

DLA Aviation Hazardous Minimization and Green Products Program Non-Chromium Anodizing Sealer (Task N.0828)

Statement of Need

The Defense Logistics Agency (DLA) is the DoD's largest logistics combat support agency, providing worldwide logistics support in both peacetime and wartime to the military Services as well as to several civilian agencies and foreign countries. The NDCEE has been working with the DLA Aviation Hazardous Minimization and Green Products Branch to actively evaluate green and less hazardous products as alternatives for procurement by the DoD.

Anodic coatings are used by the United States Air Force (USAF) and other military Services in maintenance, repair, and overhaul (MRO) applications. Aluminum (Al) alloy parts are anodized to protect the surfaces from corrosion and wear, as well as to enhance paint adhesion. Corrosion on critical Al alloy parts can lead to catastrophic failures. A sealing operation typically completes the anodizing process. A sodium dichromate solution is the most commonly used sealer in Type II anodizing processes. Sodium dichromate contains hexavalent chromium (Cr^{6+}), which is a hazardous material that is cited in several lists of toxic industrial chemicals to be voluntarily reduced or eliminated. In addition to environmental, safety and occupational health (ESOH) concerns, the use of Cr^{6+} carries a significant regulatory burden that detrimentally impacts both the affordability and availability of USAF assets.

Ogden Air Logistics Complex (OO-ALC) is currently in the process of implementing a sealer in Type II anodizing processes that does not contain any form of chromium (Cr). However, other USAF ALCs and Army facilities use different coating systems than those used at OO-ALC and have different requirements for the implementation of an alternative non-Cr sealer. Subsequent to the anodizing process, many parts are painted with primers and topcoats. Prior to transferring the non-Cr anodizing sealer to other ALCs and Army facilities, performance of the non-Cr anodizing sealer must be validated with the coating systems (primers) used at each facility.

Technical Approach

Under this effort the NDCEE will identify current anodizing processes and coatings systems used at Oklahoma City Air Logistics Complex (OC-ALC), Warner Robins Air Logistics Complex (WR-ALC), Anniston Army Depot (ANAD), and

Corpus Christi Army Depot (CCAD) and determine the applicability of the non-Cr anodizing sealer to each facility. Requirements/performance criteria will be identified for implementation of the non-Cr anodizing sealer at each facility and a transition plan

will be developed. An alternative non-Cr anodizing sealer and a secondary sealer (if required) will be demonstrated with coating systems at OC-ALC and WR-ALC per facility requirements including quality, corrosion resistance, and paint adhesion. A cost-benefit analysis will be conducted to determine the economic feasibility of implementing the successfully demonstrated alternative non-Cr anodizing sealer and secondary sealer at OC-ALC and WR-ALC. The NDCEE will review demonstration results with OC-ALC and WR-ALC personnel to assist in transitioning the non-Cr anodizing sealer to OC-ALC and WR-ALC and support the development of National Stock Numbers (NSNs).

Government POC

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Status

Ongoing

Anticipated Results and Benefits

NDCEE Task N.0828 will validate the performance of a non-Cr anodizing sealer in USAF MRO applications. The validation of a non-Cr anodizing sealer will assist DLA Aviation in increasing the availability of less hazardous and environmentally preferred products for the DoD. The transition to non-Cr anodizing sealers will reduce the use of Cr^{6+} and the associated ESOH concerns and regulatory burdens that detrimentally impacts both the affordability and availability of USAF assets.

Technology Transfer and Outreach

The non-Cr anodizing sealer demonstration results will be discussed with OC-ALC and WR-ALC personnel in support of NSN development and technology transition. The establishment of NSNs for the non-Cr anodizing sealer and secondary sealer will enable procurement through the Federal supply system, facilitating implementation of these products at USAF facilities and making them available for procurement DoD-wide. Results of the project activities will be shared with potential stakeholders across the DoD.

