

INCH-POUND

MIL-PRF-83936C(USAF)

27 December 1996

SUPERSEDING

MIL-R-83936B (USAF)

13 January 1977

PERFORMANCE SPECIFICATION

REMOVER, PAINT, TANK TYPE; FOR AIRCRAFT WHEELS, LANDING GEAR COMPONENTS, AND OTHER AIRCRAFT AND SUPPORT EQUIPMENT

This specification is approved for use by the Department of the Air Force and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification establishes the requirements for one type of activated solvent tank type paint remover for use on aircraft wheels, landing gear components, and other aircraft and support equipment components.

1.2 Classification. This specification covers one type of non-phenolic, biodegradable paint remover.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be of use in improving this document should be addressed to: WR-ALC/LKJE, 460 2ND ST, STE 221, Robins AFB, GA 31098-1640, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8010

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2.2 Government documents.

2.2.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the applicable issues of these documents are those listed in the specific issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

DEPARTMENT OF DEFENSE

- MIL-M-3171 - Magnesium Alloy, Processes for Pretreatment and Prevention of Corrosion On
- MIL-C-8514 - Coating Compound, Metal Pretreatment, Resin-Acid
- MIL-A-8625 - Anodic Coatings, for Aluminum and Aluminum Alloys
- MIL-P-23377 - Primer Coating, Epoxy Polyamide, Chemical and Solvent Resistant
- MIL-L-81352 - Lacquer, Acrylic-Nitrocellulose, Gloss (For Aircraft Use)
- MIL-C-83286 - Coating, Urethane, Aliphatic Isocyanate, for Aerospace Applications

STANDARDS

FEDERAL

- FED-STD-313 - Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities
- FED-STD-595 - Colors

DEPARTMENT OF DEFENSE

- MIL-STD-870 - Cadmium Plating, Low Embrittlement, Electrodeposition

(Federal and Military Standards can be procured through the US Government Printing Office, Washington DC, 20402, 1-202-512-1800)

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2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the applicable issues are those cited in the solicitation.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Federal Hazardous Substances Labeling Act

(Application for copies should be addressed to the US Department of Health, Education and Welfare, Food and Drug Administration, Washington, DC 20203)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS

- ASTM B209 - Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate
- ASTM D2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield) Viscometer (R 1991)
- ASTM F519 - Standard Test Method for Mechanical Hydrogen Embrittlement Testing of Plating Processes and Aircraft Maintenance Chemicals

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 39103)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- SAE AMS 4377 - Sheet and Plate, Magnesium Alloy 3.0AL - 1.0Z - 0.20MN (AZ31B-H24) Cold Rolled and Partially Annealed
- SAE AMS 5046 - Sheet, Strip, and Plate, Carbon Steel (SAE 1020 and 1025) Annealed

(Applications for copies should be addressed to Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document,

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however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. The remover furnished under this specification shall be a product that has been tested and passed the qualification tests specified herein, and has been listed or approved for listing on the applicable qualified products list before contract award (see 4.2 and 6.4)

3.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Materials. The material covered by this specification shall be a tank type paint remover consisting of ingredients to produce a stable, homogeneous, satisfactory product. The viscosity shall not exceed 15 centipoises at the manufacturer's recommended operating temperature when tested in accordance with paragraph 4.4.2.

3.4 Composition. The formulation of the paint remover shall be optional with the supplier but shall be restricted by other requirements specified herein, and shall contain no phenols or phenol derivatives. The paint remover shall be a pourable liquid at room temperature and shall contain no materials which may be considered corrosive under applicable conditions. The use of a water or oil seal is permissible to prevent evaporation of the remover in actual use.

3.5 Biodegradability. All surfactants incorporated in the paint remover formulation shall be at least 90 percent biodegradable. The supplier shall furnish certification (from the manufacturer of the surfactants) regarding biodegradability characteristics.

3.6 Toxicity. The paint remover shall have no adverse effect on the health of personnel when used for its intended purpose. The instructions for use of the paint remover shall include any necessary safety precautions for handling hazardous materials. The chemical composition and/or toxicological data of the paint remover shall be supplied to WR-ALC/LKJE, 460 2ND ST, STE 221, ROBINS, GA 31098-1640 to evaluate the occupational and environmental protection necessary to utilize the paint remover in Air Force activities.

3.7 Requirements. Physical and chemical properties of the paint remover shall meet the requirements of Table I when tested in accordance with the indicated method.

4. VERIFICATION

4.1. Classification of inspections. The inspection requirements are classified as follows:

- (a) Qualification inspection (see 4.2)

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(b) Quality conformance inspection (see 4.3)

4.2 Qualification inspection. Qualification tests shall consist of all the tests specified in Table I.

TABLE I

PHYSICAL AND CHEMICAL REQUIREMENTS

PROPERTY	REQUIREMENT	TEST METHOD
Flammability	Self-extinguishing within 3 seconds.	Para. 4.4.1 *
Viscosity	Maximum of 15 centipoises at the manufacturer's recommended operating temperature.	Para. 4.4.2 *
Corrosion	Not to exceed limits per Para 4.4.3, Table II.	Para 4.4.3 *
Paint Removal Performance	Visibly attacks and lifts 95% of finishes of two out of three panels.	Para 4.4.4 *
Hydrogen Embrittlement	Shall not produce tensile failure or show any visible signs of hydrogen embrittlement.	Para. 4.4.5
Storage Stability (6 months)	Meet all requirements of specification.	Para. 4.4.6

* Denotes requirements to be checked for quality conformance inspection per para 4.3.

4.2.1 Qualification procedures. Upon successful completion of all testing requirements as specified herein, the contractor shall provide a certified qualification test report showing that the material conforms to all requirements of this document. The report shall be forwarded to WR-ALC/LKJE, 460 2ND ST, STE 221, ROBINS AFB, GA 31098-1640. Upon review and acceptance of the test report, the government will add the product to the Qualified Products List.

4.3 Quality conformance inspection. Quality conformance inspection shall include all tests of this specification as noted by asterisks in Table I and as specified herein.

4.4 Test Procedures.

4.4.1 Flammability. A 1 x 6 inch panel shall be prepared from 2024 aluminum alloy conforming to ASTM B209. A hole shall be drilled near one end to facilitate hanging. The panel shall be dipped into a container of the paint remover and immediately suspended on a ring stand. A microburner flame, not exceeding 3/16 inch in length shall be passed back and forth along the lower edge of the panel within a 2 second period. This operation shall be repeated three times at 3 second intervals. If the paint remover ignites, the burner flame shall be removed and observation made to determine whether the paint remover continues to burn. Burning duration in excess of 3 seconds after removal of the flame shall be cause for rejection.

4.4.2 Viscosity. Viscosity shall be a maximum of 15 centipoises. It shall be determined at manufacturer's recommended operating temperature, using a Model LFV Brookfield Viscometer,

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or its equivalent in accordance with ASTM D2196. Readings shall be taken after the spindle has been operating for a minimum of three minutes.

TABLE II

METAL	SPECIFICATION/ STANDARD	SURFACE TREATMENT	WEIGHT CHANGE
Aluminum	ASTM B209 (2024-T3)	As Received	±4.0 mg
Aluminum	ASTM B209 (2024-T3)	MIL-A-8625 Type II, Class I 1900 - 2100 mg/sq ft	-4.0 mg
Magnesium	SAE AMS 4377	MIL-M-3171, Type III	±20.0 mg
Steel	SAE AMS 5046	As Received	±4.0 mg
Steel	SAE AMS 5046	MIL-STD-870 Type II, Cl I (Cad. Plate)	±40.0 mg

NOTE: All panels shall be cleaned/degreased with a suitable solvent, oven dried at 375° F for 1 hour, and desiccated for 1/2 hour prior to surface treatment and/or testing. Panels shall be sheared/cut prior to surface treatment.

TABLE III

METAL	SPECIFICATION	SURFACE TREATMENT
Aluminum	ASTM B209 (2024-T3)	MIL-A-8625, Type II, Class I, Dichromate Seal
Magnesium	SAE AMS 4377	MIL-M-3171, Type III
Steel	SAE AMS 5046	MIL-STD-870, Type II, Class 1

NOTE: All panels shall be sheared/cut prior to surface treatment. All panels shall be cleaned/degreased with suitable solvent prior to surface treatment and painting.

TABLE IV

COATING SYSTEM	DRY FILM THICKNESS	DRYING TIME STD CONDITIONS
Wash Primer, MIL-C-8514	0.3 - 0.5 mils	1 hr
Topcoat, MIL-L-81352	2 coats (0.5 - 0.7 mils each)	8 hr
Epoxy Primer, MIL-C-23377	0.5 - 0.9 mils	1 hr
Urethane Topcoat, MIL-C-83286	2 coats 0.8 - 1.1 mils each	4 hrs between coats. 48 hrs after last coat

NOTE: After coating systems are applied to both sides of the test panel and cured as above, all panels shall be baked for 96 hours at 210° ± 10° F cooled to ambient temperature and stored in a desiccator (or equivalent) until used for test.

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4.4.3 Corrosion. Two specimens, 2 x 4 inches shall be prepared from each of the metals listed in Table II. Each specimen shall be weighed to the nearest 0.1 mg, placed singly in suitable glass jars at approximately a 45° angle, and completely covered with the paint remover. The jars shall be loosely capped with screw type cap and placed in a suitable conditioning chamber at the manufacturer's recommended operating temperature, for a total exposure period of 24 hours. At the end of the exposure period, the specimens shall be removed from the conditioning chamber and thoroughly rinsed with tap water. The specimens shall then be thoroughly rinsed with a suitable solvent, oven dried at 375°F for one hour, desiccated for one-half hour, and re-weighed to the nearest 0.1 mg. Pitting, etching, or weight changes exceeding the limits of Table II shall be cause for rejection.

4.4.4 Paint removal performance.

4.4.4.1 Preparation of test panels. Six test panels, 3" x 6" x 1/16", of each of the metals and treatment as specified in Table III shall be prepared.

4.4.4.2 Painting of test panels. After the test panels have been prepared as specified in Table III, three panels of each metal shall be painted with the coating systems as specified in Table IV. All paint topcoats shall be color # 17875 or # 16473 in accordance with FED-STD 595.

4.4.4.3 Paint removal procedure. Three test panels of each metal specified in Table III, and painted with each coating system specified in Table IV shall be immersed in a container of the paint remover which shall be brought up to the manufacturer's recommended operating temperature in an oven prior to immersing the test panels; the test panels shall remain in the remover in the oven for a period of 30 minutes. At the conclusion of the test period the test panels shall be rinsed with a water spray (hot or cold) not exceeding 100 psi. The test panels shall be air dried and examined for compliance with the paint removal requirements of Table I.

4.4.5 Hydrogen embrittlement. Test specimens shall be prepared and tested in accordance with ASTM F519, Type 1a, for maintenance chemicals. Accept/reject criteria shall be in accordance with ASTM F519, paragraph 9.

4.4.6 Six month storage stability. A one gallon container of the paint remover shall be stored unopened at a temperature of 75° ± 5°F for a period of six months. At the end of the storage period, the container shall be examined for visual signs of paint remover deterioration. Any bulging of the container due to pressure build-up or signs of deterioration of the container lining or material separation shall be cause for rejection. The paint remover shall then conform to all the requirements of this specification.

5. PACKAGING

5.1 General. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point

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packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department or Defense Agency automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. The paint remover covered by this specification is intended to be used for removing difficult to remove paint finishes from aircraft wheels, landing gears, and other components.

6.2 Acquisition requirements. Acquisition documents shall specify the following:

- a. Title, number and date of this specification.
- b. Issue of the DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2).
- c. Material Safety Data Sheets, if required (6.4).
- d. Packaging requirements (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of contract, qualified for inclusion in Qualified Products List QPL-83936, whether or not such products have been listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from WR-ALC/LKJE, 460 2ND ST, STE 221 ROBINS AFB, GA 31098-1640.

6.4 Material Safety Data Sheets. When specified (see 6.2) Material Safety Data Sheets will be provided in accordance with FED-STD-313.

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6.5 Subject term (key word) listing.

biodegradable
flammability
hydrogen embrittlement
solvent
surfactant
viscosity

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodian:
Air Force - 99

Preparing Activity:
Air Force - 84

Agent:
Air Force - 99

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