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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 1545A

Issued OCT 1986
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Reaffirmed SEP 1996

Superseding AMS 1545

Cleaner, Thrust Reverser Alkaline, Water-Base

1. SCOPE:

1.1 Form:

This specification covers an alkaline-type, water-base cleaner in the form of a liquid.

1.2 Application:

This cleaner has been used typically for removing stains and carbon deposits from corrosion and heat resistant steel and titanium alloy thrust reverser parts removed from the aircraft, but usage is not limited to such applications. This cleaner will etch aluminum. If an aluminum-safe cleaner is required, AMS 1540 should be used.

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 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.

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7121 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

2.1 SAE Publications:

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

AMS 1540	Cleaner, Thrust Reverser, Water-Base
AMS 2825	Material Safety Data Sheets
AMS 4911	Titanium Alloy Sheet, Strip, and Plate, 6Al - 4V, Annealed
MAM 4911	Titanium Alloy Sheet, Strip, and Plate, 6Al - 4V, Annealed
AMS 5045	Steel Sheet and Strip, 0.25 Carbon, maximum, Hard Temper

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 1568	Sampling and Chemical Analysis of Alkylbenzene Sulfonates
ASTM D 2667	Biodegradability of Alkylbenzene Sulfonates
ASTM F 483	Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
ASTM F 519	Mechanical Hydrogen Embrittlement Testing of Plating Processes and Aircraft Maintenance Chemicals
ASTM F 1104	Preparing Aircraft Cleaning Compounds, Liquid Type, Water Base, for Storage Stability Testing
ASTM F 1111	Corrosion of Low Embrittling Cadmium Plate by Aircraft Maintenance Chemicals

2.3 U.S. Government Publications:

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

MIL-STD-2073-1	DOD Materiel, Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Material:

The composition of the cleaner shall be optional with the manufacturer but should contain water, biodegradable surfactants, and other additives as required to produce a homogeneous product meeting the requirements of 3.2.

3.2 Properties:

Cleaner shall conform to the following requirements; tests shall be performed in accordance with specified test methods on the product in concentrated form except as otherwise specified herein:

3.2.1 Corrosion of Metal Surfaces:

3.2.1.1 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 F 483:

TABLE 1 - Maximum Weight Change

Test Panel	Weight Change mg/cm^2 per 24 hours
AMS 5045 Carbon Steel	0.8
AMS 4911 or MAM 4911 Titanium Alloy	0.1

3.2.1.2 Low-Embrittling Cadmium Plate: 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 F 1111.

3.2.2 Hydrogen Embrittlement: The cleaner shall be non-embrittling, determined in accordance with ASTM F 519, Type 1a, 1c, or 2a.

3.2.3 Flash Point: Shall be not lower than 60 °C (140 °F), determined in accordance with ASTM D 56.

3.2.4 Solubility: Cleaner shall be completely soluble in water to make a uniform solution free of gelatinous lumps, layering of ingredients, and sediment. There shall be no violent or dangerous reactions when cleaner is diluted according to manufacturer's recommendations.

3.2.5 Storage Stability: Cleaner shall neither show separation from exposure to heat or cold nor show an increase in turbidity greater than a control sample, determined in accordance with ASTM F 1104.

3.2.6 Biodegradability: Surfactants used shall be not less than 90% biodegradable, determined in accordance with ASTM D 2667. The vendor of the cleaner shall obtain certification from surfactant manufacturer of the percent biodegradability of the surfactant.

3.2.7 Performance: Cleaner, when used in accordance with manufacturer's recommendations, shall remove carbon deposits and stains normally found on corrosion and heat resistant steel and titanium alloy thrust reverser parts. Standards for acceptance and test methods shall be as agreed upon by purchaser and vendor.

3.3 Quality:

The cleaner, as received by purchaser, shall be a homogeneous liquid, free from sediment, abrasives, skins, lumps, and foreign materials detrimental to usage of the cleaner.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of cleaner shall supply all samples for vendor's tests and shall be responsible for performing all required tests. 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 for total immersion corrosion (3.2.1.1) and flash point (3.2.3) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests for low-embrittling cadmium plate (3.2.1.2), hydrogen embrittlement (3.2.2), solubility (3.2.4) and performance (3.2.7) are 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 for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of cleaner 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.

4.2.3.1 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, contracting officer, or request for procurement.

4.3 Sampling and Testing:

Shall be in accordance with ASTM D 1568; 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. A lot may be packaged in small quantities and delivered under the basic lot approval provided lot identification is maintained.

4.3.1 When a statistical sampling plan has 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.