

California Department of Forestry and Fire Protection

Aviation Program Advisory

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Approved Aircraft Washing Soaps and Cleaners

Problem/Background: Many cleaners that are on the market will attack aircraft aluminum and magnesium, and induce failure of high strength steel bolts, pins and fittings from hydrogen embrittlement. Many cleaners have caustic chemicals, high sodium/salt products, strong detergents and high pH levels.

Problem History: Approximately three years prior, the US Army issued an emergency service bulletin to not use "Simple Green" to clean Army helicopters. We issued an advisory to follow compliance with the bulletin at that time. We were recently advised of one base using Simple Green again. We issued another advisory. On a broader perspective, we discovered that CDF was using additional cleaning products that were not suitable for cleaning aircraft or automotive equipment. We recently advised not to use "Premium Blue" cleaner. This product is a corrosive liquid and attacks both aluminum and steel alloys.

Impact and Effect: The above type cleaners are typically used for severe cleaning applications. The effects include corrosion attack to aluminum and magnesium and chemical attack to steel parts. The chemical attack of high strength steel bolts, pins and fittings is in the form of producing a hydrogen gas by-product. The problem is that the hydrogen gas is in the steel grain matrix and results in another effect called hydrogen embrittlement. This causes bolts heads to fail or lug nuts to separate. Not a good situation.

What cleaning products can CDF use on aircraft? We can use mild soaps without detergent and no salt or sodium. Aircraft should be washed per the maintenance manual with normal safing procedures, relubricated and then flown as soon as practical. AMU will provide acceptable aircraft grade cleaners that conform to MILSPEC's for cleaners. This is an area we are researching. At this point we can advise that MILSPEC MIL-C-87936-A applies to aircraft cleaning compounds and any product conforming to this specification is acceptable. (This includes Aerosolutions "Carbonex Super Concentrate", and Calla 800 or Calla 120, Zip-Chem, 800-648-2661). AMU is looking for additional products.

Remember, when washing aircraft to cover all pitot static openings, intake and exhaust ports and wheels and brakes. Wheels and brakes are very critical and we have had accidents in the past due to water intrusion in wheel bearings. Remember- aircraft wheel bearings only have light dust covers and do not have any water sealing bearing seals as do automotive equipment.

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