CORTEC Laboratories, Inc.
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@cortecvci.com
cortecvci.com • corteclaboratories.com

Humidity Testing of BioCorr and VpCI-377 Versus Competitive RP Products

To: Customer

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

cc: Boris Miksic
Cliff Cracauer
Robert Kean

Project #: 15-289-1825

Results reported by:

Brian Benduha
Lab Technician

Approved by:

Eric Uutala
Technical Service Manager

Background: Customer. has submitted small metal parts along with three rust preventative products for humidity testing. They would like these products tested (diluted to 10% concentration) and compared to BioCorr and VpCI-377 (diluted to 5% concentration).

Samples Received: The following samples were received on 12-21-15 in good condition:

1) RP526P (manufactured by Advanced Fluid Technologies)
2) Protech 1650 (manufactured by Chemetall)
3) Protech 1999 LCMS (manufactured by Chemetall)
4) Small metal parts (20 parts total)

Method: ASTM D1748, Humidity Testing

*Cortec Laboratories, Inc. is not ISO/IEC 17025 accredited for the test(s) marked.

Materials: VpCI-377 (batch #07625)
BioCorr (batch #20165)
Methanol, ACS grade (lot #090415C)
Plain polyethylene film, 2mil
Impulse heat sealer

Procedure: The following procedure was followed for the humidity testing:

1) The submitted metal parts were first cleaned with methanol, and then dried.
2) Prepare the solutions for testing (note – solutions were made with water, by weight, not by volume).
3) Dip the parts in the solutions (3 parts per solution) to be tested and allow to air dry overnight.
4) Seal the parts in 2-mil plain polyethylene film and then hang in the humidity chamber until failure. Time to failure was determined by the first appearance of corrosion.
5) After 480 hours, the parts were taken out of the chamber and photographed.

Results: The following results were found for the humidity testing:

Submitted parts treated with:	Time to failure
Not treated (control)	24 hours
BioCorr	140 hours
5% VpCI-377	480 hours
10% RP526P	140 hours
10% Protech 1650	190 hours
10% Protech 1999 LCMS	310 hours

Interpretations: According to the results of the humidity testing, VpCI-377 at 5% concentration was shown to provide the best corrosion protection for the machined parts from the customer.

Photos after 480 hours of Humidity Testing

Not treated (control)

Treated with BioCorr

Treated with 5% VpCI-377

Treated with 10% RP526P

Treated with 10% Protech 1650

Treated with 10% Protech 1999 LCMS