E-3 Non-Chromate Coating System Evaluation

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AFLCMC/HBSDA
January 2018
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Purpose

- Discuss the USAF E-3 on going “Non-Chromate Coating Systems” project
OSHA regulations on hazardous materials changed in 2006 to reduce permissible exposure limits (PEL) for hexavalent chromium (Cr\textsuperscript{6+})

- PEL lowered from 52 µg/m\textsuperscript{3} to 5 µg/m\textsuperscript{3}

Air Force wide Cr\textsuperscript{6+} reduction / elimination goal

- The Under Secretary of Defense Memorandum – Dated April 2009

The current paint systems in use on the USAF E-3 aircraft contain Cr\textsuperscript{6+} (MIL-PRF-23377 Type 1 Class C2)
The Air Force Corrosion Prevention and Control Office (AFCPCO) and the Coating Technology Integration Office (CTIO) have been evaluating several non-chrome coating systems and endorsed a Qualification Operational Test & Evaluation of selected coating systems.
In conjunction with AFCPCO and CTIO, USAF E-3 is conducting a Qualification Operational Test & Evaluation of selected non-chrome coating systems:

- Aircraft Outer Mold Line (LH & RH Upper Wing Skins)
  MIL-PRF-32239 Type 2:
  - PREKOTE (non-chromate surface treatment)
  - AERODUR 2100 (Mg-rich primer)
  - MIL-PRF-85285 Type I (polyurethane topcoat)

- Aircraft Parts (Engine Strut Saddle Fairings & Latrine Service Door):
  - PREKOTE (non-chromate surface treatment)
  - ECOAT (electrocoat non-chromate primer)
  - MIL-PRF-85285 Type I (polyurethane topcoat)
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Selected Test Coating System 1

Selected Test Coating System 2

Engine Strut Saddle Back Fairings
(P/N 05-1064-22/33)

Latrine Service Loop
(P/N 55-3633-14)
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Way Forward

- The test coating systems were applied on selected FY14 PDM aircraft
- The test coating systems will remain on the aircraft until the FY20 PDM
- The performance of the test coating systems is being compared to the chromate coating systems currently in use
- Evaluations take place during ISO inspections
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Concerns

- For corrosion inspection purposes during PDM, paint systems must be completely removed
  - Non-chromate coating systems tested at OC-ALC are not removable using current chemical paint removers
- Non-chromate coating systems must be able to remain in-tact (i.e. no degradation, peeling, etc.) for full PDM cycle
Questions