Breakout Session 3
Non Hex Cr Treatments for IVD/Electroplated Al, Zn, Zn Alloy Coatings

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**Non Hex Cr Treatments for IVD/Electroplated Al, Zn, Zn Alloy Coatings**

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Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18
Treatments for IVD/Electroplated Al

- Metalast TCP HF Qualified on Alumiplate
  - 25 to 50% at RT
  - 25% at 90°F

- All MIL-DTL-81706, Ty II TCP Materials Should Work on Al Coatings
  - Pure (99% Aluminum) to Treat with TCP
    - Henkel
    - CST SurTec
    - Luster-On
    - Metalast
Treatments for IVD/Electroplated Al

• Other Non TCPs That Offer Corrosion Resistance
  – Iridite NCP (Meets Ty II, Class 3)
  – Alodine 2000 (TD-3095 Seal)
  – Sanchem 3300 + 3400 Permanganate – Silicate Process

• Other Non-TCPs With Good Paint Adhesion Only
  – Boegel, Alodine 5700, PreKote

• Anodize or Oxide Coatings
  – Ty IC (BSAA), II (SAA), IIB (TSAA)
  – EC2
MIL-DTL-5541 Issues for Al Coatings

• MIL-DTL-5541 Still Required 2024 for Monthly Salt Spray
• Need to Change 5541 to Read Like MIL-A-8625 for Anodize
  – Corrosion Test with 2024 or Predominant Alloy Used That Month
Zn – Zn Alloy Coatings

• Many To Choose From – Mature Technology
  – Generations
    • I – Inorganics (Good for Zn Alloys)
    • II – III – Organics w/ wo Cobalt
    • IV – Nanoparticles – Silica
  – Taylor for Needs – DoD Needs to Specify What They Want
    • Thickness, Elec Properties, Lubricity, Corrosion
  – Technology is Off the Shelf
    • Work with Vendors
      – SERDP – ESTCP Projects
Zn – Zn Alloy Coatings

• No Mil Spec Needed for These Treatments
  – Cd Plate Spec Required 96 hr SS
  – Need to Specify Additional Requirements

• DoD Should Select Non-Cobalt Versions for Evaluation
  – Avoid Future Regs
Installation of Non Hex Cr Systems

• Tighter Controls
  – pH, Temp, Concentration

• Process Less Forgiving
  – Pay Attention to Details

• Contamination
  – Remove Old Cr Tanks and Systems

• Non Hex Cr Costs Are Higher
  – Chemical Costs are Higher
    • Need to Use Technology to Extend Bath Life
      This Exists for Zn Alloy Systems
Issues for Insert of NonHex Into DoD

• Non-Cr Primer
  – Need Hex Cr Surface Treatments to Make Non-Cr Primer Work
    • Progress Being Made But Not There Yet
Reliability of Non Hex Treatments

• Zn Alloys Treatments Very Reliable
  – Long History With Automotive Industry
• Al Coating Treatments Very Reliable (Not 2024)
• Touch-Up
  – Zn Alloy Coatings
    • Not Typically Done But Possible (Check with Brush Platers)
  – Al Coatings
    • Metalast is Brushable
    • CST SurTec Has Pen Applicators for Their Version
    • Henkel is Qualifying Alodine 871 Touch-N-Prep Pens
What Needed to Implement

• Al Coatings
  – Drop-In Replacement
    • Use MIL-DTL-81706, Ty II
    • Check out Non-Cr Primers

• Zn Alloy Coatings
  – Need to Repeat All Work Done with Hex Cr on Zn-Ni
    • Corr, Galvanic, HE, Re-HE, Paint, Fatigue??, . . .