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DIPSOL OF AMERICA

AEROSPACE EXPANSION OF WORLDWIDE APPROVAL SPECIFICATIONS

Livonia, MI, October 8, 2013— Dipsol is pleased to announce the expansion of its Aerospace worldwide **Approval** specifications by adding **Boeing BAC 5680** specification for High Strength Steel Application for LHE Zinc Nickel Dipsol IZ-C17+ LHE Zinc Nickel Process™ with the impressive Trivalent IZ-264. The process has satisfied and met the Boeing (Commercial and Military) requirements.

The process is available globally and Dipsol technical staff is ready to offer support.

If you would like more information about this topic, please contact Tarek Nahlawi at 734-261-0633 or email at main@dipsolamerica.com.



Low Hydrogen Embrittlement (LHE) Zinc-Nickel



Objective

Eliminate Cadmium on high strength steel landing gear components

Health Concerns

Cadmium is currently used as a sacrificial protective coating on high strength steel aircraft landing gear to prevent corrosion. Unfortunately, Cadmium is very hazardous to the environment and to human health for the following reasons:

- Probable human carcinogen
- Respiratory tract problems
- Kidney failure
- Liver Damage
- Bone mineral density loss



Additional Safety Benefit

Cyanide Elimination (Sodium cyanide is used as a chelator for the cadmium plating process—there is a significant risk of liberating cyanide gas)

LHE Zn-Ni Plating Qualification

Zn-Ni has successfully passed Cadmium baseline performance parameters:

- Adhesion (ASTM B571)
- Hydrogen Embrittlement (ASTM F219)
- Liquid and Solid Metal Embrittlement (ASTM F219)
- Re-embrittlement (ASTM F219 and USAF DWG 9823019)
- Fatigue (ASTM E466)
- Corrosion (ASTM B717)
- SO₂ Corrosion (ASTM G85)
- Brush Plating for repair of damage LHE Zn-Ni Coatings

Corrosion



Hydrogen Embrittlement



Fatigue results statistically the same as Cadmium



Plating Adhesion



Prototype LHE Zn-Ni Plating Line

Prototype line will be installed at Hill AFB. Landing Gear to be plated with LHE Zn-Ni instead of Cadmium



Plating Line Layout



Field Service Evaluation

- 24 month evaluation
- Inspect for corrosion
- Aggressive corrosion environment
- Ease of access for inspection
- Exposed surfaces



Plating Fixturing Development



Outer Cylinder



Torque Arm





