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
Internet http://www.cortecvci.com

Comparing Cortec Packaging to WD-40 on Parts from Textron Lycoming

Background: Lycoming Engines, a Textron Company, is a world leader in the design and manufacture of general aviation piston engines. To go along with manufacturing and selling complete engines, Lycoming also does large amounts of business in replacement parts. They would like to find an effective packaging method for storing connecting rods.

Purpose: Evaluate various protection methods for connecting rods from Lycoming Engines.

Method: ASTM D-1735 Water Fog

Materials: 8 Connecting Rods, Provided by Textron Lycoming
3 VpCI-126 Blue Film Bags
4 VpCI-131 Foam pieces
3 Plain PE Bags
VpCI-418LM

Procedure: The following procedure was used:

1) The 8 connecting rods arrived in plastic dunnage, wrapped in plain PE bags.
    a. The parts were coated with WD-40 prior to shipment.
2) Seven of the eight rods were degreased using a 5% solution of VpCI-418LM.
3) After degreasing, the rods were prepared in the following ways:
    a. One rod was cleaned and not packaged.
    b. One rod was left with WD-40 on it, and was not packaged.
    c. One rod was packaged in a plain PE Ziploc bag.
    d. Two rods were packaged in plain PE Ziploc bags with half of a VpCI-131 foam pad.
    e. One rod was packaged in a VpCI-126 bag and heat sealed.
    f. Two rods were packaged in VpCI-126 with half of a VpCI-131 foam pad.
4) After packaging, the rods were allowed to sit overnight to condition.
5) The rods were then placed in ASTM D-1735 water fog cabinet.
6) All parts were visually inspected periodically.
7) After 240 hours, all parts were removed from ASTM D-1735 water fog cabinet.
8) Parts were visually inspected and photographed.

Results: The following results were found:

1) Control part: After 240 hours in water fog conditions, corrosion was present on ~25% of the surface area of the control part.
2) WD-40 part: After 240 hours, corrosion was present on ~10% of the surface area of the part.
3) Plain PE part: After 240 hours, corrosion was present on ~25% of the surface area of the part.

4) Plain PE with VpCI-131: After 240 hours, corrosion was present on ~5% of the surface area of the parts.
5) VpCI-126 bag: After 240 hours, corrosion was present on ~5% of the surface area of the part.
6) VpCI-126 with VpCI-131: After 240 hours, corrosion was present on less than 1% of the surface area of the part.

Conclusion: The combination of VpCI-126 and VpCI-131 foam provided the best protection for the connecting rods from Lycoming Engines. The use of VpCI-131 greatly increased protection within the plain PE bag, while the use of VpCI-126 provided excellent protection as well. WD-40 did not provide adequate corrosion protection, and it left an oily surface after testing.

Project #: 07-237-1825