



PROJECT ID:
616

Touch Up Repair of Enhanced Trivalent Chromium Coatings



Principal Investigator Sheridan from NESDI project 514 conducts an initial trivalent chromium pretreatment. This project will test the product developed under this project along with others.

OBJECTIVE

This project aims to verify and demonstrate that hexavalent chromium free touch-up applicators are a suitable alternative with regards to conversion coating repair in a depot setting and an intermediate setting.

PROBLEM STATEMENT

In an effort to reduce the use of hexavalent chromium, a known carcinogen and environmental toxin, Naval Air Systems Command (NAVAIR) Fleet Readiness Centers (FRCs) are seeking alternatives to their current conversion coating products—all while answering the need for increased material readiness, and a 10% reduction in maintenance manhours per flight.

DESCRIPTION

Trivalent chromium-based touch-up

applicators have been on the Qualified Product List for over 10 years; however transitioning to these products had largely been avoided due to the difficulty of visually inspecting the applied coating, as it is naturally clear. NESDI project 514 addressed this issue by testing a trivalent chromium coating system that incorporates a dye into the coating, producing an easily visually identified conversion coating. This and other leading hexavalent chromium-free touch up applicators will be tested for five qualities: time until failure in an accelerated salt fog environment, paint adhesion, conductivity, coating weight, and ease of use.

The applicators will be compared to hexavalent chromium-based applicators, and the best performing applicator will be



tested and demonstrated at an FRC, as well as an associated intermediate-level facility. This project will save time and money by leveraging data from NESDI project 600, which is looking at the same hexavalent chromium-free chemistries for a different use case.

RETURN ON INVESTMENT

The enhanced trivalent chromium applicators cost approximately half of the currently used hexavalent chromium applicators, reducing the overall cost of consumables, and maintain compatibility with current repair techniques.

NAVY BENEFITS

This project will reduce FRCs' environmental impact by reducing the amount of total chrome used and eliminate the use of hexavalent chrome. This will reduce the cost of disposal, reduce exposure to artisans/sailors, and avoid potential regulatory changes affecting supply/costs. In addition, by switching to a brush anodize repair this will lead to longer intervals between corrosion-related maintenance due to the greater protection anodize affords, compared to

hexavalent chrome conversion coatings. This has the potential to be applied to all repair depots, and may trickle down to the I-level as well.

TRANSITION DESCRIPTION

The selected product will be transitioned to two NAVAIR FRCs. These FRCs are the end users, and this project will directly transition these capabilities, including training, and required materials. These technologies have been matured by industry, and approved by necessary regulators, so the only transition is to the operational environment. Once the products have been demonstrated in the operational environment a local process specification (LPS) will be generated ensuring that future users have a clear understanding and instructions of how to use these products and associated processes.

CONTACT

For more specific information about this project, contact the Principal Investigator at 301-342-0151.



ABOUT THE NESDI PROGRAM

The Navy Environmental Sustainability Development to Integration (NESDI) program is the Navy's environmental research and development demonstration and validation program, sponsored by OPNAV N4I Installations Division and managed by the Naval Facilities Engineering Systems Command from the Engineering and Expeditionary Warfare Center in Port Hueneme, CA. The mission of the program is to provide solutions by demonstrating, validating and integrating innovative technologies, processes and materials and by filling knowledge gaps to minimize operational environmental risks, constraints and costs while ensuring Navy readiness and lethality.

For more information, visit the program's web site at www.navfac.navy.mil/nesdi or contact Ken Kaempffe, the NESDI Program Manager at 805-982-4893, DSN: 551-4893 or kenneth.c.kaempffe.civ@us.navy.mil.

Distribution Statement A: Approved for public release; distribution is unlimited. Mention of any product or service does not constitute an endorsement by the U.S. Navy.