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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Certificate # L2267 Testing

Comparing Packaging Methods for Small Parts

To: Customer

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

cc: Boris Miksic
Cliff Cracauer
Bob Dessauer
Andrew Wroblewski

Project #: 14-005-1125.bis

Test conducted by:

Caleb Pheneger
Technical Service Engineer

Approved by:

Eric Uutala
Technical Service Manager

Date: February 4, 2014

Background: Customer wants to evaluate if changing their current Zerust yellow VCI bag for a VpCI-126 Blue bag will alleviate their corrosion problem, without needing to modify their wash and preparation project.

Samples Received: 1-9-14 received in good condition 7 boxes each containing 1200 small parts in Zerust yellow bags

Method: ASTM D-1735 Water fog testing (40 °C and approx. 99% RH)

Materials: VpCI-126 Blue bags (10" x 12"), batch #210230
Zerust Yellow bag
Plain polyethylene bag
Metal test parts
Methanol
VpCI-131 foam piece, batch #08333

Procedure:
1. Use methanol to soak and clean 1 bag worth of parts
2. Allow the cleaned parts to dry and then place in plain poly
3. Repackage 1 bag of parts in plain poly
4. Repackage 1 bag of parts in VpCI-126 Blue bag
5. Repackage 1 bag of parts in VpCI-126 Blue bag, inserting a VpCI-131 foam piece in the middle of the parts
6. Seal all bags and allow to condition overnight
7. Place bags in chamber and monitor for visual corrosion by looking through the bags
8. Remove bags after 264 hours and inspect parts for corrosion
9. Randomly select 20 parts to estimate corrosion percentage and photograph

Results: **Table 1: Corrosion Assessment of ASTM D-1735 Test**

Treatment	Time to Corrosion	Parts Corroded (out of 20)
Clean in plain poly	24 hours	20 / 20
VpCI-126	DNF*	0 / 20
VpCI-126 + VpCI-131	264 hours	0 / 20
Plain poly	24 hours	20 / 20
Zerust Yellow bag	96 hours	18 / 20

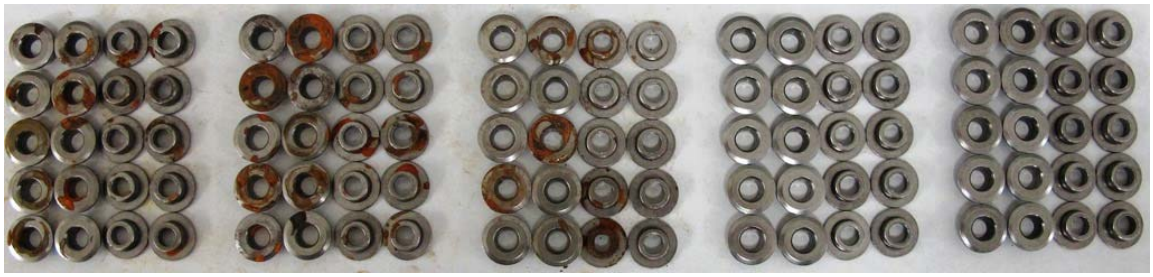
*DNF = did not fail in 264 hours of testing

Results relate only to items tested

Interpretations: VpCI-126 showed superior protection to the plain polyethylene and the Zerust yellow competitor film. The bag with the VpCI-131 emitter had approximately 3 or 4 of the 1,200 parts corroded after 264 hours. It should be noted that the parts seemed to stick to the foam as the weight of the parts compressed the foam.

Photos: Taken after 264 hours of humidity testing

Control VpCI-126 Zerust



Control (Cleaned) | Control (Un-cleaned) | Zerust | VpCI-126 + VpCI-131 | VpCI-126

VpCI-131