COR-COTE® VEN GF
GRAPHITE FILLED VINYL ESTER

Product Description

COR-COTE VEN GF Graphite Filled Vinyl Ester is a multifunctional epoxy novolac based vinyl ester. It provides resistance to many aromatic and aliphatic solvents, organic and mineral acids, and excellent resistance to thermal degradation. It employs laminar graphite fillers in place of silica based fillers for applications where exposure to hydrofluoric or hydrofluosilicic acids are encountered.

- Excellent chemical resistance
- Provides conductivity
- Chlorine and chlorine dioxide resistant
- High temperature resistance
- Graphite fillers are resistant to halogenated acids

Product Characteristics

Finish: Matte
Color: Charcoal Gray

Volume Solids: 100% Reactive

Note: Cor-Cote VEN GF is a reactive material, however some shrinkage will occur in application due to styrene evaporation as well as normal spray losses. Resulting practical volume solids will be approximately 80%.

VOC (calculated): <100 g/L; .84 lbs/gal

Mix Ratio: Use CHP catalyst at the rate of 2.0 - 4.0 fluid oz. per gallon of Part A, depending on environmental conditions.

Recommended Spreading Rate per coat:

<table>
<thead>
<tr>
<th>Wet mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.0 (500)</td>
<td>25.0 (625)</td>
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</table>

<table>
<thead>
<tr>
<th>Dry mils (microns)</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.0 (375)</td>
<td>20.0 (500)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>~Coverage sq ft/gal (m²/L)</th>
<th>Minimum</th>
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<tbody>
<tr>
<td>64 (1.6)</td>
<td>80 (2.0)</td>
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</tbody>
</table>

| Theoretical coverage sq ft/gal (m²/L) @ 1 mil / 25 microns dft | 1600 (39.2) |

Recommended Uses

Cor-Cote VEN GF Graphite Filled Vinyl Ester is used as a coating/lining and as a topcoat for self-leveling, mortar, and mortar laminate applications.

Protects concrete and steel in immersion and atmospheric exposure in tank linings, secondary containment, and process flooring applications in various facilities including:

- Automotive
- Chemical processing
- Electronics
- Food & beverage
- Metal & mining
- Pharmaceutical
- Power
- Pulp & paper
- Water & wastewater
- Acceptable for use in sodium hypochlorite up to 16% concentration.

Recommended uses:

Cor-Cote VEN GF Graphite Filled Vinyl Ester is used in special applications where conductivity is needed or where exposure to acids that will attack silica-based fillers is expected (i.e., hydrofluoric acid or hydrofluosilicic acid).

Performance Characteristics

Test Name | Test Method | Results
---|---|---
Adhesion | ASTM D4541 | Concrete - 350 psi; Steel - 2000 psi
Durometer Hardness | ASTM D2240 | Shore D - 70
Flexural Strength | ASTM D790 | 5,000 psi
Surface Electrical Resistance, Conductivity | NFPA99/ASTM F150, ESD-S7.1 | 25,000 - 1,000,000 ohms
Tensile Strength | ASTM D638 | 3,000 psi
Water Vapor Transmission Rate | ASTM E96 | 0.0016 perm in

Drying Schedule @ 20.0 mils wet (500 microns):

<table>
<thead>
<tr>
<th>@ 60°F/16°C</th>
<th>@ 73°F/23°C</th>
<th>@ 90°F/32°C</th>
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<tbody>
<tr>
<td>50% RH</td>
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</table>

To touch: 16 hours
To recoat: minimum: 12 hours; maximum*: 4 days
To cure: 48 hours
*If uncertain, test by rubbing surface with styrene. If surface does not become tacky, surface must be lightly blasted or sanded prior to recoating.

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Pot Life: 30-60 minutes
Sweat-in-time: Not required

Shelf Life: 3 months, unopened

Store indoors at 40°F (4.5°C) to 100°F (38°C).

Viscosity: 4,000 cps

Flash Point (PMCC): 82°F (27°C)

Reduction: Not recommended

Clean Up: MEK, R6K10

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**PRODUCT INFORMATION**

**RECOMMENDED SYSTEMS**

<table>
<thead>
<tr>
<th>Steel (coating, lining):</th>
<th>Medium Film Lining</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 ct. Corbond Vinyl Ester Primer</td>
<td>2.0-3.0 (50-75)</td>
</tr>
<tr>
<td>1 ct. Poly-Glass Putty as required for filling pits and transitioning sharp edges, weld seams, etc.</td>
<td></td>
</tr>
<tr>
<td>1 ct. Cor-Cote VEN GF</td>
<td>15.0-20.0 (375-500)</td>
</tr>
<tr>
<td>1 ct. Cor-Cote VEN GF with Wax Solution</td>
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</tbody>
</table>

**Concrete (lining, containment, flooring):**

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<thead>
<tr>
<th>Medium Film Lining</th>
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</thead>
<tbody>
<tr>
<td>1 ct. Corbond Vinyl Ester Primer</td>
</tr>
<tr>
<td>1 ct. Poly-Glass Putty as required for filling voids and bugholes to provide a continuous substrate.</td>
</tr>
<tr>
<td>1 ct. Cor-Cote VEN GF</td>
</tr>
<tr>
<td>1 ct. Cor-Cote VEN GF with Wax Solution</td>
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</tbody>
</table>

**Concrete (conductive lining, containment, flooring):**

<table>
<thead>
<tr>
<th>Medium Film Lining</th>
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</thead>
<tbody>
<tr>
<td>1 ct. Corbond ConductiveVinyl Ester Primer 3.5-4.5 (88-112)</td>
</tr>
<tr>
<td>1 ct. Poly-Glass Putty as required for filling voids and bugholes to provide a continuous substrate.</td>
</tr>
<tr>
<td>1 ct. Cor-Cote VEN GF</td>
</tr>
<tr>
<td>1 ct. Cor-Cote VEN GF with Wax Solution</td>
</tr>
</tbody>
</table>

The systems listed above are representative of the product’s use, other systems may be appropriate.

**SURFACE PREPARATION**

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Referring to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:
- **Iron & Steel:** Atmospheric SSPC-SP6/NACE 3, 2 mil (50 micron) profile
- **Immersion:** SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile

Concrete & Masonry:
- **Atmospheric:** SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 3-5
- **Immersion:** SSPC-SP13/NACE 6-4.3.1 or 4.3.2 or ICRI No. 310.2R, CSP 3-5

<table>
<thead>
<tr>
<th>Surface Preparation Standards</th>
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</thead>
<tbody>
<tr>
<td>Condtion of Surface</td>
</tr>
<tr>
<td>White Metal</td>
</tr>
<tr>
<td>Near White Metal</td>
</tr>
<tr>
<td>Commercial Blast</td>
</tr>
<tr>
<td>Brush-Off Blast</td>
</tr>
<tr>
<td>Hand Tool Cleaning</td>
</tr>
<tr>
<td>Power Tool Cleaning</td>
</tr>
</tbody>
</table>

**TINTING**

Do not tint.

**APPLICATION CONDITIONS**

- Temperature: 50°F (10°C) minimum, 90°F (32°C) maximum
- Relative humidity: 85% maximum

Referring to product Application Bulletin for detailed application information.

**ORDERING INFORMATION**

- **Packaging:**
  - Part A: 1 gallon (3.78L) and 5 gallons (18.9L)
  - Part B: 1 gallon (3.78L)

**SAFETY PRECAUTIONS**

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

**WARRANTY**

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANDISABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel (immersion service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Remove all weld spatter and round all sharp edges. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Iron & Steel (atmospheric service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2R, CSP 3-5. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910. Primer required. If surface deterioration presents an unacceptably rough surface, prime with Corobond Vinyl Ester Primer. Patch and resurface with Poly-Glass Putty. Fill all cracks, voids and bugholes with Poly-Glass Putty (over Corobond Vinyl Ester Primer).

Follow the standard methods listed below when applicable:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI No. 310.2R Concrete Surface Preparation.

Concrete, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 1.3.2 or ICRI No. 310.2R, CSP 3-5.
**Application Bulletin**

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**Application Procedures**

Surface preparation must be completed as indicated.

For detailed installation instructions, refer to the Installation Procedures for the respective system type in the ControlTech Technical Resource Manual.

**Mixing Instructions:** Premix Part A component separately, using a low-speed drill and Jiffy Blade model ES mixer. Make certain no pigment or graphite flake remains on the bottom or sides of the can. Use CHP catalyst at the rate of 2.0 - 4.0 fluid oz. per gallon (3.78L) of Part A, depending on environmental conditions. Mix with low-speed drill and Jiffy Blade model ES mixer for three minutes and until uniform.

**For topcoat only:**

Add 970-C-949 Wax Solution at the rate of 3 - 4 oz per gallon (3.78L) of Part A to obtain a completely tack free surface. Add wax solution before adding catalyst. If wax solution is cloudy, it will clear with gentle warming. DO NOT USE FLAME TO HEAT THE WAX SOLUTION.

Apply paint at the recommended film thickness and spreading rate as indicated below:

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<td>Wet mils (microns)</td>
<td>20.0 (500)</td>
<td>25.0 (625)</td>
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<tr>
<td>Dry mils (microns)</td>
<td>15.0 (375)</td>
<td>20.0 (500)</td>
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<td>~Coverage sq ft/gal (m²/L)</td>
<td>64 (1.6)</td>
<td>80 (2.0)</td>
</tr>
<tr>
<td>Theoretical coverage sq ft/gal (m²/L)</td>
<td>1600</td>
<td>39.2</td>
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**Drying Schedule @ 20.0 mils wet (500 microns):**

- @ 60°F/16°C @ 73°F/23°C @ 90°F/32°C 50% RH
- To touch: 16 hours 6 hours 3 hours
- To recoat: minimum: 12 hours 3 hours 2 hours
  maximum*: 4 days 72 hours 48 hours
  To cure: 48 hours 24 hours 16 hours

*If uncertain, test by rubbing surface with styrene. If surface does not become tacky, surface must be lightly blasted or sanded prior to recoating.

**If maximum recoat time is exceeded, abrade surface before recoating.**

**Drying time is temperature, humidity, and film thickness dependent.**

**Pot Life:** 30-60 minutes

**Sweat-in-time:** Not required

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

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**Clean Up Instructions**

Clean spills and splatters immediately with MEK, R6K10. Clean tools immediately after use with MEK, R6K10. Follow manufacturer's safety recommendations when using any solvent.

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**Disclaimer**

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

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**Performance Tips**

For concrete, always perform Calcium Chloride test as per ASTM F1869. Do not proceed with MVE > 3 lbs.

For steel, stripe coat all chine, welds, bolted connections, and sharp angles to prevent early failure in these areas.

Pot life of this material is short. Working time can be extended by mixing small batches and by getting material out of mixing containers and on to the working surface in desired film thickness as quickly as possible.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

For immersion applications: Holiday test prior to application of Cor-Cote VEN GF in accordance with ASTM D5162 for steel or ASTM D4787 for concrete. Cor-Cote VEN GF is conductive and can not be spark tested. Set voltage in accordance with the manufacturer's recommendation. Repair holidays found prior to application of final coat.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle. In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with MEK, R6K10.

Store in a temperature controlled environment, 50°F (10°C) to 80°F (26°C), and out of direct sunlight. Keep resins, catalysts, and solvents separated from each other and away from sources of ignition.

Do not apply material beyond recommended pot life.

Do not mix previously catalyzed material with new.

Consult your Sherwin-Williams representative for specific application and performance recommendations.

Refer to Product Information sheet for additional performance characteristics and properties.

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**Safety Precautions**

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**Application Bulletin**

**TRM.49**

**Revised April 27, 2016**

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