

MAY 2018



The **LEADING** Edge

Cortec® Laboratories Works Tirelessly to “REACH” New Requirements for EU Imports



Cortec® Laboratories has been working tirelessly toward REACH certification for numerous raw materials used in Cortec® products. This registration is necessary to allow European distributors to continue importing Cortec® products into the EU (European Union). REACH, which is an abbreviation for “Registration, Evaluation, Authorization and Restriction of Chemicals,” entered into force in 2007 in the EU. While there are many elements of REACH, the major focus of the regulation covers the manufacture or import of chemicals in the EU in quantities greater than 1 tonne. There were several stages and deadlines involved in the implementation of REACH, but the major deadline for compliance is May 31st, 2018.

After devoting extensive amounts of time, energy, and resources into the REACH certification process, Cortec® Laboratories is pleased to announce that it has passed the important stage of raw materials testing and is now gathering access to reports that will launch Cortec® to the final stages of registration. While the obligation for REACH compliance rests fundamentally with the actual importer, the chemical manufacturer can voluntarily take on that responsibility. That is the approach being taken by Cortec®. By handling the intricacies of REACH certification, Cortec® will make the importing of Cortec® products into the EU much easier for our valued European distributors. At the same time, Cortec® Laboratories is working hard to streamline processes so future REACH certification activities will be easier for all involved.

In addition to the time involved, there are some very significant testing costs involved in REACH registration. For that reason, Cortec® will not be registering all its raw materials. However, strategies are in place to allow continued sales of affected products while meeting the requirements of REACH.

Cortec® Laboratories Noticed for Strong Emphasis on USDA Certified Biobased Products

Cortec® offers a wide range of USDA Certified Biobased Products for use in cleaning and surface prep, construction, bio-fuels, lubrication, metalworking, rust prevention, and water treatment. These products are part of the USDA BioPreferred® Program Mandatory Federal Purchasing Initiative. Through ongoing development of new USDA Certified Biobased Products, Cortec® is providing a wide variety of “green” corrosion control options and promoting the use of sustainable resources for any industry that faces metal corrosion. This portfolio, which continues to grow, can be seen in the recently updated BioCortec® Brochure (<https://www.cortecvci.com/Publications/Brochures/BioCortec.pdf>).



Cortec's emphasis on biobased corrosion inhibiting products brought Cortec® under the spotlight in a January article published by Agri-Pulse, a comprehensive weekly news source for the agriculture industry. The article, entitled “USDA's \$2.7 million BioPreferred® program reaps multibillion-dollar benefits,” investigates the success of the USDA BioPreferred® Program to encourage the development and use of products made from renewable resources. As part of its research, Agri-Pulse reached out to small and large businesses or associations representing various biobased product categories to learn about their experience with the program. Cortec® was one of the handful of companies (along with Fortune 500 company Proctor & Gamble) mentioned in the article, in which Product Development Manager, Ming Shen, shared that Cortec's portfolio of about 30 products in the BioPreferred® Program “shows our commitment to a sustainable environment.” (To read more about the article, please visit: https://www.cortecvci.com/whats_new/announcements/Agri-Pulse-Article.pdf).

One of Cortec's USDA Certified Biobased products was picked up in the October 2017 issue of NACE International's *Materials Performance* magazine. The “Product Showcase” announced that EcoClean® Biodegradable Scale and Rust Remover contains 100% USDA certified biobased content and exceeds the minimum USDA requirements for metal cleaners and corrosion removers qualified for federal purchasing under the USDA's BioPreferred® Program. This fast-acting product dissolves heavy scale, corrosion, and naturally occurring oxides off metals and is one of the many USDA Certified Biobased Products that Cortec® is able to offer to its customers.

Cortec® Laboratories Provides Testing to Help Customers Select Their Preferred Corrosion Solution

As the only ISO/IEC-17025 Laboratory Testing Accredited facility in the industry, Cortec® Laboratories provides regular testing to inform and guide customers in their search for corrosion solutions. Sometimes this involves testing Cortec® products against a competitor's product; other times it is done simply to meet requirements of a customer's routine quality assurance policy. The following scenarios are drawn from two of the many test report files that have already been completed by Cortec® Laboratories this year.

SAE J10 Testing of Air Tanks Protected by EcoLine® 3690

One customer requested Cortec® Laboratories to test the performance of EcoLine® 3690 for protecting the internals of compressed air tanks that are part of large tractor trailer air-brake systems. The customer had already been using the temporary biobased coating but needed to re-verify its protection capabilities due to ongoing quality assurance practices. Evaluation required that coated air tank samples be able to withstand 96 hours in ASTM B117 salt spray testing conditions while still conforming to SAE J10 standards. The first tank section was left in and removed after 96 hours, with no corrosion observed on the tank. The second tank section was able to remain in the test chamber much longer before a small amount of corrosion appeared. The test confirmed that EcoLine® 3690 provided protection in line with the customer's requirements. As applied, the coating also provided protection beyond the customer's estimated requirements.



Tank section after 96 hours of testing in ASTM B117 salt spray conditions.

Lab News

Evaluating a Packaging System for Users of Cortec® Products

A third-party packaging company needed to supply a packaging system that would provide a minimum of nine months' protection during storage. Based on previous experience and evaluation, they requested that accelerated testing be performed for 72 hours on two trays of parts packaged with VpCI®-126 film. One tray included multiple parts packaged in a VpCI®-126 bag; the other tray included individually wrapped parts. Each tray was over-wrapped with a gusseted VpCI®-126 bag.

The two trays were placed in ASTM D1735 hot and humid testing conditions (38 °C/100 °F with constant water fog) for 72 hours. Upon inspection, no corrosion was observed on parts within either packaging system, allowing the systems to pass the customer's testing requirements for a 9 month corrosion protection system.

To learn more about Cortec® Laboratories Testing Services, please visit: <http://corteclaboratories.com/services/>

Equipment and Personnel Updates

Cortec® Laboratories continues to upgrade equipment for improved R&D capabilities and efficiency. In the last six months, new FTIR (Fourier Transform Infrared) equipment improved the lab's capability for analyzing the molecular composition of materials in research and development.

An especially major upgrade that will contribute to future R&D success was the recent installation of two new fume hoods that provide additional working space, improved safety, and better storage of chemistry materials. The new venting system includes an advanced makeup air unit that balances air pressure to allow the inflow of fresher air into the laboratory when working.



New fume hood

The above investments reflect the ongoing commitment of CEO and Chairman, Boris Miksic, to have the best laboratory capabilities in the industry.

Cortec® Laboratories has also seen staffing changes in the last few months, with Ben Voight transitioning from the quality department to spend part of his time assisting Cortec® Technical Services in a combined role of "Process Engineer & Technical Service Engineer I" as of early February. On March 12th, Cortec® Laboratories was pleased to hire previous contract employee Cindy Mason to continue fulfilling the role of ISO 17025 Coordinator/Lab Technician, now as a direct employee.



Bulk-wrapped parts with no observed corrosion after 72 hours of testing in ASTM 1735 conditions.



FTIR (Fourier Transform Infrared)



Cortec Laboratories, May 2018.

Cortec® Laboratories Tests VpCI® Coatings in Subtropical Outdoor Conditions

Testing the weathering resistance of VpCI® coatings according to ASTM D 1014 – 95 continues at Cortec® Biotechnology Campus in Sarasota, Florida. Cortec® Laboratories' Coating Chemist, Rick Shannon, initially set up the test in January 2017 to monitor panels of VpCI® coatings for color drift, corrosion, and any changes in gloss while they face a southern exposure in a subtropical climate near the Gulf of Mexico.

In December 2017, more panels were added to the rack, bringing the total number of panels under testing up to approximately 100. Most of the panels are covered with standard VpCI® coatings that were applied either direct to metal (DTM) or as two-coat systems (e.g. VpCI®-375 top-coated with VpCI®-386). Some new coatings formulas were also tested.

The panels are snapped at a 45 degree angle into a rack that is bolted to the ground facing southern exposure. Utilizing this rack at the Cortec® Biotechnology Campus will allow Cortec® Laboratories to witness how various colors and coating systems perform under harsh outdoor conditions and to make further recommendations and formula adjustments from there.



ASTM exposure rack for testing weathering resistance of VpCI® coatings. The rack is located at Cortec® Biotechnology Campus in Sarasota, Florida, in a semitropical climate in the vicinity of the Gulf of Mexico.



White Paper Presents Test Results of Recyclable Barrier Coated Paper Compared to Polycoated Paper

A new white paper from Cortec® Laboratories highlights the testing performance of recyclable barrier coated papers developed by Cortec® R&D. A key question for today's manufacturers is how to balance the environmental benefits of paper packaging materials with the challenge of maintaining their durability in the presence of moisture. Often, performance is achieved by using barrier coatings that reduce the suitability of the paper for recycling.

To achieve good barrier properties while keeping the paper recyclable, Cortec® has developed a line of EcoShield® barrier coated papers available with or without VpCI® corrosion inhibitors. These papers were independently tested against polycoated and waxed papers and found to have a competitive water vapor transport rate, especially when considering the recycling advantage of EcoShield® Super Barrier. The full white paper can be found at: https://www.cortecvci.com/whats_new/announcements/Barrier-Products-White-Paper.pdf.

Results

The table below shows the test results for the various samples. Results are reported in the commonly used units of g/h·m² and g/24h·m². The ID numbers are used for easy reference on the attached Mocon test reports.

Coated Paper Samples	WVTR g/h·m ²	WVTR g/24h·m ²
92-1 EcoShield® Super barrier	0.44-0.47	10.6-11.3
92-2 EcoShield® Super barrier	0.31-0.34	7.55-8.12
92-3 EcoShield® VpCI®-144 Super barrier	0.43	10.3
94-1 EcoShield® VpCI®-144	0.60-0.68	14.3-16.3
95-1 Walki Polycoated	0.29	6.97-6.98
92-5 Cor-Pak® Polycoated	0.30-0.32	7.23-7.65
97-1 Commercial Waxed Paper‡	1.0-5.4	25.5-130

WVTR tested at 23°C (73°F) and 50% RH, ASTM F-1249 except as noted

‡Due to highly porous and variable sample, could not be tested with ASTM F-1249, so ASTM E-96 was used (run at 22 °C)

PRODUCT ANNOUNCEMENTS

M-540 is a premium quality additive formulated to provide superior corrosion protection in biobased and ester-based greases. It provides excellent long-term protection, even in humid and salt-containing environments, such as coastal and offshore conditions, where the chance for condensation and corrosion increases. When tested according to ASTM D5969 for rust prevention, grease that failed to prevent rust in a 5% seawater solution was able to pass the same test after M-540 was added. Learn more: https://www.cortecvci.com/whats_new/announcements/M540-PR.pdf



EcoShield® Barrier Coating is a waterborne moisture barrier coating that gives paper manufacturers the ability to create non-toxic, effective, environmentally friendly paper and corrugated-board alternatives to wax and polyethylene papers. By applying EcoShield® Barrier Coating onto their Kraft paper, recycled paper, and linerboard, manufacturers can produce fully recyclable and repulpable paper and boxes that resist moisture, oil, and grease. Learn more: https://www.cortecvci.com/whats_new/announcements/EcoShield-Coating-PR.pdf



Desicorr® VpCl® Pouches/NW are specially designed two-sided pouches containing a unique combination of desiccant and Vapor phase Corrosion Inhibitors for moisture absorption and corrosion protection. This dual func-

tion reduces moisture in the air and provides multi-metal corrosion protection within a package. Desicorr® VpCl® Pouches are available in both windowed (to see when the desiccant is fully spent) and non-windowed versions (for greater cost-effectiveness and durability). Learn more: https://www.cortecvci.com/whats_new/announcements/DesiCorr-VpCl-NW-PR.pdf

EcoLine® Biobased Grease powered by Nano VpCl® is a multipurpose biobased grease with superior corrosion protection properties. It is formulated from vegetable oils, lithium-based thickener, extreme pressure additives, and Cortec® VpCl® corrosion inhibitors. It contains 86% USDA certified biobased content and qualifies for federal purchasing under the USDA BioPreferred® Program due to its use of renewable materials. Learn more: https://www.cortecvci.com/whats_new/announcements/EcoLine-Biobased-Grease-PR.pdf

VpCl®-649 BD fights corrosion, scale, and odor in closed loop systems, pipelines, tanks, and more. A combination of contact and Vapor phase Corrosion Inhibitors protect metal surfaces in direct contact with the treated fluid, as well as those areas above the level of the fluid where the contact inhibitor cannot reach. As the inhibitor flows along in the liquid stream, it releases a corrosion inhibiting vapor that adsorbs and forms a protective layer on exposed metal surfaces above the level of the fluid. Unlike a number of traditional closed loop inhibitors, VpCl®-649 BD does not rely on nitrite, phosphate, chromate, or heavy metals to inhibit corrosion. It also contains an acrylic polymer to prevent scale formation and an organic odor-control agent to minimize odor from the growth of bacteria inside the closed loop. https://www.cortecvci.com/whats_new/announcements/VpCl-649-BD-PR.pdf



EcoLine® VpCl®-642 allows seawater to be safely utilized for hydrostatic testing without the danger of premature corrosive equipment failure. It effectively protects the ferrous metals in contact with the corrosive, high-chloride fluid by forming a protective layer on metal surfaces and inhibiting cathodic corrosion reactions. Its low dosage of 0.3-0.75% by volume makes it economical and cost-competitive. Chiefly derived from renewable resources, EcoLine® VpCl®-642 contains 93% USDA certified biobased content. It provides an excellent replacement for more hazardous products containing nitrite, chromate, and hydrazine. Learn more: https://www.cortecvci.com/whats_new/announcements/EcoLine-VpCl-642-PR.pdf

Lab News

EcoAir® BioClean Spray is a gentle but effective cleaner for removing soil and stains from hard surfaces. Unlike other cleaners that rely on harsh chemicals, EcoAir® BioClean is very friendly to users and the environment. It is predominantly derived from coco oil and corn syrup—renewable resources and natural components that are non-toxic, non-hazardous, and biodegradable. In addition to its gentle, naturally derived cleaning components, EcoAir® BioClean Spray is packaged in recyclable EcoAir® spray cans powered by compressed air rather than flammable propellants or CFCs. Learn more: https://www.cortecvci.com/whats_new/announcements/EcoAir-BioClean-Spray-PR.pdf



CorrProTec™ 372 is an exciting water-based peelable coating that is easy to apply and remove for temporary protection of metal parts against rust and corrosion. It is an extra thick version of a water-based acrylic peelable coating that provides protection in harsh, outdoor, unsheltered applications. This unique, user-friendly option is good to consider for preserving dynamic metal profiles such as pipe splines and other surfaces. It can be applied to metal surfaces by spraying, rolling, brushing, or dipping and dries to touch in one to two hours. Learn more: <https://www.cortecvci.com/Publications/PDS/CorrProTec-372-powered-by-Nano-VpCI.pdf>

CorrVerter® MCI® Rust Primer offers engineers, owners, contractors, DOTs, and other government agencies a convenient, low-labor option when performing repairs on heavily corroded rebar and other metal surfaces. This single component, fast drying, water-based primer is formulated to penetrate and eliminate rust as well as to protect bare metal against further rusting. CorrVerter® MCI® Rust Primer converts existing rust to a passive layer and can be used alone or with a topcoat for extended protection. Learn more: https://www.cortecvci.com/whats_new/announcements/CorrVerter-MCI-Rust-Primer.pdf

EcoShield® Super Barrier Paper and Linerboard is an environmentally friendly replacement for polycoated and waxed papers. It relies on a water-based moisture barrier coating for moisture resistance and offers competitive performance compared to polycoated and waxed paper. The high gloss paper helps protect against the ingress of moisture or grease into a package and also protects against the leaching of oil and grease out of a package. Learn more: https://www.cortecvci.com/whats_new/announcements/EcoShield-SuperBarrierPaperPR.pdf



Coming Soon! Expanding Greases Portfolio

Cortec® Laboratories has been working hard to expand its portfolio of biobased lubes and greases and plans to release a number of new offerings in the near future. Stay tuned for upcoming news about Cortec's lubricant and grease offerings for food machinery, wire rope, drilling rods, and more!



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