NEWS ALERT

ISO 9001 • ISO 14001
ISO/IEC 17025

Extended Layup of Boeing 747

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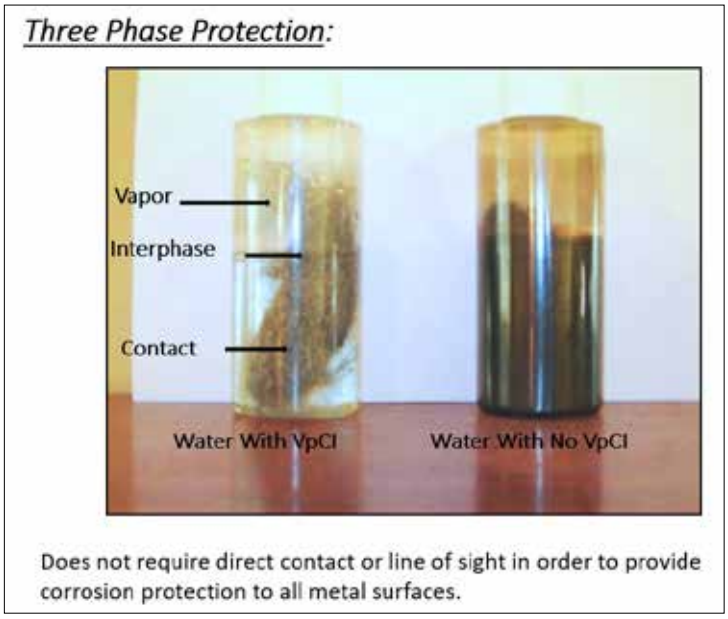
The purpose of this specification is to provide recommendations for the preservation of aircraft using Vapor phase Corrosion Inhibitors and related Cortec® Technologies. These products are typically environmentally responsible, provide multi-year protection, and—with proper selection—do not need to be removed and minimize HSE or disposal issues. Protection is achieved by creating an ionically bonded molecular film on the surface of the metal. This ionic bonding process absorbs all free electrical charges of electrons on the metal surface, thus preventing the onset of corrosion, which requires a free electrical charge to combine with corrosive elements such as O2.

The below picture demonstrates (1) that the presence of water is not an issue and (2) that products containing Vapor phase Corrosion Inhibitors protect both in the contact phase and vapor phase.



Procedure:

1. Cleaning

a. Wash all external surfaces with a 10% solution of VpCI®-415 (Boeing D6-17487, Rev P; MIL-PRF-8937D)

b. Clean all internal surfaces per airline standards

c. Verify no visual corrosion/oxidation on any metal surfaces; if found, remove with EcoAir® 423 and EcoAir® 414

d. Flush and clean all toilets and waste holding tanks

e. Fuel system – after fuel has been removed from plane, add approximately 130 gallons (492 L) of VpCI®-707

i. Add VpCI®-707 at 0.2% by volume of system to be protected (approximately 130 gallons [492 L] of VpCI®-707)

ii. Operate fuel transfer system to coat entire fuel system – including lines, valves, and pumps and air refueling systems

iii. Alternate method is to open all access ports to fuel tanks/cells and fog inhibitor at 0.5 oz./ft^3 (0.5 mL/L) of system volume, approximately

2. Engine Lubricating Oil System

a. Depending on oil classification, add one of the following at 3% by system volume (approximately 30 oz. [0.89 mL])

i. Add M-530 – Naphthenic and white mineral

ii. M-531 – PAO oils

iii. M-528 – PAG oils

3. Auxiliary Power Unit – APU

a. Protect fuel system and lubrication system per item 1.e. and item 2.

b. Place the appropriate number of VpCI®-308 Pouches (35 ft^3 [1 m^3]/pouch) into the APU compartment and secure door (approximately 10 pouches)

4. Engines

a. Lubrication – reference item 2.

b. Fuel system – reference item 1.e.

c. Flow path – place VpCI®-308 Pouch (35 ft^3 [1 m^3]/pouch) into inlet and exhaust, distributing evenly between inlet and exhaust (approximately 20 pouches/engine)

d. Shrink wrap engine with MilCorr® VpCI® Shrink Film (approximately 625 ft^2 [58 m^2]/engine)

5. Landing Gear

a. Inspect to ensure clean and rust free

i. If required, remove rust with EcoAir® 423 and EcoAir® 414

b. Spray all articulating joints with CorShield® VpCI®-369 (approximately 1 can/assembly)

c. Coat all exposed surfaces with CorShield® VpCI®-369 (approximately 1 can/assembly)

d. If bearings are grease-packed with zirc fittings, purge old grease and replace with CorrLube® VpCI® Lithium EP Grease (approximately 1 tube/unit)

e. Shrink wrap with MilCorr® VpCI® Shrink Film (approximately 150 ft^2 [14 m^2]/unit)

6. Ailerons, Wing Flaps, Stabilizers, Elevator, Doors, and Rudder

a. Spray all moveable parts with VpCI®-369D (approximately 10 cans/plane)

b. Shrink wrap with MilCorr® VpCI® Shrink Film

i. Empennage–tail fin/vertical stabilizer (approximately 450 ft^2 [42 m^2])

ii. Empennage–horizontal stabilizer (approximately 110 ft^2 [10 m^2])

iii. Wing assembly (approximately 2500 ft^2 [232 m^2])

CORTEC CORPORATION

Environmentally Safe VpCI®/MCI® Technologies

7. Fuselage

a. Electrical

i. Open doors to all electrical cabinets and spray with ElectriCorr® VpCI®-239

ii. Leave doors open

b. Toilets and holding tanks

i. ECO-SEPT™ for toilets

ii. PORTA-TREAT™ for holding tanks

c. Passenger section, cockpit, crew quarters, kitchen, and cargo compartments underneath passenger section

i. Cargo compartments (approximately 152 VpCI®-308 Pouches)

ii. Passenger and crew area (approximately 1350 VpCI®-308 Pouches)

8. Hydraulic Systems

a. Add M-528 to hydraulic system at 5% by volume (approximately 0.75 gallons [2.8 L])

9. Avionics Compartments

a. Open each cabinet and spray with ElectriCorr® VpCI®-239

b. Place VpCI®-111 Emitter (11 ft^3 [0.31 m^3]/emitter) into cabinet

c. Place VpCI®-308 Pouch (35 ft^3[1 m^3]/pouch) into compartment

Preservation Kit for Boeing 747 (Planning Purposes)	
Product	**Approximate Quantity**
VpCI®-415	55 gallons (208 L)
EcoAir® 423	1 carton
VpCI®-707	150 gallons (568 L)
Lubricating engine oil additives (depending on oil type) • M-531 - PAO Oils • M-530 - Naphthenic & White Mineral Oil • M-528 - PAG Oils	 0.3 gallons (1 L) 0.3 gallons (1 L) 0.3 gallons (1 L)
VpCI®-308 Pouches	33 cartons
MilCorr® VpCI® Shrink Film	4 - 20' x 100' rolls (6 x 30 m)
CorShield® VpCI®-369D	5 cartons
EcoAir® 414	2 cartons
CorrLube® VpCI® Lithium EP Grease	2 cartons
M-528	1 gallon (3 L)
VpCI®-111 Emitters	5 cartons

Product	NSN National Stock Number	Qualified MIL Spec	Standard Test Methods
CorrLube® VpCI® Lithium EP Grease			ASTM D-566 ASTM D-1743 ASTM D-942 ASTM D-2509 ASTM D-2596
ElectriCorr® VpCI®-239	6850-01-600-442		
MilCorr® VpCI® Shrink Film	8340-01-629-6601		ASTM D-882 ASTM D-882A ASTM D1709, Method A ASTM D-1922A ASTM D-3420 ASTM D6988-07 ASTM D1748 ASTM D2732-30 ASTM F3429 ASTM D3985 NACE TM0208-2008 NACE RP0487-2000
VpCI®-111	6850-01-408-9025	MIL-I-22110C commercial equivalent	NACE TM0208-2008 NACE RP0487-2000
VpCI®-308 Pouch		MIL-I-22110C commercial equivalent	NACE TM0208-2008 NACE RP0487-2000
VpCI®-369M (1 qt.)	8030-00-244-1295	MIL PRF-16173E (Grade 2)	ASTM D-1735 ASTM D-1748 ASTM B-117 ASTM D3690 ASTM D522 NACE (Minimum Surface Preparation Guideline) SSPC (Minimum Surface Preparation Guideline)
VpCI®-369M (1 gal.)	8030-00-244-1297		
VpCI®-369M (5 gal.)	8030-00-244-1298		
VpCI®-369M (55 gal.)	8030-01-149-1731		
VpCI®-414			ASTM G-31 ASTM D4627 OECD Method 301D
VpCI®-415	6850-01-583-3039	MIL PRF-87939D, Type IV	ASTM G-31 ASTM D4627 40 CFR 796.3100 Boeing D6-17487, Revision P
VpCI®-423	6850-01-482-4536		ASTM F-519 ASTM D-6866-11 OECD Method 301D
M-528 M-530 M-531		MIL-PRF-46002 commercial equivalent MIL-PRF-85062 commercial equivalent	ASTM D-4172 ASTM D-130 ASTM D-665 ASTM D-974 ASTM D-1401 ASTM D-1748 ASTM D-2196