

**AEROSPACE
MATERIAL
SPECIFICATION**

Submitted for recognition as an American National Standard

SAE AMS 1550A

Issued 1-15-78
Revised 1-1-86

Superseding AMS 1550

**CLEANER FOR INTERIOR MATERIALS OF AIRCRAFT
Biodegradable, Water-Base**

1. SCOPE:

1.1 Form: This specification covers a biodegradable, water-base cleaner in the form of a concentrated liquid.

1.2 Application: Primarily for cleaning interior materials of aircraft including paint, metal, plastics, sealants, adhesives, and decor.

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 2825 - Material Safety Data Sheets

AMS 4045 - Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075; -T6 Sheet, -T651 Plate)

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 D2667 - Biodegradability 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 F485 - Effects of Cleaners on Unpainted Aircraft Surfaces
- 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 Material: Shall consist of a biodegradable, water-base material with additives as necessary to meet the requirements of 3.1.1, 3.1.2, and 3.2.

3.1.1 The cleaner shall not be hazardous as defined in OSHA regulations.

3.1.2 The concentrated cleaner shall dilute readily with water with minimum agitation to produce a homogenous solution, determined by inverting three times a 100 mL graduated cylinder containing 100 mL of the cleaner diluted for use in accordance with manufacturer's recommendations.

3.2 Properties: The cleaner shall conform to the following requirements; tests shall be performed in accordance with specified test methods on the cleaner as-received in concentrated form and at use dilution recommended by the manufacturer:

3.2.1 Effect on Metallic Surfaces:

3.2.1.1 Sandwich Corrosion: Specimens of AMS 4045 and AMS 4049 aluminum alloy, after test, shall show a rating not worse than 2, determined in accordance with ARP 1512.

- 3.2.1.2 Total Immersion Corrosion: Cleaner shall neither show evidence of corrosion of panels of AMS 4045 and AMS 4049 aluminum alloy nor cause a weight change of any such panel greater than 0.3 mg/cm^2 per 24 hr, determined in accordance with ASTM F483.
- 3.2.2 Flash Point: Shall be not lower than 70°C (160°F), determined in accordance with ASTM D56.
- 3.2.3 Effect on Transparent Plastics: The product shall not craze, stain, or discolor Type C acrylic plastic, determined in accordance with ASTM F484. The product 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. ± 2 to an outer fiber stress of 3,000 psi (20 MPa).
- 3.2.4 Effect on Painted Interior Surfaces: Cleaner shall neither decrease the hardness of films of polyurethane paint or other paint specified by purchaser nor shall it produce any streaking, discoloration, or blistering of the paint film, determined in accordance with ASTM F502.
- 3.2.5 Effect on Unpainted Interior Surfaces: The product, tested in accordance with ASTM F485, shall neither produce streaking nor leave any stains on AMS 4045 and AMS 4049 aluminum alloys which require polishing to remove.
- 3.2.6 Storage Stability: Cleaner, tested in accordance with ASTM F503, shall show no evidence of precipitation, stratification, layering, or separation, shall be restorable to its original appearance by moderate agitation, and shall conform to all other technical requirements of this specification after the storage stability period.
- 3.2.7 Biodegradability: Surfactants used shall be not less than 90% biodegradable, determined in accordance with ASTM D2667. The vendor of the cleaner shall obtain certification from the surfactant manufacturer of the percent activity and the percent biodegradability of the surfactants.
- 3.2.8 Performance: Cleaner, when used in accordance with the manufacturer's recommendations, shall remove normally accumulated soils from the interior surfaces of aircraft without leaving any visible residue on any surface tested.
- 3.3 Quality: The cleaner, as received by purchaser, shall be homogeneous, uniform in color, and free from skins and lumps and from foreign materials detrimental to usage of the cleaner.

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of the cleaner 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 cleaner conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for
∅ total immersion corrosion (3.2.1.2), flash point (3.2.2), and effect on transparent plastics (3.2.3) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical
∅ requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of cleaner to a purchaser, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.2.1 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: Sufficient cleaner 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 two.

4.3.1 A lot shall be all cleaner 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 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.

4.4 Approval:

4.4.1 Sample cleaner shall be approved by purchaser before cleaner 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 cleaner which are essentially the same as those used on the approved sample cleaner. If necessary to make any change in ingredients or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample cleaner. Production cleaner made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports: Unless waived by purchaser, the vendor of cleaner shall furnish
with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the cleaner conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 1550A, manufacturer's identification, formula number, lot number, and quantity.