MICRO-CORROSION INHIBITING COATINGS™
POWERED BY NANO VpCI®
Cortec® VpCI® Coatings Solve A Wide Variety Of Corrosion Problems

VpCI® Coatings protect a multitude of metal products. Applying VpCI® Coatings provides fast and economical protection for exterior and interior surfaces. Our technical staff can help you decide which product you need for long lasting and complete protection of your corrosion sensitive products.

Productivity, Investment Protection, And Cost Reduction

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 repainted, reprocessed, or scrapped due to corrosive attack while in the plant or in the field. This leads to lost productivity. The high cost of corrosion also includes rust claims and freight costs for returned goods.
The Industrial-Strength Edge In Safe VpCI® Corrosion Protection

Whether it’s sea or land, Cortec® industrial-strength coatings withstand some of the harshest environments and climates. Cortec® offers a broad range of high-quality, innovative, environmentally safe coatings. Our goal is to provide you with the highest technical and intelligent solutions to protect your assets. Our performance is reliable globally, and our products provide excellent adhesion to substrates and exceptional resistance for reduced environmental impact.

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, self-replenishes, and can be combined with other functional properties for added protective capabilities. VpCI® forms a physical bond on the metal surface creating a barrier layer against aggressive ions.

How VpCI® Works

• Vaporizes
• Conditions enclosed atmosphere with a protective vapor.
• Vapor condenses on all metal surfaces.
• Ions dissolve in moisture layer (water electrolyte).
• Protective ions are attracted to metal surfaces.
• Ions form a thin molecular protective layer at the metal surface.
• Protective layer re-heals and self-replenishes through further condensation of the vapor.
• VpCI® combines with other functional properties. Antistatic, Lubricating, Cleaning, Paint Removing, Desiccant, Polymeric, Coatings, Rust Removing, Fire Retarding.

Traditional Coatings vs. Cortec® Micro-Corrosion Inhibiting Coatings™ With Nano VpCl®

Traditional coatings rely on sacrificial metals (zinc, chromates, aluminum) for inhibition. Due to the large particle size of these inhibitors, gaps exist which allow corrosion to start and eventually expand, causing coating failure.

Cortec® Nano VpCI® coatings use the patented VpCI® technology to protect the metal substrate with a tight bonding molecular structure. This system eliminates the gaps which occur with traditional inhibitors and prevent corrosion from starting.
Choosing The Correct Coating

- Type of protection needed (short term, long term)
- Type of metal to protect
- Type of exposure (indoor, outdoor)
- How it will be applied (spray, dip, brush)
- What are the application parameters
- Cost parameters

### One Component Primers

<table>
<thead>
<tr>
<th>System Type</th>
<th>1K System</th>
<th>VpCI®-375</th>
<th>VpCI®-386</th>
<th>VpCI®-396</th>
<th>CorrVerter™</th>
<th>EcoShield® 386</th>
<th>EcoPrimer™</th>
<th>CorrBarrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Solvent</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
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<tr>
<td>Exterior Durability</td>
<td>Poor</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Poor</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>Chemical Resistance</td>
<td>Poor</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
<td>Very Good</td>
<td>Fair</td>
<td>Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>Direct To Metal (DTM)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>72 hrs</td>
<td>750 hrs+</td>
<td>168 hrs</td>
<td>750 hrs+</td>
<td>500 hrs</td>
<td>1000 hrs</td>
<td>200 hrs</td>
<td>500 hrs</td>
</tr>
<tr>
<td>VOC</td>
<td>0.6 lbs/gal (72 g/l)</td>
<td>0.7 lbs/gal (84 g/l)</td>
<td>0.6 lbs/gal (72 g/l)</td>
<td>3.1 lbs/gal (371 g/l)</td>
<td>0.1 lbs/gal (12 g/l)</td>
<td>0.61 lbs/gal (68 g/l)</td>
<td>0.1 lbs/gal (12 g/l)</td>
<td>0.2 lbs/gal (24 g/l)</td>
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<tr>
<td>Solids</td>
<td>30.90%</td>
<td>39%</td>
<td>31%</td>
<td>56.20%</td>
<td>34.50%</td>
<td>31%</td>
<td>41.70%</td>
<td>44.30%</td>
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<tr>
<td>Recommended DFT</td>
<td>0.5-1.0 mils (12.5-25 um)</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>2.0-3.0 mils (50-75um)</td>
<td>3.0-5.0 mils (75-125um)</td>
<td>1.5-3.0 mils (37.5-125um)</td>
<td>1.5-4.0 mils (37.5-100um)</td>
<td>2.0-3.0 mils (50-75um)</td>
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<tr>
<td>Dry To Touch</td>
<td>20 min</td>
<td>20 min</td>
<td>30 min</td>
<td>2-3 hrs</td>
<td>2-3 hrs</td>
<td>30 min</td>
<td>20-30 min</td>
<td>20-30 min</td>
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*VpCI®-386 Clear - colors will have less hrs SS

### One Component Topcoats

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>System Type</td>
<td>Water</td>
<td>Solvent</td>
<td>Solvent</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
<td>Solvent</td>
</tr>
<tr>
<td>Resin</td>
<td>Acrylic</td>
<td>Alkyd</td>
<td>Silicone</td>
<td>Acrylic</td>
<td>Fluropolymer</td>
<td>Urethane/</td>
<td>Acrylic</td>
<td>Acrylic</td>
<td>Acrylic</td>
<td>Acrylic</td>
<td>Sulphonate</td>
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<tr>
<td>Exterior Durability</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>Chemical Resistance</td>
<td>Fair</td>
<td>Poor</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>Very Good</td>
<td></td>
</tr>
<tr>
<td>Direct To Metal (DTM)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>1000 hrs</td>
<td>336 hrs</td>
<td>600 hrs</td>
<td>750 hrs+</td>
<td>1000 hrs+</td>
<td>168 hrs</td>
<td>168 hrs</td>
<td>500 hrs</td>
<td>500 hrs</td>
<td>200 hrs+</td>
<td>2000 hrs+</td>
</tr>
<tr>
<td>Gloss</td>
<td>80+</td>
<td>80+</td>
<td>30-50</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
</tr>
<tr>
<td>VOC</td>
<td>0.61 lbs/gal (68 g/l)</td>
<td>2.8 lbs/gal (336 g/l)</td>
<td>3.3 lbs/gal (395 g/l)</td>
<td>0.7 lbs/gal (84 g/l)</td>
<td>1.6 lbs/gal (192 g/l)</td>
<td>0.29 lbs/gal (35 g/l)</td>
<td>0.6 lbs/gal (72 g/l)</td>
<td>0.6 lbs/gal (72 g/l)</td>
<td>0.8 lbs/gal (95 g/l)</td>
<td>1.12 lbs/gal (134 g/l)</td>
<td>1.1 lbs/gal (132 g/l)</td>
</tr>
<tr>
<td>Solids</td>
<td>31%</td>
<td>54-57%</td>
<td>37.10%</td>
<td>39%</td>
<td>33.90%</td>
<td>33.70%</td>
<td>12%</td>
<td>31%</td>
<td>30.90%</td>
<td>26.20%</td>
<td>34.10%</td>
</tr>
<tr>
<td>Recommended DFT</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>1.0-2.0 mils (25-75um)</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>3.0-5.0 mils (75-125um)</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>4-1.2 mils (10-30um)</td>
<td>1.5-3.0 mils (37.5-125um)</td>
<td>3.0-5.0 mils (75-125um)</td>
<td>1.5-2.0 mils (37.5-50um)</td>
<td>1.0-2.0 mils (25-50um)</td>
<td>4.0-5.0 mils (100-125um)</td>
</tr>
<tr>
<td>Dry To Touch</td>
<td>30 min</td>
<td>30 min</td>
<td>20 min</td>
<td>20 min</td>
<td>30 min</td>
<td>20-30 min</td>
<td>30 min</td>
<td>30 min</td>
<td>1 hr</td>
<td>1-2 hrs</td>
<td>30-40 min</td>
</tr>
</tbody>
</table>

### Cortec® Pre-Treatment

Typical 5 Stage System

- **Alkaline Wash**
  - VpCI®-405-419 Series
  - Acid Wash
  - VpCI®-422-427 Series

- **Rinse**

- **Alkaline Wash**
  - VpCI®-405-419 Series
  - Acid Wash
  - VpCI®-422-427 Series

- **Rinse**

- **Adhesion Promoter**
  - VpCI®-440
## Two Component Topcoats

<table>
<thead>
<tr>
<th>System Type</th>
<th>VpCI®-382</th>
<th>VpCI®-384</th>
<th>VpCI®-2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>Water</td>
<td>Solvent</td>
<td>100% Solids</td>
</tr>
<tr>
<td>Exterior Durability</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Very Good</td>
</tr>
<tr>
<td>Chemical Resistance</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Excellent</td>
</tr>
<tr>
<td>Direct To Metal (DTM)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>1000 hrs +</td>
<td>500 hrs +</td>
<td>500 hrs +</td>
</tr>
<tr>
<td>Gloss</td>
<td>80+</td>
<td>80+</td>
<td>80+</td>
</tr>
<tr>
<td>VOC</td>
<td>0.02 lbs/gal (2.4 g/l)</td>
<td>3.5 lbs/gal (419 g/l)</td>
<td>0.1 lbs/gal (12 g/l)</td>
</tr>
<tr>
<td>Solids</td>
<td>67.90%</td>
<td>50-55%</td>
<td>100%</td>
</tr>
<tr>
<td>Recommended DFT</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>1.5-3.0 mils (37.5-75um)</td>
<td>11.0-13.0 mils (275-325um)</td>
</tr>
<tr>
<td>Pot Life</td>
<td>2-3 hours</td>
<td>2-3 hours</td>
<td>20-25 minutes</td>
</tr>
<tr>
<td>Dry To Touch</td>
<td>2.5-3 hrs</td>
<td>.5-2 hrs</td>
<td>30 min</td>
</tr>
</tbody>
</table>

### VpCI®-382
- **System Type**: Water
- **Resin**: Urethane
- **Exterior Durability**: Very Good
- **Chemical Resistance**: Very Good
- **Direct To Metal (DTM)**: No
- **VOC**: 0.02 lbs/gal (2.4 g/l)
- **Solids**: 67.90%
- **Recommended DFT**: 1.5-3.0 mils (37.5-75um)
- **Pot Life**: 2-3 hours
- **Dry To Touch**: 2.5-3 hrs

### VpCI®-384
- **System Type**: Solvent
- **Resin**: Urethane
- **Exterior Durability**: Very Good
- **Chemical Resistance**: Very Good
- **Direct To Metal (DTM)**: No
- **VOC**: 3.5 lbs/gal (419 g/l)
- **Solids**: 50-55%
- **Recommended DFT**: 1.5-3.0 mils (37.5-75um)
- **Pot Life**: 2-3 hours
- **Dry To Touch**: .5-2 hrs

### VpCI®-2026
- **System Type**: 100% Solids
- **Resin**: Novolac Epoxy
- **Exterior Durability**: Very Good
- **Chemical Resistance**: Excellent
- **Direct To Metal (DTM)**: Yes
- **VOC**: 0.1 lbs/gal (12 g/l)
- **Solids**: 100%
- **Recommended DFT**: 11.0-13.0 mils (275-325um)
- **Pot Life**: 20-25 minutes
- **Dry To Touch**: 30 min
Removable Coatings

Cortec’s removable coatings deliver exceptional multimetal protection for outside applications and salt-spray resistance. These removable coatings are an advanced, safe replacement for hazardous oil-based products. They are an excellent choice for long-term indoor protection that lasts up to 5 years and short to medium-term (6-24 months) unsheltered outdoor protection.

These completely safe and easy to use coatings cure to a soft film and eventually harden. They are very efficient in \( \text{SO}_2 \) and \( \text{H}_2\text{S} \) environments. The products leave a translucent, waxy coating that are easily removable, and are low in VOC’s. Cortec’s removable coatings can be easily removed with alkaline cleaners, such as Cortec’s VpCI®-414. Metals protected are: aluminum, steel, cast iron, copper alloy and tin plated steel.

Cortec’s removable coatings are the best solution on the market for applications such as equipment lay-up, parts processing protection, overseas shipping, maintenance repairs, and parts storage. Traditional coatings rely on sacrificial metals (zinc, chromates, and aluminum) for inhibition. Due to the large particle size of these inhibitors, gaps exist which allow corrosion to start and eventually expand, causing coating failure.

Cortec’s removable coatings use the patented VpCI® technology to protect the metal substrate with a tight bonding molecular structure. This system eliminates the gaps which occur with traditional inhibitors and prevents corrosion from starting. With environmentally safe VpCI® technology, the equipment and products will get superior corrosion protection.

Typical Applications

- Equipment lay-up
- Parts processing protection
- Overseas shipping
- Maintenance repairs
- Parts storage

<table>
<thead>
<tr>
<th>System Type</th>
<th>VpCI®-368</th>
<th>VpCI®-369</th>
<th>VpCI®-372</th>
<th>VpCI®-388</th>
<th>VpCI®-389</th>
<th>VpCI®-391</th>
<th>CorShield®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Durability</td>
<td>Very Good</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Very Good</td>
<td>Very Good</td>
<td>Good</td>
</tr>
<tr>
<td>Salt Spray</td>
<td>1500 hrs</td>
<td>3500+ hrs</td>
<td>168 hrs</td>
<td>100 hrs</td>
<td>600 hrs</td>
<td>250+ hrs</td>
<td>100 hrs</td>
</tr>
<tr>
<td>VOC</td>
<td>2.9 lbs/gal (347 g/l)</td>
<td>0.0 lbs/gal (0 g/l)</td>
<td>0.2 lbs/gal (24 g/l)</td>
<td>0.2 lbs/gal (24 g/l)</td>
<td>0.1 lbs/gal (12 g/l)</td>
<td>0.4 lbs/gal (48 g/l)</td>
<td>0.0 lbs/gal (0 g/l)</td>
</tr>
<tr>
<td>Solids</td>
<td>52.30%</td>
<td>99%</td>
<td>33%</td>
<td>26.70%</td>
<td>37.10%</td>
<td>34.40%</td>
<td>10-20%</td>
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<tr>
<td>Recommended DFT</td>
<td>2.0-3.0 mils (50-75 um)</td>
<td>1.0-3.0 mils (25-75um)</td>
<td>2.0-10.0 mils (50-250 um)</td>
<td>2.0-3.0 mils (50-75um)</td>
<td>1.0-2.0 mils (25-50 um)</td>
<td>1.0-3.0 mils (25-75 um)</td>
<td>0.5-1.0 mils (12.5-25 um)</td>
</tr>
<tr>
<td>Dry To Touch</td>
<td>30 min</td>
<td>na</td>
<td>1-2 hrs</td>
<td>20-30 min</td>
<td>10-60 min</td>
<td>30-60 min</td>
<td>30 min</td>
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</table>

VpCI®-368M is:
- Qualified to MIL-PRF-16173E (Grades 1)
- NSN 8030-01-430-4898
- QPL 4620-1535(1)

VpCI®-369M is:
- Qualified to MIL-PRF-16173E (Grade 2)
- Listed QPL 4260-1535 (Grade 2)
- NSN 8030-00-244-1298
- NSN 8030-01-149-1731
Cortec® Coatings Provide Permanent Protection For Field Service, Anti-Corrosive Maintenance, And OEM Applications

Cortec® can match 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. Cortec® products also have excellent 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.

Before
Right: The customer required long term protection of metal pillars used in electrical transmission lines. Sand blasting and water blasting were prohibited from being done on this project. Additionally, the customer required an easy to apply, cost effective, and environmentally friendly solution.

Courtesy Cortecros Ltd.
Products: CorrVerter® and VpCI®-386 Aluminum
Location: Croatia

After
Products: VpCI® CorrVerter® & VpCI®- 396
Cortec® Corporation

Quality Management System (ISO 9001 Certified)

World Class Product Offerings
An innovative producer of leading edge products.

World Class Customer Service
A positive, long-lasting impression through every link of our company.

World Class Environmental Commitment
Cortec® commits to continued development of processes and products that are useful, non-hazardous to the environment, and recyclable whenever possible.

An Ethical and Respectful Company Culture
Respect and treat our colleagues, customers, and vendors as we would our own family members.

Environmental Management System
(ISO 14001 Certified)

Cortec’s strong environmental concern is demonstrated in the design and manufacturing of products that protect materials of all kinds from environmental degradation. A strong commitment to produce recyclable products made from sustainable resources has been and will be our future policy. This brochure can be recycled.

Laboratory Accreditation (ISO/IEC 17025)

Cortec® Laboratories, Inc. is the only lab in our industry that has received ISO/IEC 17025 Certification, which ensures quality in recording and reporting data, as well as calibrating equipment within the laboratory.

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.

Cortec® Corporation shall have no liability for any injury, loss or damage arising out of the use of or the inability to use the products.

BEFORE USING, USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR ITS INTENDED USE, AND USER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH.

No representation or recommendation not contained herein shall have any force or effect unless in a written document signed by an officer of Cortec® Corporation.

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