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## AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 1451A

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Superseding AMS 1451

### DISINFECTANT, AIRCRAFT

#### 1. SCOPE:

1.1 Form: This specification covers disinfectants or chemicals for use in disinfecting aircraft after carrying livestock.

1.2 Application: Primarily as a disinfectant of aircraft where required by the U.S. Department of Agriculture, the World Health Organization, or member states.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications and Aerospace Recommended Practices shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

#### 2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

AMS 2820 - Aerosol Packaging

AMS 2825 - Material Safety Data Sheets

AMS 4049 - Aluminum Alloy Sheet and Plate, Alclad, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (Alclad 7075; -T6 Sheet, -T651 Plate)

#### 2.1.2 Aerospace Recommended Practices:

ARP 1512 - Corrosion of Aluminum Alloys by Aircraft Maintenance Chemicals, Sandwich Test

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2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

- ASTM D56 - Flash Point by Tag Closed Tester
- ASTM D1568 - Sampling and Chemical Analysis of Alkylbenzene Sulfonates
- ASTM F483 - Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
- ASTM F484 - Stress Cracking of Acrylic Plastics in Contact with Liquid or Semi-Liquid Compounds
- ASTM F502 - Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces
- ASTM F503 - Preparing Aircraft Cleaning Compounds, Liquid Type, For Storage Stability Testing

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Specifications:

MIL-P-83310 - Plastic Sheet, Polycarbonate, Transparent

2.3.2 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Shall be optional with the manufacturer, shall be nonflammable up to 65°C (150°F), and shall be a uniform mixture meeting the requirements of 3.2.

3.1.1 Disinfectant shall comply with registration, efficacy, toxicological, and other requirements of:

World Health Organization and Member States as Required  
 United States Environmental Protection Agency  
 United States Department of Agriculture  
 United States Public Health Service

3.2 Properties: Disinfectant shall conform to the following requirements; tests shall be performed in accordance with specified test methods on the disinfectant supplied in concentrated form:

3.2.1 Flash Point: Disinfectant shall exhibit no flash point up to the boiling point or 65°C (150°F), determined in accordance with ASTM D56.

- 3.2.2 Residue: Two 2 x 6 in. (50 x 150 mm) panels of AMS 4049 aluminum alloy shall be cleaned with acetone and immersed in a sufficient quantity of the disinfectant to cover approximately one-half of the panel. After the disinfectant has been applied, the panels shall be placed at 45 deg from horizontal in an oven maintained at  $38^{\circ}\text{C} \pm 1$  ( $100^{\circ}\text{F} \pm 2$ ) for 30 min.  $\pm 1$ , removed from the oven, rinsed with room-temperature methyl ethyl ketone, and allowed to dry. The treated and untreated areas of the panel shall be visually examined and compared for the presence of residue and stains.
- 3.2.3 Corrosion of Metal Surfaces:
- 3.2.3.1 Sandwich Corrosion: Specimens of AMS 4049 aluminum alloy, after test, shall show a rating not worse than 1, determined in accordance with ARP 1512.
- 3.2.3.2 Total Immersion Corrosion: Disinfectant shall neither show evidence of pitting of the panels nor cause a weight change greater than  $0.3 \text{ mg/cm}^2$  per 24 hr for any panel of AMS 4049 aluminum alloy, determined in accordance with ASTM F483.
- 3.2.4 Temperature Stability: Disinfectant shall show no chemical or physical deterioration, including evidence of discoloration, layering, or other change denoting loss of stability after exposure for 120 hr  $\pm 1$  at  $2^{\circ}\text{C} \pm 3$  ( $35^{\circ}\text{F} \pm 5$ ).
- 3.2.5 Effect on Painted Surfaces: Disinfectant shall neither decrease the paint film hardness by more than two pencil hardness levels nor shall it produce any streaking, discoloration, or blistering of the paint film, determined in accordance with ASTM F502.
- 3.2.6 Effect on Transparent Plastics: Disinfectant shall not craze, stain, or discolor Type C acrylic plastic, determined in accordance with ASTM F484.  
Ø Disinfectant shall not craze, stain, or discolor MIL-P-83310 polycarbonate plastic or polysulfone plastic, determined in accordance with test procedures specified in ASTM F484 on specimens stressed for 30 min.  $\pm 2$  to an outer fiber stress of 3,000 psi (20 MPa).
- 3.2.7 Storage Stability:
- 3.2.7.1 Short-Time Test: Disinfectant shall remain homogeneous and free of lumps and skin formation and shall show no evidence of layering, separation, settling, or crystallization, determined on samples subjected to five freeze-thaw cycles as in 3.2.7.1.1.
- 3.2.7.1.1 Two 6-oz (175-mL) samples of the disinfectant shall be placed in 8-oz (250-mL) clear glass bottles and sealed and, from that time until test is completed, shall be handled so as to minimize movement of the sample. Samples shall be exposed for not less than 12 hr at  $-23^{\circ}\text{C} \pm 1$  ( $-10^{\circ}\text{F} \pm 2$ ). At the end of the 12-hr period, remove sample to a room-temperature environment and allow to thaw completely. This shall constitute one freeze-thaw cycle.

3.2.7.2 Long-Time Storage: Disinfectant shall be stable and shall not deliquesce or otherwise deteriorate to the extent that the disinfectant will not meet the other properties of 3.2 when stored in shipping container or use package for not less than 12 months from date of receipt by purchaser, determined in accordance with ASTM F503.

3.3 Quality: Disinfectant, as received by purchaser, shall be uniform, shall show no separation or layering, and shall be free from foreign materials detrimental to usage of the disinfectant.

#### 4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of disinfectant shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the disinfectant conforms to the requirements of this specification.

#### 4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for flash point (3.2.1) and effect on plastics (3.2.6) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for residue (3.2.2), corrosion of metal surfaces (3.2.3), temperature stability (3.2.4), effect on painted surfaces (3.2.5), and short-time storage stability (3.2.7.1) are classified as periodic tests and shall be performed at a frequency selected by the manufacturer unless frequency of testing is specified by purchaser.

4.2.3 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification except long-time storage stability (3.2.7.2) are classified as preproduction tests and shall be performed prior to or on the initial shipment of disinfectant to a purchaser, when a change in material, processing, or both requires reapproval, and, when purchaser deems confirmatory testing to be required.

4.2.3.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be in accordance with ASTM D1568; a lot shall be all disinfectant produced in a continuous series of operations from the same batches of ingredients and presented for vendor's inspection at one time.

4.3.1 When a statistical sampling plan and acceptance quality level (AQL) have been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3 and the report of 4.5 shall state that such plan was used.