



The LEADING Edge

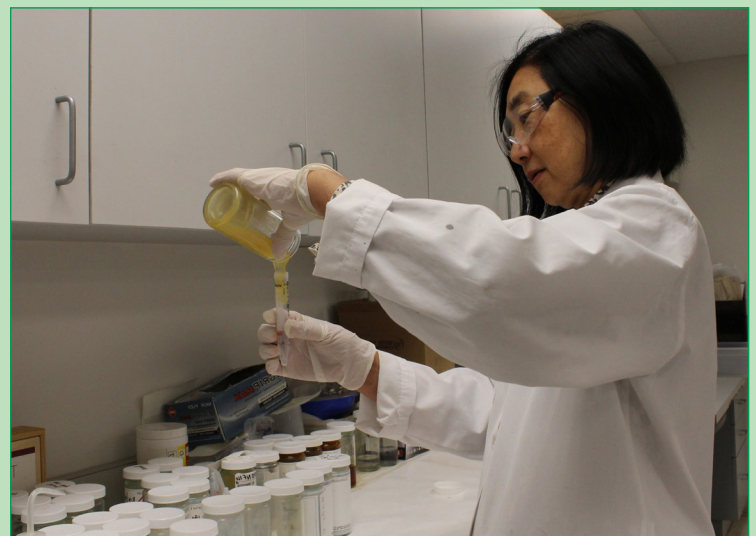
CORTEC® LABORATORIES LOOKS AHEAD TO EXCITING DEVELOPMENTS WITH RECENT REORGANIZATION

Cortec® Laboratories took on a new organizational structure on the first business day of 2021, when Ming Shen, Ph.D., shifted her focus from laboratory leadership to devote her time and energy to ecologically-friendly product development and support.

As our new Manager of Green Chemistry Initiative, Ming is helping us lead the industry to innovative “green” packaging and corrosion solutions that mirror the increasing demand for environmentally sensitive product development and use.

Simultaneously, Pavlo Solntsev, Ph.D. (who celebrates his six-year anniversary with Cortec® this month), stepped up to accept more responsibilities as the new Lab Manager. His duties include providing and directing key product support, leading and collaborating on innovation efforts, ensuring compliance, and supporting technical integrity.

Join us in congratulating Ming and Pavlo on their new roles and watching for exciting new developments to come out of the lab as a result of their efforts!



Left: Pavlo Solntsev, Ph.D., is the new Lab Manager at Cortec® Laboratories. Right: In her new role as Manager of Green Chemistry Initiative, Ming Shen, Ph.D., focuses on ecologically-friendly product development, including preparation of new biobased product samples to apply for the USDA Certified Biobased Product label.

Eco Wrap® Laboratory Composting Progression



Day 1



Week 6



Week 10

PRODUCT NEWS

Eco Wrap®: World's First Compostable Machine Grade Stretch Film

Our rollout of new or improved “green” packaging materials got off to a good start this year by the January release of our latest formulation of Eco Wrap®—to our knowledge the world's first compostable industrial strength stretch film for use on automated stretch wrap equipment! Eco Wrap® uses a certified compostable resin plus a tackifier additive to create a stretch film that is commercially compostable* according to ASTM D6400. This is a breakthrough for industrial packaging and warehousing that rely heavily on automated stretch wrapping of pallets. Eco Wrap® can be used wherever conventional stretch film is needed:

- Agriculture bundling
- Luggage wrapping
- Packaging construction materials
- Transporting furniture
- And more!



Learn more: https://www.cortecvci.com/whats_new/announcements/Eco-Wrap-PR-2021-01.pdf

Watch a video of Eco Wrap® in use on stretch wrap equipment: https://www.youtube.com/watch?v=_vFH45i8tDQ

EcoStretch™ powered by Nano VpCI®: Compostable Stretch Film + Corrosion Protection!



The next release in our line of commercially compostable films this year was EcoStretch™ powered by Nano VpCI®, a commercially compostable* stretch film with the added feature of corrosion protection! This new stretch film is perfect for stretch-wrapping metal equipment or components that need to be kept rust-free while minimizing the environmental impact of traditional plastic packaging. With the increasing concern about environmental pollution and tightening restrictions on plastics use, EcoStretch™ is becoming available at a critical time when industries will be looking for new options that meet their packaging needs while improving their environmental footprint.

Learn more: https://www.cortecvci.com/whats_new/announcements/EcoStretch-PR-2020-03.pdf

**This product is intended to be composted in a commercial composting facility operated in accordance with best management practices. Check locally to see if such a facility exists in your community and if they will accept this product. Not suitable for backyard composting.*

VpCI®-330 Offers Highly Versatile Alternative to Common All-Purpose Rust Preventative

In March, we introduced a new rust preventative with excellent corrosion protection and improved user experience. VpCI®-330 is easy to spray onto metal using a handheld trigger spray bottle or common spray equipment. It leaves a light protective film that is detectable but does not alter the appearance of the metal surface, making it ideal for applications where removal is not feasible or not desirable before further processing or shipment. It shows excellent corrosion protection performance even after months of humidity chamber testing. VpCI®-330 is highly versatile and can be used practically anywhere a person would normally use WD-40®† for rust prevention.

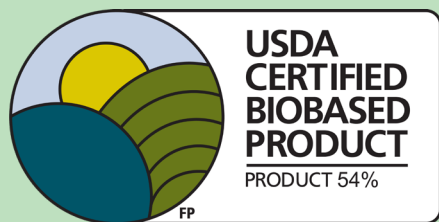
Learn more: https://www.cortecvci.com/whats_new/announcements/VpCI-330%20PR.pdf

Desicorr® NW VpCI® Pouches Available in New Sizes!

We are pleased to now be able to offer our unique Desicorr® NW VpCI® Pouches in larger sizes. These new Unit 4 and Unit 8 Desicorr® NW VpCI® Pouches provide dual desiccant/Vapor phase Corrosion Inhibitor action inside packages or voids up to 20 or 40 cubic feet (560 or 1120 L), respectively. This makes it much more practical to apply Desicorr® NW VpCI® Pouches to large voids rather than having to insert an excessive number of smaller pouches to achieve the same desiccant/VpCI® protection.

Learn more: https://www.cortecvci.com/whats_new/announcements/New-Desicorr-VpCI-Sizes-PR.pdf

Our Newest Generation of BioCorr® is Here!



BioCorr® HP is a new generation of BioCorr®, Cortec's time-tested water-based and biobased rust preventative designed to preserve metals in storage and during transportation. BioCorr® HP has excellent emulsion stability, contains no chemicals that interfere with automatic transmission fluids, provides multi-metal protection, and is an excellent environmentally sound alternative to petroleum-derived products due to its biobased content (contains 54% USDA certified biobased content). Unlike rust preventative oils, this product leaves a dry, virtually undetectable film on the metal surface. It uses a unique UV-marker technology for easier identification on the metal surface.

Learn more: <https://www.cortecvci.com/Publications/PDS/BioCorr-HP.pdf>

S-10 F Boiler Additive Earns USDA Certified Biobased Product Label

On April 15th, we received yet another label to add to our growing portfolio of USDA Certified Biobased Products! Our latest addition, S-10 F Boiler Additive, contains 82% USDA certified biobased content and is an excellent choice for fighting the corrosiveness of carbonic acid that forms from dissolved carbon dioxide in steam and condensate lines. Added directly to the steam or condensate lines as either a batch or continuous treatment during operation, S-10 F Boiler Additive forms a persistent film that makes it an excellent replacement for film forming amines. This film is resistant to oxidation, has a high salt tolerance, and is stable under a wide range of temperatures. As a leader in green chemistry initiatives, we are proud to be able to offer biobased options such as S-10 F to help federal agencies and their contractors meet minimum biobased content requirements and provide users in general with viable solutions derived from renewable materials.

Learn more: https://www.cortecvci.com/whats_new/announcements/S-10-F-Boiler-Additive-Biobased-NA-2021-05.pdf



VpCI®-330

DESCRIPTION

VpCI®-330 is a clear, ready-to-use low-viscosity rust preventative. It provides excellent protection to metals in indoor and outdoor, sheltered conditions. The product leaves a thin, transparent film, great for metal parts that require an almost invisible coat of oil for further processing and/or shipment (e.g., gears, spindles, coils, or any other metal part that should be protected but for which subsequent oil removal is not feasible or desirable).

PACKAGING & STORAGE

VpCI®-330 is packaged in 5 gallon (19 L) plastic pails, 55 gallon (208 L) metal drums, liquid totes, and bulk.

To ensure best product performance, store in original packaging, indoors, and out of direct sunlight at 40-100 °F (4-38 °C).

Shelf life: 2 years

VpCI® METALWORKING PRODUCTS



FEATURES

- Non-flammable
- Clear and homogeneous (from at least 40 to 140 °F [4 to 60 °C])
- Contains no chromates, nitrites, phosphates, secondary amines, or OSHA hazardous components

BENEFITS

- Provides universal corrosion protection to ferrous metals and is compatible with yellow metals
- Performs effectively even under the adverse conditions of 100% relative humidity and in the presence of corrosive species such as chlorides
- Easily sprayed using a handheld trigger spray bottle or common spray equipment

APPLICATION

VpCI®-330 can be sprayed, dipped, rolled, or brushed onto metal surfaces. A handheld trigger spray bottle works well for easy application.

†WD-40® is a registered trademark of WD-40 Company.

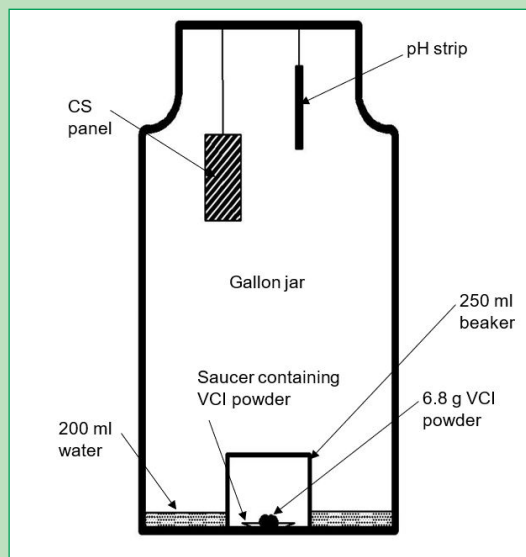
LABORATORY TESTING

Four Year Efficacy Testing of VpCI® Powder

We were recently able to release the results of more than four years of efficacy testing performed in our lab from February 2016 to November 2020. This was done to answer periodic questions coming from potential customers asking for proof that VpCI® powder will protect long-term or whether it will lose efficacy under constant humidity or turn acidic over time.

Our lab took VpCI®-609 and VmCI 307® powders and evaluated each in an enclosed humid environment at 104 °F (40 °C) for the first three years and at room temperature from February 2019 to November 2020. At the end of the test, the lab concluded that both powders demonstrated ability to provide corrosion protection to carbon steel for over four years in an enclosed high humidity environment.

Read more here: <https://www.cortecvci.com/wp-content/uploads/Four-Year-Efficacy-Test-of-VCI-Powder-NA.pdf>



New Thermal Chamber Expands Laboratory Temperature Cycling Test Capabilities



Early in 2021, we added a new thermal chamber to our analytical lab. This temperature cycling chamber has a temperature range of -90.4 to 356 °F (-68 to 180 °C), allowing it to perform freeze-thaw testing and simulate other extreme temperature scenarios. It recently came in handy to test the structural integrity of our product pouch seals when exposed to low temperatures. The chamber will be a valuable tool to perform extended testing with temperature cycling to simulate seasonal changes as needed in the future.

At left: Tenney Junior Compact Temperature Test Chamber for freeze-thaw cycling and extreme temperature testing. Tenney.com.

Laboratory Compost Disintegration Studies

With our increased emphasis on commercially compostable films development, our lab has conducted a number of disintegration tests in our in-house composting chamber. The goal was to see whether the films tested would meet the ASTM D6400 compost disintegration requirement aspect by leaving behind no more than 10% of its original dry weight (after filtering) after 12 weeks. The test found two films to meet this requirement in seven weeks and two to meet it in 10 weeks.

Read more about the study and see pictures here: <https://www.cortecvci.com/whats-new/announcements/Compost-Disintegration-Studies-NA.pdf>



Results

Composting Results Summary


Films	Weeks to meet the compostable disintegration criteria (residues <10% original film mass, ASTM D6400)	Weeks to total disintegration (no observable film fragments)
Eco-Corr Film® 10	7 weeks	8 weeks
Eco-Corr Film® 30	7 weeks	8 weeks
Eco Wrap®	10 weeks	11 weeks
Eco-Corr Film® ESD	10 weeks	11 weeks

Progress in Film Disintegration

Eco-Corr Film® 10

Day 1
Week 3



CORTEC CORPORATION
Environmentally Safe VpCI®/MCI® Technologies

