



# AEROSPACE MATERIAL SPECIFICATION

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

## AMS 1530A

Superseding AMS 1530

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### CLEANER FOR AIRCRAFT EXTERIOR SURFACES Wipe-on, Wipe-off, Water-Miscible

#### 1. SCOPE:

1.1 Form: This specification covers a water-miscible cleaner in the form of a ready-to-use liquid.

1.2 Application: Primarily for removing soils from painted and unpainted exterior surfaces of aircraft by a wipe-on, wipe-off procedure not requiring a water rinsing operation.

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 2825 - Material Safety Data Sheets

AMS 4049 - Aluminum Alloy Sheet and Plate, Alclad, 5.6Zn - 2.5Mg - 1.6Cu - 0.26Cr  
(Alclad 7075; -T6 Sheet, -T651 Plate)

AMS 4376 - Magnesium Alloy Plate, 3.0A1 - 1.0Zn (AZ31B-H26)

AMS 4911 - Titanium Alloy Sheet, Strip, and Plate (6A1 - 4V), Annealed

##### 2.1.2 Aerospace Recommended Practices:

ARP 1511 - Corrosion of Low-Embrittling Cadmium Plate by Aircraft Maintenance Chemicals

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 A109 - Steel, Carbon, Cold-Rolled Strip

ASTM D56 - Flash Point by Tag Closed Tester

ASTM D1404 - Estimation of Deleterious Particles in Lubricating Grease

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 - Determination of Effects of Cleaning and Chemical Maintenance Materials on Painted Aircraft Surfaces

ASTM F503 - Preparing Aircraft Cleaning Compounds, Liquid Type, for Storage Stability Testing

ASTM F519 - Hydrogen Embrittlement Testing of Aerospace Materials

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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-C-23377 - Primer Coating, Epoxy Polyamide, Chemical and Solvent Resistant
- MIL-P-25690 - Plastic, Sheets and Parts, Modified Acrylic Base, Monolithic, Crack Propagation Resistant
- MIL-C-81773 - Coating, Polyurethane, Aliphatic, Weather Resistant

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 mixture of selected solvents, detergents, soaps, and water, either with or without thickening agents, to produce a product completely miscible in water and meeting the requirements of 3.2.

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

3.2.1 Corrosion of Metal Surfaces:

3.2.1.1 Sandwich Corrosion: Specimens, after test, shall show a rating not worse than 1, determined in accordance with ARP 1512.

3.2.1.2 Total Immersion Corrosion: The product shall neither show evidence of corrosion nor cause a weight change of any single test panel greater than the following, determined in accordance with ASTM F483:

Test Panel	Weight Change (mg/cm <sup>2</sup> )/24 hr
AMS 4049 Aluminum Alloy	0.4
AMS 4376 Magnesium Alloy	0.8
AMS 4911 Titanium Alloy	0.1
ASTM A109, Temper No. 5, Carbon Steel	1.0

3.2.1.3 Low-Embrittling Cadmium Plate: Test panels coated with low-embrittling cadmium plate shall not show a weight change greater than 1.0 (mg/cm<sup>2</sup>)/24 hr, determined in accordance with ARP 1511.

3.2.2 Hydrogen Embrittlement: The product shall be non-embrittling, determined in accordance with ASTM F519, Type 1a, 1c, or 2a.

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

3.2.4 Effect on Plastics: The product, at use dilution recommended by the manufacturer, shall not craze, stain, or discolor MIL-P-25690 stretched acrylic plastic, determined in accordance with ASTM F484.

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 requiring polishing to remove.
- 3.2.7 Abrasive Effects: The product shall not scratch glass, paint, or aluminum alloy surfaces, determined in accordance with ASTM D1404 except that the test specimens shall be glass, AMS 4049 aluminum alloy, and AMS 4049 aluminum alloy coated with MIL-C-23377 epoxy primer and MIL-C-81773 polyurethane coating compound. The cleaner shall be applied to the specimens in the as-received concentrated form. Only arc-type scratches greater than 1/16 in. (1.6 mm) from the edge of any specimen shall be considered.
- 3.2.8 Storage Stability: The product, tested in accordance with ASTM F503, shall be restorable to its original appearance by vigorous shaking and shall conform to all other technical requirements of this specification after the storage stability period.
- 3.2.9 Performance: The product, when used in accordance with manufacturer's recommendations, shall remove normally accumulated soils from the exterior 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 such confirmatory testing as he deems 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 total immersion corrosion (3.2.1.2), effect on painted surfaces (3.2.5), effect on unpainted surfaces (3.2.6), and quality (3.3) are classified as acceptance tests and shall be performed on each lot.
  - 4.2.2 Periodic Tests: Tests to determine conformance to requirements for sandwich corrosion (3.2.1.1), low-embrittling cadmium plate (3.2.1.3), hydrogen embrittlement (3.2.2), flash point (3.2.3), effect on plastics (3.2.4), abrasive effects (3.2.7), storage stability (3.2.8), and performance (3.2.9) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.
  - 4.2.3 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed on the initial shipment of the product 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: Sufficient cleaner shall be taken at random from each lot to perform all required tests. The number of tests for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three. 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 submitted for vendor's inspection at one time.

**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. 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 any change is necessary in ingredients or in manufacturing procedures, the vendor shall submit for reapproval a statement of the proposed changes in material and/or processing 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 the cleaner shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the acceptance test requirements and, when performed, to the periodic 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 1530A, manufacturer's identification, formula number, lot number, and quantity.
- 4.5.1 A material safety data sheet conforming to AMS 2825 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 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 cleaner may be based on the results of testing three additional samples for each original nonconforming sample. Failure of any retest sample to meet the specified requirements shall be cause for rejection of the cleaner represented and no additional testing shall be permitted. Results of all tests shall be reported.

**5. PREPARATION FOR DELIVERY:****5.1 Packaging and Identification:**

- 5.1.1 Cleaner shall be packaged in suitable containers of a size agreed upon by purchaser and vendor.
- 5.1.2 Each container shall be legibly marked to show not less than AMS 1530A, purchase order number, manufacturer's identification, lot number, and quantity.
- 5.1.3 Containers of cleaner 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 cleaner to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.
- 5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.1 and 5.1.3 will be acceptable if it meets the requirements of Level C.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Cleaner not conforming to this specification or to modifications authorized by purchaser will be subject to rejection.