



400 Commonwealth Drive, Warrendale, PA 15096-0001

# AEROSPACE MATERIAL SPECIFICATION



AMS 1451B

Issued OCT 1978  
Revised DEC 1998

Superseding AMS 1451A

Submitted for recognition as an American National Standard

## Disinfectant, Aircraft For Use in Cargo Compartments

### 1. SCOPE:

#### 1.1 Form:

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

#### 1.2 Application:

This material has been used typically as a disinfectant for aircraft where required by the U.S. Department of Agriculture, the World Health Organization, or member states, but usage is not limited to such applications.

#### 1.3 Safety - Hazardous Materials:

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and processes and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

### 2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

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QUESTIONS REGARDING THIS DOCUMENT:

(724) 772-7161

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**2.1 SAE Publications:**

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2820      Aerosol Packaging  
AMS 4049      Aluminum Alloy, Sheet and Plate, Alclad 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (Alclad 7075 -T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated  
AMS-P-83310      Plastic Sheet, Polycarbonate, Transparent

**2.2 ASTM Publications:**

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 56      Flash Point by Tag Closed Tester  
ASTM D 1193      Reagent Water  
ASTM D 1568      Sampling and Chemical Analysis of Alkylbenzene Sulfonates  
ASTM F 483      Total Immersion Corrosion Test for Aircraft Maintenance Chemicals  
ASTM F 484      Stress Crazing of Acrylic Plastics in Contact with Liquid or Semi-Liquid Compounds  
ASTM F 502      Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces  
ASTM F 1104      Preparing Aircraft Cleaning Compounds, Liquid Type, Water Base, For Storage Stability Testing  
ASTM F 1110      Sandwich Corrosion Test

**2.3 U.S. Government Publications:**

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

FED-STD-1313      Material Safety Data Sheets, Preparation of

**3. TECHNICAL REQUIREMENTS:****3.1 Composition:**

Shall be optional with the manufacturer, 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 not exhibit a flash point lower than 65 °C (149 °F) determined in accordance with ASTM D 56.
- 3.2.2 Residue: Two 2 x 6 inch (51 x 152 mm) panels of AMS 4049 aluminum alloy shall be degreased with a suitable solvent 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 degrees from horizontal in an oven maintained at  $38^{\circ}\text{C} \pm 1$  ( $100^{\circ}\text{F} \pm 2$ ) for 30 minutes  $\pm 1$ , removed from the oven, rinsed with room-temperature methyl ethyl ketone or other suitable solvent and allowed to dry. The treated and untreated areas of the panel shall be visually examined and compared; there shall be no residue or stains on the treated or untreated surfaces.
- 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 or not worse than control panels using ASTM D 1193, Type IV water determined in accordance with ASTM F 1110.
  - 3.2.3.2 Total Immersion Corrosion: Disinfectant shall neither cause pitting of the panels nor a weight change greater than  $0.3 \text{ mg/cm}^2$  per 24 hours for any panel of AMS 4049 aluminum alloy, determined in accordance with ASTM F 483.
- 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 hours  $\pm 1$  at  $2^{\circ}\text{C} \pm 3$  ( $36^{\circ}\text{F} \pm 5$ ).
- 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 F 502.
- 3.2.6 Effect on Transparent Plastics: Disinfectant shall not craze, stain, or discolor Type C acrylic plastic, determined in accordance with ASTM F 484. Disinfectant shall not craze, stain, or discolor AMS-P-83310 polycarbonate plastic or polysulfone plastic, determined in accordance with test procedures specified in ASTM F 484 on specimens stressed for 10 minutes  $\pm 1$  to an outer fiber stress of 2000 psi (13.8 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 fluid-ounce (177 mL) samples of the disinfectant shall be placed in 8 fluid ounce (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 hours at  $-23^{\circ}\text{C} \pm 1$  ( $9^{\circ}\text{F} \pm 2$ ). At the end of the 12-hour 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 F 1104.

3.3 Quality:

Disinfectant, as received by purchaser, shall be a uniform mixture, 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 performance of all required tests. 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: Flash point (3.2.1) and effect on plastics (3.2.6) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: 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 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: All technical requirements except long-time storage stability (3.2.7.2) are preproduction tests and shall be performed prior to or on the initial shipment of disinfectant to a purchaser, when a change in material and/or processing, requires reapproval, and, when purchaser deems confirmatory testing to be required.

4.3 Sampling:

Shall be in accordance with ASTM D 1568; 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.