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

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Evaluating Packaging Systems

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

cc: Boris Miksic
Anna Vignetti
Cliff Cracauer
Mike Gabor

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Test conducted by: Eric Uutala

Eric Uutala
Technical Service Engineer

Approved by: M. Kharshan

Margarita Kharshan
Laboratory Director

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Sample Received: Four sets of machined metal parts
2-mil Armor VCI bag

Method: ASTM D-1735 Water Fog (100°F, >95% relative humidity)

Materials: Machined metal parts
2-mil Armor VCI bag
3-mil VpCI-126 Blue bags
VpCI-136 foam
VpCI-146 paper
BioCorr Rust Preventative
VpCI-377

Procedure: The following procedure was used:

1) Parts arrived in four separate bags; one Armor VCI bag and three VpCI-126 bags.
2) Parts were prepared for testing as follows:
    a. Dipped in VpCI-377 (used at 5% concentration in deionized water), allowed to air dry, then packaged in 2-mil Armor VCI bag with VpCI-146 paper.
    b. Dipped in VpCI-377 (5%), allowed to air dry, then packaged in 3-mil VpCI-126 bag with VpCI-146 paper added.
    c. Dipped in VpCI-377 (5%), allowed to air dry, then packaged in 3-mil VpCI-126 bag with VpCI-133 foam added.
    d. Dipped in BioCorr, allowed to air dry, then packaged in 3-mil VpCI-126 bag with VpCI-133 foam.
3) After packaging, all parts were allowed to condition overnight.
4) All parts were then placed in ASTM D-1735 water fog cabinet.
5) Parts were visually inspected periodically.
6) After 1000 hours, all parts were removed from ASTM D-1735 water fog cabinet.
7) Parts were unpacked, visually inspected, and photographed.

Results: The following results were found:

Protection System	Time to Corrosion (Hours)
VpCI-377/Armor Film/146	336
VpCI-377/126/146	No corrosion
VpCI-377/126/133	932
BioCorr/126/133	No corrosion

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Interpretations: Corrosion in this test was mainly seen in the package using Armor film. The pieces on the edge of the stack, in contact with the film, were the most severely corroded.

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All Cortec packaging systems provided excellent protection, aside from a few lightly corroded parts in the VpCI-377/126/130 package.

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