AEROSPACE MATERIAL SPECIFICATION

AMS1453	REV. A

Issued 1995-03
Reaffirmed 2004-02
Revised 2015-07

Superseding AMS1453

(R) Disinfectant Cleaner for Aircraft Interior
General Purpose Liquid

RATIONALE

Changes in this revision include format/editorial changes as well update to specification revisions as well as harmonize the language with other specifications related to Aircraft Disinfectants.

1. SCOPE

1.1 Form

This specification covers a general purpose disinfectant in the form of a concentrated liquid to be used diluted in accordance with label instructions.

1.2 Application

This disinfectant has been used typically for disinfection of aircraft galleys, passenger service trays and drop-down table surfaces, and other hard surfaces which require disinfection, but usage is not limited to such applications. When used on surfaces which will come in direct contact with food, a potable water rinse may be required. Product may also be used for sanitizing hard surfaces in aircraft lavatories.

1.3 This specification deals only with the effect of the fluid on the materials of construction used in aircraft and does not address the efficacy of the fluid or approval to use this product in various locales. For example, in the United States of America (USA), any fluid purporting to have disinfecting or sanitizing properties must be registered with the Environmental Protection Agency. Similarly in the European Union (EU) all active substances in any biocidal products used to treat or contained in an article must be approved for use. It is the responsibility of the supplier to ensure the product meets the regulations of the locales where it will be used.

1.4 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 to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2470 Anodic Treatment of Aluminum Alloys, Chromic Acid Process

AMS4037 Aluminum Alloy, Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn, (2024; -T3 Flat Sheet, -T351 Plate), Solution Heat Treated

AMS4049 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

AMS4911 Titanium Alloy, Sheet, Strip, and Plate, 6Al - 4V, Annealed

AMS5045 Steel, Sheet and Strip, 0.25 Carbon, Maximum, Hard Temper

AMS-P-83310 Plastic Sheet, Polycarbonate, Transparent

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D56 Standard Test Method for Flash Point by Tag Closed Cup Tester

ASTM D1193 Standard Specification for Reagent Water

ASTM F483 Standard Practice for Total Immersion Corrosion Test for Aircraft Maintenance Chemicals

ASTM F484 Standard Test Method for Stress Crazing of Acrylic Plastics in Contact with Liquid or Semi-Liquid Compounds

ASTM F485 Standard Practice for Effects of Cleaners on Unpainted Aircraft Surfaces

ASTM F502 Standard Test Method for Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces

ASTM F519 Standard Test Method for Mechanical Hydrogen Embrittlement Evaluation of Plating/Coating Processes and Service Environments

ASTM F1104 Standard Test Method for Preparing Aircraft Cleaning Compounds, Liquid Type, Water Base, for Storage Stability Testing

ASTM F1110 Standard Test Method for Sandwich Corrosion Test

ASTM F1111 Standard Test Method for Corrosion of Low Embrittling Cadmium Plate by Aircraft Maintenance Chemicals

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2.3 U.S. Government Publications

Copies of these documents are available online at http://quicksearch.dla.mil.

MIL-PRF-25690 Plastic, Sheets and Formed Parts, Modified Acrylic Base, Monolithic, Crack Propogation Resistant

2.4 Other Publications

ANSI Z400.1/Z129.1 Hazardous Workplace Chemicals - Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

3. TECHNICAL REQUIREMENTS

3.1 Material

The composition of the disinfectant shall be optional with the manufacturer, but should contain water, surfactants, disinfectants, and inhibitors to produce a product 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 applicable
United States Environmental Protection Agency
United States Department of Agriculture
United States Public Health Service
Regulation (EC) No. 528/2012 of the European Parliament and of the Council of May 2012 concerning the making available on the market and use of biocidal products

3.1.1.1 Disinfectant shall conform to the requirements for a Class III disinfectant under the Federal Economic Poisons Control Act and shall be registered as such by the U.S. Environmental Protection Agency. The disinfectant identification label (See 5.1.3) shall show the registration number and manufacturer identification number as required by the above act.

3.1.1.2 The disinfectant active agent must be approved for use within the EU as required by the regulation listed above .

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 and at use dilution recommended by the manufacturer as hereinafter specified:

Diluent shall be ASTM D1193, Type IV, water.

3.2.1 Corrosion of Metal Surfaces

3.2.1.1 Sandwich Corrosion

Specimens, after test, shall not show corrosion worse than control panels, using ASTM D1193, Type IV, water, determined in accordance with ASTM F1110.

3.2.1.2 Total Immersion Corrosion

The product shall neither show evidence of corrosion nor cause a weight change of any test panel greater than shown in Table 1, determined in accordance with ASTM F483.

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Table 1- Total immersion corrosion

Test Panel	Weight Change mg/cm^2 per 24 hours
AMS4037 Aluminum Alloy, anodized in accordance with AMS2470	0.3
AMS4049 Aluminum Alloy	0.3
AMS4911 Titanium Alloy	0.1
AMS5045 Carbon Steel	0.8

3.2.1.3 Low-Embrittling Cadmium Plate

Test panels coated with low-embrittling cadmium plate shall not show a weight change greater than 0.3 mg/cm^2 per 24 hours, determined in accordance with ASTM F1111.

3.2.2 Hydrogen Embrittlement

The product shall be non-embrittling, determined in accordance with ASTM F519 utilizing Type 1a, 1c, or 2a specimens, cadmium plated in accordance with MIL-STD-870, Class 1, Type I. Type 1a and Type 1c specimens shall be loaded to 45% of the predetermined notch fracture strength, and Type 2a specimens loaded to 80% of the yield strength. The entire 2a stressed specimen, or just the notched area of the 1a and 1c stressed specimen, shall be immersed continuously in the solution under test for 150 hours at a temperature between 68 to 86 °F (20 to 30 °C).

3.2.3 Flash Point

Shall not be lower than 140 °F (60 °C), determined in accordance with ASTM D56.

3.2.4 Effect on Plastics

The product shall not craze, stain, or discolor MIL-PRF-25690 stretched acrylic plastic, determined in accordance with ASTM F484.

3.2.4.1 Product shall not craze, stain, or discolor AMS-P-83310 polycarbonate plastic, determined in accordance with procedures in ASTM F484 except the specimens shall be stressed for 30 minutes ± 1 to an outer fiber stress level of 2000 psi (13.8 MPa).

3.2.5 Effect on Painted Surfaces

The product shall neither decrease the hardness of the paint film 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 Unpainted Surfaces

The product, tested in accordance with ASTM F485, shall neither produce streaking nor leave any stains which would require polishing to remove.

3.2.7 Long Term Storage Stability

The product, tested in accordance with ASTM F1104, shall be restorable to its original appearance by moderate shaking, and shall meet all technical requirements after the storage stability period of 1 year.

3.2.8 Performance

The product, used in accordance with label instructions, shall remove normally accumulated soils from the surfaces being cleaned and shall leave those surfaces in a disinfected or sanitized condition without any visible residue.

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3.2.9 Accelerated Storage Stability

Disinfectant shall remain homogeneous and shall show no evidence of layering, separation, settling, or crystallization, determined in accordance with 3.2.9.1 and 3.2.9.2.

3.2.9.1 Elevated Temperature

One 6-oz (175-mL) sample of the product 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. The jar shall be exposed for 120 hours ± 1 at 122 °F ± 5 (50 °C ± 3). At the end of the 120-hour period, remove sample to a room-temperature environment, and allow to cool completely and examine for conformance to 3.2.9.

3.2.9.2 Cold Temperature

One 6-oz (175-mL) sample of the product 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. The jar shall be exposed for 120 hours ± 1 at 14 °F ± 5 (-10 °C ± 3). At the end of the 120-hour period, remove sample to a room-temperature environment, and allow to thaw completely and examine for conformance to 3.2.9.

3.3 Quality

The product, as received by purchaser, shall be homogeneous, uniform in color, and free from skins, lumps, and any foreign materials detrimental to the usage or performance of the product.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification.

4.2 Classification of Tests

4.2.1 Acceptance Tests

Effects on plastics (3.2.4) and performance (3.2.8) are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests

All technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling and Testing

Sufficient product shall be taken at random from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1 A lot shall be all product produced in a single production run, from the same batches of raw materials, under the same fixed conditions, and presented for vendor's inspection at one time.

4.3.2 A statistical sampling plan, acceptable to purchaser, may be used in lieu of sampling as in 4.3.

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4.4 Approval

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

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

4.5 Reports

The vendor of the product shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance tests requirements and stating that the product conforms to the other technical requirements. The report shall include the purchase order number, lot number, AMS1453A, manufacturer's identification, formula number or registered name, and quantity.

4.5.1 A material safety data sheet conforming to ANSI Z400.1/Z129.1, or equivalent, shall be supplied to each purchaser prior to, or concurrent with, the report of preproduction test results or, if preproduction testing be waived by purchaser, concurrent with the first shipment of the product for production use. Each request for modification of product formulation shall be accompanied by a revised data sheet for the proposed formulation.

4.6 Resampling and Retesting

If any sample used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional samples for each original nonconforming sample. Failure of any retest sample to meet specified requirements shall be cause for rejection of the product represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY

5.1 Packaging and Identification

5.1.1 Product shall be packaged in containers of a type and size acceptable to purchaser and vendor.

5.1.2 A lot of product may be packaged in small quantities and delivered under the basic lot approval provided lot identification is maintained.

5.1.3 Each container shall be legibly marked with not less than AMS1453A, purchase order number, manufacturer's identification, lot number, U.S. Environmental Protection Agency registration number and quantity. Containers of the product shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the product to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

7. REJECTIONS

Product not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

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8. NOTES

8.1 A change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

8.2 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary; dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.

8.3 Purchase documents shall specify not less than the following:

Title, number, and date of this specification
Type and size of containers desired
Quantity of product desired
Special packaging, if required.

8.4 Product meeting the requirements of this specification has been classified under Federal Supply Classification (FSC) 6840.

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