Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 1450

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Revised

DISINSECTANT (INSECTICIDE), AIRCRAFT

1. SCOPE:

1.1 Form: This specification covers insecticides for use in disinsection of aircraft as required on international passenger flights.

1.2 Application: Primarily as disinsectant of aircraft where required by the U.S. Department of Agriculture, the World Heath 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 (AMS) and Aerospace Recommended Practices (ARP) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2820 - Aerosol Packaging
AMS 4049 - Aluminum Alloy Sheet and Plate, Alclad, 5.6Zn - 2.5Mg - 1.6Cu - 0.26Cr (Alclad 7075; -T6 Sheet, -T651 Plate)

2.1.2 Aerospace Recommended Practices:

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

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 D891 - Specific Gravity of Industrial Aromatic Hydrocarbons and Related Materials
ASTM D1078 - Distillation Range of Volatile Organic Liquids
ASTM D1353 - Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products
ASTM D1568 - Sampling and Chemical Analysis of Alkylbenzene Sulfonates
ASTM F483 - Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
ASTM F484 - Stress Crazing of Acrylic Plastics in Contact with Liquid or Semi-Liquid Compounds
ASTM F502 - Effects of Cleaning and Chemical Maintenance Materials on Painted Surfaces
ASTM F503 - Preparing Aircraft Cleaning Compounds, Liquid Type, For Storage Stability Testing

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120 except as specified in 2.3.4.

2.3.1 Federal Specifications:

QQ-A-250/13 - Aluminum Alloy Alclad 7075 Plate and Sheet

2.3.2 Military Specifications:

MIL-P-25690 - Plastic, Sheets and Parts, Modified Acrylic Base, Monolithic, Crack Propagation Resistant

2.3.3 Military Standards:

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

2.3.4 U.S. Department of Labor, Occupational Safety and Health Administration Forms: Available from regional offices of U.S. Department of Labor, Bureau of Labor Standards.

OSHA Form 20 - Material Safety Data Sheet

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Disinsectant shall be a uniform mixture and shall be nonflammable up to 65° C (150° F).

3.2 Properties: Disinsectant shall conform to the following requirements; tests shall be conducted in accordance with specified test methods on the disinsectant supplied in concentrated form:

3.2.1 Flash Point: Disinsectant shall exhibit no flash point, determined in accordance with ASTM D56.

3.2.2 Residue: Two 2 x 6 in. (50 x 150 mm) panels of AMS 4049 or QQ-A-250/13 aluminum alloy shall be cleaned with acetone and immersed in a sufficient quantity of the disinsectant to cover approximately one-half of the panel. After the disinsectant has been applied, the panels shall be placed at 45 deg from horizontal in an oven maintained at 38° C ± 1 (100° F ± 2) for 30 min. ± 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 or QQ-A-250/13 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: Disinsectant shall neither show evidence of pitting of the panels nor cause a weight change greater than 0.3 $(mg/cm^2)/24$ hr for any single panel of AMS 4049 or QQ-A-250/13 aluminum alloy, determined in accordance with ASTM F483.

3.2.4 Temperature Stability: Disinsectant shall show no chemical or physical deterioration, including evidence of discoloration, layering, or other change denoting loss of stability, after exposure for 120 hr ± 1 at 2° C ± 3 (35° F ± 5).

3.2.5 Effect on Painted Surfaces: Disinsectant shall neither produce a decrease in film hardness greater 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: Disinsectant shall not craze, stain, or discolor MIL-P-25690 stretched acrylic plastic, determined in accordance with ASTM F484. Disinsectant, likewise, shall not craze, stain, or discolor polycarbonate or polysulfone plastics, determined in accordance with test procedures specified in ASTM F484 on specimens stressed for 72 hr ± 1 to an outer fiber stress of 3,000 psi (21 MPa).

3.2.7 Specific Gravity: Shall be determined in accordance with ASTM D891 and the results reported.

3.2.8 Distillation Range: Shall be determined in accordance with ASTM D1078 and the following points reported:

Initial Boiling Point -
10% -
20% -
30% -
40% -
50% -
60% -
70% -
80% -
90% -
Dry Point -

3.2.9 Nonvolatile Matter: Shall be determined in accordance with ASTM D1353 and the results reported.

3.2.10 Storage Stability:

3.2.10.1 Short-Time Test: Disinsectant 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 3.2.10.1.1.

3.2.10.1.1 Two 6-oz (175-mL) samples of the disinsectant 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° C ± 1 (-10° F ± 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.

3.2.10.2 Long-Time Storage: Disinsectant shall be stable, and shall not deliquesce or otherwise deteriorate to the extent that the disinsectant 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.

3.2.11 Disinsectant 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

3.3 Quality: Disinsectant, 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 disinsectant.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of disinsectant shall supply all samples 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 perform such confirmatory testing as he deems necessary to ensure that the disinsectant 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), specific gravity (3.2.7), distillation range (3.2.8), nonvolatile matter (3.2.9), and storage stability (3.2.10.1) 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 (3.2.10.2) are classified as preproduction tests and shall be performed on the initial shipment of disinsectant to a purchaser, when a change in material or processing requires reapproval as in 4.4.2, 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, unless otherwise specified by purchaser; a lot shall be all disinsectant produced in a continuous series of operations from the same batches of ingredients and presented for manufacturer's inspection at one time.

4.4 Approval:

4.4.1 Disinsectant shall be approved by purchaser before disinsectant for production use is supplied, unless such approval be waived. Results of tests on production disinsectant shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, and methods of routine inspection on production disinsectant which are essentially the same as those used on the approved sample disinsectant. If any change is necessary in ingredients or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material or processing and, when requested, sample disinsectant. Production disinsectant made by the revised procedure shall not be shipped prior to receipt of reapproval.