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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 1525C

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Superseding AMS 1525B

Submitted for recognition as an American National Standard

CLEANER FOR AIRCRAFT EXTERIOR METALLIC SURFACES
Wipe Solvent, Cold Operations

1. SCOPE:

1.1 Form:

This specification covers a cleaner in the form of a liquid.

1.2 Application:

This cleaner has been used typically at ambient temperature as a cleaner for exterior metallic surfaces of aircraft, but usage is not limited to such applications. This cleaner shall not be used on plastics or aircraft windows due to crazing properties.

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.

2.1 SAE Publications:

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

AMS 2825 Material Safety Data Sheets
AMS 4049 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

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 56 Flash Point by Tag Closed Tester
ASTM D 891 Specific Gravity of Liquid Industrial Chemicals
ASTM D 1078 Distillation Range of Volatile Organic Liquids
ASTM D 1353 Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products
ASTM D 1568 Sampling and Chemical Analysis of Alkylbenzene Sulfonates
ASTM F 483 Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
ASTM F 485 Effects of Cleaners on Unpainted Aircraft Surfaces
ASTM F 1105 Preparing Aircraft Cleaning Compounds, Liquid Type, Solvent Based, for Storage Stability Testing
ASTM F 1110 Sandwich Corrosion Test

2.3 U.S. Government Publications:

Available from Standardization Documents Order 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 Composition:

The cleaner shall be a uniform mixture of the materials in the percentages by volume shown in Table 1.

TABLE 1 - Composition

Ingredient	Percentage
Dichloromethane, Technical Grade	69 ± 1
Methyl Ethyl Ketone	29 ± 1
Ethylene Glycol Monobutyl Ether	2 ± 0.5

3.1.1 Cleaner shall not be deleterious to aircraft structural alloys.

3.2 Properties:

The cleaner shall conform to the following requirements; tests shall be performed in accordance with specified test methods on the cleaner supplied in concentrated form:

3.2.1 (R) Flash Point: Shall be not lower than 43 °C (109 °F), determined in accordance with ASTM D 56 or other method acceptable to purchaser.

3.2.2 Residue: There shall be no visible residue or stains on aluminum alloy panels after the final water rinse, determined in accordance with 3.2.2.1.

3.2.2.1 Two 2 x 6 inch (51 x 152 mm) panels of AMS 4049 aluminum alloy shall be cleaned with acetone. The specimens shall be immersed in a sufficient quantity of the cleaner to cover approximately one-half of the panel. After the cleaner has been applied, the panels shall be placed at approximately 45 degrees from the horizontal in an oven maintained at 38 °C ± 1 (100 °F ± 2) for 30 minutes ± 1. At the end of the 30 minutes, the panels shall be removed from the oven, rinsed with room-temperature distilled water, 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 (R) Sandwich Corrosion: Specimens shall pass the sandwich corrosion test, determined in accordance with ASTM F 1110.

3.2.3.2 Total Immersion Corrosion: Cleaner shall neither produce evidence of corrosion of the panels nor cause a weight change greater than 0.3 (mg/cm^2) per 24 hours for any panel of AMS 4049 aluminum alloy, determined in accordance with ASTM F 483.

3.2.4 Temperature Stability: Cleaner shall not show chemical or physical deterioration, including evidence of discoloration, layering, or other change denoting loss of stability after exposure to 2 °C ± 3 (35 °F ± 5) for 120 hours ± 1.

3.2.5 Color: The product shall be water white.

3.2.6 Effect on Unpainted Surfaces: Cleaner, tested in accordance with ASTM F 485, shall neither produce streaking of unpainted AMS 4049 aluminum alloy test panels nor leave any stains requiring polishing to remove.

3.2.7 (R) Storage Stability: Cleaner shall be stable in storage for not less than 12 months at room temperature. Cleaner shall remain free of lumps and skin formation and shall remain homogeneous. Samples prepared as in 3.2.7.1 shall show no evidence of layering, separation, settling, or crystallization after being subjected to five freeze-thaw cycles in accordance with 3.2.7.2. Cleaner shall not deliquesce or otherwise deteriorate when stored in shipping container or use package for not less than 12 months, determined in accordance with ASTM F 1105.

3.2.7.1 Two 6-ounce (177-mL) samples of the product shall be placed in 8-ounce (237-mL) clear glass bottles, sealed, and, from that time until test is completed, shall be handled so as to minimize movement of the sample.

3.2.7.2 Samples shall be exposed for not less than 12 hours at -23 °C ± 1 (-9 °F ± 2). At the end of the 12 hours, sample shall be removed to a room-temperature environment and allowed to thaw completely.

3.2.8 Specific Gravity: Shall be 1.1204 to 1.2376 at 23 °C (73 °F), determined in accordance with ASTM D 891.

3.2.9 Distillation Range: Shall be as follows, determined in accordance with ASTM D 1078:

Initial Boiling Point	-	40 °C (104 °F) minimum
10%	-	47 °C (117 °F) minimum
20%	-	48 °C (118 °F) minimum
30%	-	50 °C (122 °F) minimum
40%	-	52 °C (126 °F) minimum
50%	-	55 °C (131 °F) minimum
60%	-	59 °C (138 °F) minimum
70%	-	65 °C (149 °F) minimum
80%	-	71 °C (160 °F) minimum
90%	-	81 °C (178 °F) minimum
Dry Point	-	166 °C (331 °F) maximum

3.2.10 Nonvolatile Matter: Shall not exceed 0.002%, determined in accordance with ASTM D 1353.

3.2.11 Performance: Cleaner, when used in accordance with manufacturer's recommendations, shall remove normally accumulated soils from exterior metallic surfaces of aircraft without leaving any visible residue on any surface tested.

3.3 Quality:

The cleaner, as received by purchaser, shall be clear, homogeneous, and free from solid particles and separation and from foreign materials detrimental to usage of the cleaner.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:
(R)

The vendor of the 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 flash point (3.2.1), residue (3.2.2), color (3.2.5), specific gravity (3.2.8), distillation range (3.2.9), nonvolatile matter (3.2.10), and quality (3.3) are acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests for composition (3.1), corrosion of metal surfaces (3.2.3), temperature stability (3.2.4), effect on unpainted surfaces (3.2.6), and performance (3.2.11) 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:

(R) 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.

4.3.1 (R) 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.

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, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and, when requested, sample cleaner. Production cleaner made by the revised procedure shall not be shipped prior to receipt of reapproval.