



• 4119 White Bear Parkway, St. Paul, MN 55110 USA
• Phone: (651) 429-1100, Fax: (651) 429-1122
• Toll Free: (800) 4-CORTEC, E-mail: info@corotecvci.com
corotecvci.com • corteclaboratories.com

Evaluating Rust Preventive Options for Parts

From: Cortec Corporation Laboratories
4119 White Bear Parkway
St. Paul, MN 55110

cc: Boris Miksic
Anna Vignetti
Cliff Cracauer
Mike Morin

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Test conducted by:

Eric Uutala
Technical Service Engineer

Approved by:

Margarita Kharshan
Laboratory Director

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Background: Customer would like Cortec to evaluate both liquid and packaging options on supplied parts. Part of this test requires compatibility testing be performed between VpCI-126 film and two process fluids currently used by customer. Accelerated corrosion testing will also be performed on these fluids, compared to Cortec alternatives.

Sample Received: Perkins Perkote 30-266-DG, Lot # 0H012 (clear plastic container)
FUCHS Anticorit SV 50233 X-BLK (metal pint can, unlabeled)

Method: ASTM D-1748 Humidity Cabinet
Standardized Compatibility Test (Modified)

Materials: Perkins Perkote 30-266-DG
FUCHS Anticorit SV 50233 X-BLK
VpCI-126 Blue Film bags (4"x6" heat seal)
VpCI-377
BioCorr
1010 cold rolled carbon steel test panels (3"x5")
Laboratory grade methanol

Procedure: The following procedure was used:

Modified Compatibility Test

- 1) Two carbon steel test panels were cleaned with methanol prior to testing.
- 2) After cleaning, one panel was dipped in Perkote product, the second was dipped in Anticorit product.
 - a. Both products were used as received.
- 3) Both panels were immediately placed in VpCI-126 Blue Film bags, which were heat sealed.
- 4) After packaging, both panels were placed in 40°C oven for 16 hours.
 - a. After 16 hours, each panel was removed and visually inspected.
- 5) The panels were then placed in a 2°C refrigerator for 8 hours.
 - a. Each panel was removed and visually inspected.
- 6) Steps 3 and 4 constitute one cycle and testing was run for 5 cycles.
- 7) After 5 cycles, panels were kept wrapped in ambient conditions for the duration of humidity cabinet testing.
- 8) Panels were then unwrapped, visually inspected, and photographed.

ASTM D-1748 Humidity Cabinet

- 1) Five carbon steel test panels were cleaned with methanol prior to testing.
- 2) After cleaning, panels were prepared as follows:
 - a. No further preparation (control).
 - b. Dipped in Perkote 30-266-DG
 - c. Dipped in Anticorit SV 50233 X-BLK
 - d. Dipped in BioCorr
 - e. Dipped in VpCI-377 (used at 7% concentration in deionized water)
- 3) After dipping, all panels were hung to dry overnight.
- 4) Panels were then hung in ASTM D-1748 humidity cabinet.
- 5) Panels were visually inspected periodically.
- 6) After 500 hours, all panels were removed from ASTM D-1748 humidity cabinet.
- 7) Panels were visually inspected and photographed.

Results:

The following results were found:

- 1) Standardized compatibility results will be discussed in the ‘Interpretations’ section below.

ASTM D-1748 Humidity Cabinet

Rust Preventive	Time to Failure (Hours)
None (control)	<24
Perkote 30-266-DG	<96
Anticorit SV 50233 X-BLK	<96
BioCorr	DNF*
VpCI-377 (7%)	DNF*

DNF – Did not fail during 500 hours of humidity cabinet testing.

Photos:





Interpretations:

Compatibility testing showed no negative interactions between VpCI-126 Blue Film and rust preventives currently used by customer.

Accelerated corrosion testing showed significantly better protection is given by two Cortec products; BioCorr and VpCI-377. Both products are water based and leave dry surfaces after application.