transportation.

EcoAir® Laptop Wizard

Fresh scented cleaner incorporates non-toxic, biodegradable chemicals that safely cleans LCD screens of dust, dirt, and fingerprints with a no-residue, nodrip, spray foam application.

EcoAir® VpCI®-337 Vapor Corrosion Inhibitor

Water-based fogger with a delayed release actuator. Can be enclosed in a container and left to dispense. Non-flammable.

EcoAir® VpCI®-377 Corrosion Preventative

Water-based rust preventative for temporary corrosion prevention. Non-flammable.

EcoAir® VpCI®-414 Cleaner/Degreaser

Water-based, biodegradable cleaner. Clings to ceilings and vertical surfaces in hard-to-reach areas. Non-flammable.

EcoAir® VpCI®-422 & 423 Non-Toxic Rust Removers

Water-based, non-toxic rust remover. Offers multimetal protection while removing rust. Non-flammable.

VpCI®-377 Corrosion Preventative

EcoLine® Canola and Soya - Based VpCI® Technology

Environmentally Friendly Soy Products

EcoLine® products are based on renewably derived soybean methyl esters. These revolutionary, environmentally low-impact technology products provide excellent lubricity and corrosion protection. EcoLine® products are better for the environment and leave behind a high performance Vapor phase Corrosion Inhibitor (VpCI®) layer to protect multi-metal surfaces.

BioCorr® Rust Preventative

A waterbased ready-to-use, biodegradable rust preventative that is intended for preservation of metals in storage during transportation for up to 24 months. BioCorr® Rust Preventative provides multi-metal protection and is an excellent environmentally sound alternative to petroleum derived products.

EcoLine® All Purpose Lubricant

An all-purpose biodegradable lubricant that is designed for industrial, shop, and institutional uses. It contains a friction modifier and extreme pressure additive. It is safe for use on all metals and for most plastics. Perfect for both indoor and outdoor applications. Use full strength.

EcoLine® Bearing, Chain and Roller Lube

A ready-to-use high quality rust preventative lubricant, formulated with American grown natural soya seed oil. It surpasses the lubricity performance levels of most conventional petroleum-based lubricants. It also contains VpCI® corrosion protection for both indoor and outdoor applications.

EcoLine® Surface Cleaner and Degreaser

An industrial strength, biodegradable and water dilutable cleaner and degreaser. Ideal for cleaning parts in industrial and commercial applications. Use in parts washers, dip tanks, ultrasonic and pressurized cleaning systems and for general maintenance. Metals and plastics safe.

EcoLine® Cutting Fluid

A multi-functional biodegradable fluid for metal cutting operations, that provides industrial grade lubrication as it cools work pieces and tools. Provides excellent VpCI® corrosion protection during and after the work processes.

EcoLine® Long Term Rust Preventative

Biodegradable temporary coating designed for use in severe marine and high humidity outdoor and indoor environments. Provides excellent corrosion protection.

At Cortec® Corporation, we meet our customer's needs.

Our EcoLine® product line is available in bottles, pails, drums, totes, and bulk.

EcoLine® All Purpose Lubricant

EcoLine® Bearing, Chain, and Roller Lube

EcoLine® Food Machinery Lubricating Grease

High quality corrosion inhibiting lubricant formulated with American grown natural soya seed oil. Conforms to USDA H-I criteria and USFDA regulations: 21CFR 178.3570 'lubricants with incidental food contact'.

EcoLine® Heavy Duty Grease

Biodegradable grease formulated with American grown natural soya seed oil. Provides a powerful combination of lubricating, moisture displacing, and anticorrosion properties.

EcoLine® 3220: Canola Based Temporary Thin Film Coating

This 100% biobased ready-to-use temporary coating forms a tenacious film which clings to metal surfaces, providing excellent contact Vapor phase Corrosion Protection (VpCI®) in storage and shipment. Made from renewable materials, this product is very environmentally safe, has excellent thermostability, and doesn't affect rubber or plastics

EcoLine® 3690: Canola Based Extreme Environment Corrosion Inhibitor Coating

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, very safe for people and the environment.

Case History: EcoLine® Cutting Fluid

PROBLEM

The customer was experiencing corrosion problems during the exporting of automotive parts using sea going containers. The end users of the bearings, bushings, and thrust washers are engine producers: Volvo and Ford. Time in transit from manufacturer's location in Montenegro to the engine assembly plants is typically two to four months. The traditional rust inhibiting oils, imported from Japan and Germany, did not prevent oxidation and pitting of the special aluminum alloy used to produce these high-tech engine components. This resulted in significant losses from production delays and rejected parts.

SOLUTION

The customer tested Cortec® EcoLine® Cutting Fluid in their laboratory with promising results. Based on laboratory tests, a pilot plant trial was initiated; which prompted the customer's decision to implement a plant-wide, full scale implementation of EcoLine® Cutting Fluid to replace environmentally unacceptable rust inhibiting oils.

CONCLUSION AND REASON CORTEC® WAS SELECTED

Cortec's EcoLine® Cutting Fluid solved the customer's corrosion problems during storage and shipping. The bearings, bushings, and thrust washers have shown no sign of corrosion, even after extended field testing up to twelve months. The important benefits are to be able to deliver parts that are oil free, dry to the touch, compatible with robotized assembly operations, and an extremely cost effective corrosion protection method. EcoLine® Cutting Fluid is biodegradable, biobased, and enables our customer to demonstrate to their local community and customers their environmental sustainability and awareness.

Additives for Concrete Durability,
Derived from Sugar Beets & Soybeans

MCI®-2005 Gel, Migratory Inhibiting Gel for Existing Concrete Structures – Sugar Beets

An injection treatment for existing concrete to prevent corrosion of embedded steel, especially in areas subject to cracks and spalling.

MCI® MIGRATING CORROSION INHIBITORS
FROM GREY TO GREEN

MCI®-2005 Water-Based, Migrating, Corrosion Inhibiting Admixture for Concrete, Patented – Sugar Beets

Derived from sugar beets, is a water-based admixture used to prevent corrosion of rebar in concrete. MCI®-2005 can retard setting time of concrete by 3 to 4 hours at 70° F (21° C). Also available in a normal set (NS) version. Certified by Underwriter's Laboratories to meet NSF Standard 61 guidelines.

MCI®-2005 Gel

MCI®-2006 Powder, Migrating, Corrosion Inhibiting Admixture for Concrete – Sugar Beets

Derived from sugar beets, is a powdered admixture used to prevent corrosion of rebar in concrete. MCI®-2006 can retard setting time of concrete by 3 to 4 hours at 70° F (21° C). Also available in a normal set (NS) version. Certified by Underwriter's Laboratories to meet NSF Standard 61 guidelines.

MCI® EcoCure Curing Agent, Patented – Soybean

A surface applied soya-based curing agent/sealer, containing Migrating Corrosion Inhibitors (MCI®). This product is derived from Natural Soy Oil and designed to: retain the hydration water in freshly worked concrete / repel water and help prevent the scaling of the concrete surface brought on by freezing/thawing cycles and the ingress of deicing salt and provide corrosion protection to embedded reinforcement.

Case History: MCI® 2005 NS

PROBLEM

The primary reason for the pier repair was due to impact by ships, with the secondary reasons being age and corrosion. At least two previous repairs did not hold up.

APPLICATION

A valued added alternative by C.C.S., Inc. to use MCI® 2005 NS in the new concrete mix design at 1 ½ pints per cubic yard was accepted by the Coast Guard. A portion at the end of the pier was completely reconstructed.

CONCLUSION

The plastic and hardened physical characteristics of the concrete with MCI® 2005 NS were all very satisfactory. High strengths were achieved with no cracking indicated 30 days after placement.

WHY WAS MCI® CHOSEN?

The design group of the U.S.C.G. chose the use of MCI® to obtain long-term service of the pier.

Innovative Specialty Products:
Biobased and Biodegradable

VpCI®-411/411 Gel – Citrus
Heavy-duty, water-reducible, D-limonene cleaner/degreaser designed for extra tough cleaning jobs in industrial and commercial applications. Available in a gel form for hard-to-reach surfaces. Both provide flash corrosion protection.

VpCI®-422/423 – Citrus
Environmentally friendly, biodegradable rust and tarnish remover for ferrous and non-ferrous metals. Incorporates VpCI® technology so that it is not aggressive to the metal substrate. Will not harm human skin, most paints, plastics, rubber, or other materials. Biodegradable according to 405.1 EPA 600/4-79-020 Test.

VpCI®-609 – Biodegradable
Water-soluble Vapor phase Corrosion Inhibitor (VpCI®) powder for wet or dry corrosion protection of ferrous metals and aluminum. 100% biodegradable according to OECD 306, BOD28 Marine Test.

VpCI®-629 BIO – Soybeans
The only oil field inhibitor product on the market which combines high level of corrosion protection, biodegradability and low toxicity. Biodegradable and non-toxic in accordance to OECD 306, BOD28 Marine Test.

VpCI®-641 – Naturally occurring amino-acids (coffee)
A water-based, rust preventive liquid additive for the protection of ferrous and nonferrous metals in industrial waters. Nontoxic, environmentally safe, and does not contain nitrite or phosphate inhibitors. Based on all organic components, VpCI®-641 has the ability to protect at extremely low concentration levels. It is safe, economical to use and easy to dispose of. It contains a combination of contact and Vapor phase Corrosion Inhibitors capable of protecting even partly filled spaces.

VpCI®-705 BIO – Soybeans
Specially formulated for use as a multifunctional fuel additive to biodiesel and other biofuels. It serves as a corrosion inhibitor, fuel stabilizer, and water emulsifier for biodiesel, diesel, and gasoline. It provides corrosion protection, lubricity, and elastomer protection for biobased fuels. As a fuel stabilizer, this product provides better engine performance.

BioClean 610 – Coconut Oil
Coconut oil phospholipids-based product designed for the dispersion and preservation of microbiological growth in water treatment applications.

EcoPrimer™ – Soybeans
A core shell acrylic modified alkyd emulsion with bio-based primer that provides good adhesion, salt spray resistance, and extremely low VOC.

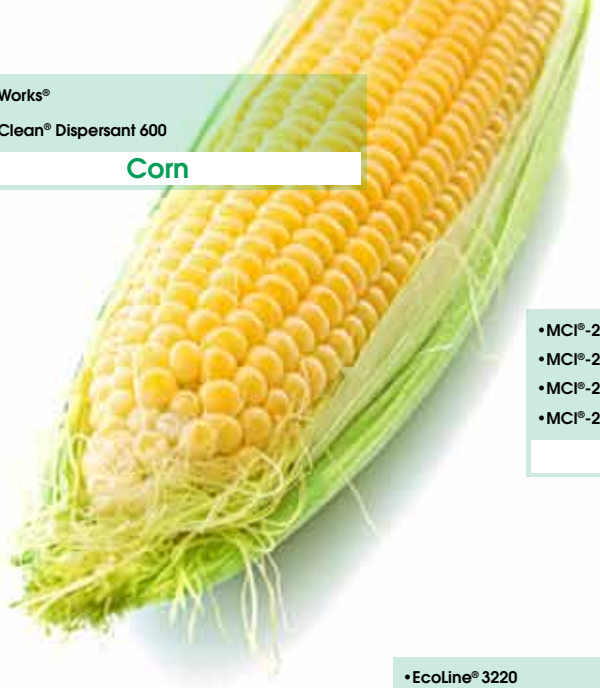
M-95 – Biodegradable
A very low foaming, water soluble corrosion inhibitor additive. It provides corrosion protection for steel, copper, brass, magnesium, aluminum, bronze, galvanized steel, and other ferrous and non-ferrous metals and their alloys. M-95 prevents corrosion contact and vapor phases. Biodegradable in compliance with HOCNF (Harmonized Offshore Chemical Notification Format) environmental requirements.

S-10 F – Naturally occurring amino-acids (coffee)
A non-toxic “green” filming corrosion inhibitor for boiler condensate based on sodium salt of fatty amino acids. This inhibitor is effective against corrosion caused by carbon dioxide and oxygen. S-10 F is useful in facilities where safety concerns limit the concentration of amines allowed in steam lines. This product is biodegradable and biobased.

S-14 BIO, Patented – Soybean
A unique green building block designed for cooling towers and other open-loop, recirculating cooling systems. S-14 Bio is a powerful combination of scale inhibitor and multi-metal corrosion inhibitor. It is comprised of non-toxic, nonhazardous, and readily biodegradable ingredients, mainly a low molecular weight natural polymer. The other components are GRAS (Generally Recognized as Safe) substances and food approved preservatives.

- VpCI®-411
- VpCI®-422/423

Orange Peel



- EcoWorks®
- EcoClean® Dispersant 600

Corn

- MCI®-2005
- MCI®-2005 NS
- MCI®-2006
- MCI®-2006 NS

Sugar Beet

- EcoLine® 3220
- EcoLine® 3690

Canola Oil

- EcoLine® 3220
- EcoLine® 3690
- EcoLine® All Purpose Lubricant
- EcoLine® Cutting Fluid
- EcoLine® Rust Preventative
- EcoLine® Bearing Chain and Roller Lubricant
- EcoLine® Cleaner/Degreaser
- EcoLine® Food Machinery Lubricating Grease
- EcoWorks
- Eco Primer
- VpCI®-629 Bio
- VpCI®-705 Bio
- S-14 Bio
- BioCorr™ RP
- MCI® EcoCure

Soybean

- BioClean-610

Coconut Shell

- VpCI®-641
- S-10 F

Coffee

Cortec® products derived from sustainable resources

Visit our websites for more information on Cortec® Corporation.

CortecVCI.com and CortecMCI.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.

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CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

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