

MIL-C-81964A(AS)

28 November 1977

SUPERSEDING

MIL-C-81964(AS)

19 February 1974

MILITARY SPECIFICATION
CLEANING COMPOUND, AVIONIC COMPONENTS

This specification is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers a cleaning compound designed for use on avionic components.

1.2 Classification. The cleaning compounds covered by this specification shall be of the following types, as specified (see 6.2).

Type I Pressurized container

Type II Standard container

2. APPLICABLE DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Engineering Specifications and Standards Department (Code 93), Naval Air Engineering Center, Lakehurst, New Jersey 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 6850

MIL-C-81964A(AS)

SPECIFICATIONS

FEDERAL

BB-F-1421	-Fluorocarbon Refrigerants
VV-D-1078	-Damping Fluid, Silicone Base (Dimethyl Polysiloxane)
PPP-B-636	-Boxes, Fiberboard
PPP-C-96	-Cans, Metal, 28 Gage and Lighter
PPP-D-729	-Drum, Shipping and Storage, Steel, 55-Gallon
PPP-P-704	-Pails, Metal: (Shipping, Steel, 1 through 12 Gallon)

MILITARY

MIL-C-81302	-Cleaning Compound, Solvent, Trichlorotrifluoroethane
-------------	---

STANDARDS

FEDERAL

FED-STD-313	-Material Safety Data Sheets, Preparation and Submission of
FED-STD-595	-Colors

MILITARY

MIL-STD-105	-Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	-Marking for Shipment and Storage

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

MIL-C-81964A(AS)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to the National Motor Freight Traffic, Tariff Order Section, 1616 P Street, N.W., Washington, D.C. 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification Rules

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

DEPARTMENT OF TRANSPORTATION

49 CFR 100-199 -Department of Transportation (DOT) Regulations for the Transportation of Explosive and Other Dangerous Articles by Land and Water

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Orders for the publications should cite "The latest issue and supplements thereto".)

3. REQUIREMENTS

3.1 Material. The cleaning compound shall be a mixture of trichlorotrifluoroethane and dimethyl polysiloxane.

3.2 Composition. The composition of the cleaning compound shall be as specified in table I.

3.3 Leakage. When tested as specified in 4.5.8, the pressurized container shall not leak nor become distorted.

3.4 Weight. When tested as specified in 4.5.9, the content of the pressurized container shall weigh not less than 16.0 ounces (avoirdupois).

3.5 Workmanship. The cleaner furnished under this specification shall be a homogeneous and uniform product free of suspended matter, sediment, grit or other foreign matter.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other

MIL-C-81964A(AS)

facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.3 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified in the applicable paragraphs in this specification.

4.4 Quality conformance inspection. Unless otherwise specified, the quality conformance inspection shall consist of the inspection described in 4.4.3 and 4.4.4 and all the tests specified herein.

4.4.1 Lot formation. A lot shall consist of all the cleaning material produced by one manufacturer, at one plant, from the same materials, and under essentially the same manufacturing conditions provided the operation is continuous. In the event the process is a batch operation, each batch shall constitute a lot (see 6.4).

4.4.2 Quality conformance tests samples (Type I only). The pressurized cans shall be selected at random in accordance with MIL-STD-105, inspection level S-1 and acceptable quality level (AQL) 2.5.

4.4.3 Visual examination of end item (Type II only). The sample unit for this examination shall be one filled unit container. The content shall be examined for the defects listed in table II. The sample size shall be in accordance with table III. Any evidence of nonconformance shall be cause for rejection of the lot.

4.4.4 Sampling for inspection of filled containers (Type II only). The sample unit for this examination shall be one filled container. The sample size shall be as specified in table III. The lot shall be unacceptable if the average net content per container for all units examined is less than specified.

4.4.5 Packaging inspection. An examination shall be made to determine if the packaging, packing and marking comply with the requirements of Section 5 of this specification. The sample unit shall be one shipping container fully prepared for delivery. Each sample unit shall be examined for the defects listed in table IV. The lot size shall be the number of shipping containers in the lot. The examination shall be in accordance with MIL-STD-105, inspection level S-2 and acceptable quality level (AQL) 2.5 defects per hundred units.

MIL-C-81964A(AS)

4.5 Test methods.

4.5.1 Leakage. Using a filled pressurized can, spray the solvent for three seconds and pause for two seconds. Repeat this operation five times. The can shall then be submerged completely in water maintained at $54 \pm 1.1^\circ\text{C}$ ($130 \pm 2^\circ\text{F}$). Let the can remain for five minutes. The emission of bubbles shall indicate leakage. At the end of the five minutes, remove the can from the water and examine it for evidence of distortion.

4.5.2 Weight. Weigh the filled pressurized can to the nearest 0.1-oz. Spray the content for 3 minutes and pause for one minute. Again, spray for 3 minutes and pause for one minute. Repeat the cycle until there is no further evidence of spray formation. Puncture a hole in the can and empty it completely. Weigh the empty can to the nearest 0.1-oz. Calculate the weight of the content by subtracting the weight of the empty can from the weight of the full can.

5. PREPARATION FOR DELIVERY

5.1 Preservation. Preservation shall be level A or minimum protection as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Type I. Unless otherwise specified in the contract or order, type I cleaning compound shall be packaged in 16-oz pressurized containers conforming to Type IX, Class 2, of PPP-C-96. There shall be no lacquer coating on the interior of the can. The valve shall be a Newman Green No. 814-10-123 or equivalent. The sprayhead shall be a Newman Green No. 102-20-18 or equivalent. Each container shall have a snug fitting metal or plastic protective cap. A 5-inch (127mm) plastic extension designed to fit the sprayhead shall be attached to the outside of the can. All containers shall be new and free from contaminants.

5.1.1.2 Type II. The type II cleaning compound shall be furnished in 1-gallon, 5-gallon or 55-gallon containers as specified (see 6.2). Unless otherwise specified in the contract or order, the 1-gallon and 5-gallon containers shall conform to type I, class 3 of PPP-P-704. The 55-gallon container shall conform to type II of PPP-D-729. All internal surfaces of the container shall be lined with a material that will not affect or be affected by the cleaning compound.

5.1.1.3 Intermediate packaging. Twelve containers packaged as specified in 5.1.1.1 shall be packaged in a fiberboard box conforming to PPP-B-636, type CF, class domestic, style RSC, grade 200. The 12 cans, arranged 3 in width and 4 in length, shall fit snugly in the fiberboard box, and each unit shall be nested in a snug fitting, full-height half-slotted style partition. The box and the partition shall be made of the same material. The box closure shall be in accordance with the appendix.

MIL-C-81964A(AS)

5.1.2 Minimum protection.

5.1.2.1 Level C. The cleaning compound, unless otherwise specified in the contract or order, shall be packaged in quantities as specified in 5.1.1 in a manner that will afford adequate protection against deterioration and physical damage during shipment from the supply source to the first receiving activity and for a minimum of 30 days storage.

5.2 Packing. Packing shall be level A, B, or minimum protection.

5.2.1 Level A. Four intermediate packages as specified in 5.1.1.3, shall be packed in a snug fitting fiberboard box conforming to PPP-B-636, class weather resistant and taped in accordance with the appendix. Four 1-gallon containers, packaged as specified in 5.1.1.2, shall be packed in a fiberboard box conforming to PPP-P-636, class weather resistant and taped in accordance with the appendix. The four 1-gallon containers, arranged 2 X 2, shall fit snugly in the fiberboard box, and each unit shall be nested in a snug fitting, full height, half slotted style partition. The partition and the box shall be made of the same material.

5.2.2 Level B. Four intermediate packages, as specified in 5.1.1.3, shall be packed in a snug fitting fiberboard box conforming to PPP-B-636, class domestic and tape sealed in accordance with the appendix. Four 1-gallon containers, packaged as specified 5.1.1.2, shall be packed in a fiberboard box conforming to PPP-B-636, class domestic and tape sealed in accordance with the appendix. The four 1-gallon containers, arranged 2 by 2, shall fit snugly in the fiberboard box, and each unit shall be nested in a snug fitting, full height, half slotted style partition. The partition and the box shall be made of the same material. The cleaning compound, when packaged in 5-gallon and 55-gallon containers as specified in 5.1.1.2, shall require no overpacking. Standard 4-way entry pallets are required for handling by mechanical equipment.

5.2.3 Minimum protection.

5.2.3.1 Level C. The cleaning compound as packaged in 5.1.2 shall be packed in shipping containers in a manner that will afford adequate protection, at the lowest rate, against damage during direct shipment from the supply source to the first receiving activity. The containers used shall conform to the rules and regulations of the mode of transportation utilized.

5.3 Marking. All unit, intermediate and shipping containers, shall be marked in accordance with MIL-STD-129. In addition, special marking required by the contract or order shall be included. Pressurized containers shall bear the following:

MIL-C-81964A(AS)

CAUTION

Content under pressure.
Do not puncture or incinerate.
Use with adequate ventilation 1/.
Do not store above 49°C (120°F).
Avoid prolonged or repeated breathing of vapors 1/.

1/ Shall also be added to the marking of type II

5.3.1 Instructions for marking. Each pressurized container shall be marked by lithograph or other permanent process in accordance with normal commercial practice. The use of gummed or glued labels is prohibited. All lettering shall be white on a blue background. The blue shall approximately match color No. 25012 of FED-STD-595.

5.3.2 Directions. Each pressurized container shall contain the following instructions:

Use in cleaning electrical and electronic components and equipment. Spray into and on equipment until the surface is wet. This will remove moisture, condensation, oil, grease, and dirt.

5.4 Safety data. Material safety data sheets shall be prepared and submitted in accordance with FED-STD-313, one copy of which shall be forwarded to the preparing activity of this specification.

6. NOTES

6.1 The cleaning compound covered by this specification is intended for cleaning electrical and electronic components, and is particularly effective in cleaning electrical contacts.

6.2 Ordering data - Procurement documents should specify the following:

- (a) Title and number of this specification
- (b) Level of preservation and packing required (see 5.1 and 5.2)
- (c) Quantity desired at 25°C (77°F)
- (d) Additional marking, if required
- (e) Certification of composition (see 3.2)
- (f) Type required (see 1.2)
- (g) Size of container

MIL-C-81964A(AS)

6.3 Batch. A batch is defined as that quantity of material which has been manufactured by some unit chemical process or subjected to some physical mixing operation intended to make the final product substantially uniform.

6.4 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Preparing activity
Navy - AS
(Project No. 6850-N621)

MIL-C-81964A(AS)

TABLE I. Composition.

Component (percent by weight)	Type I	Type II	Test Paragraph
Trichlorotrifluoroethane (MIL-C-81302, type II), %	74.7 \pm 0.7	99.6 \pm 0.04	<u>1/</u>
Silicone fluid (VV-D-1078, Viscosity 0.65 centistokes at 25°C (77°F), %	0.30 \pm 0.03	0.4 \pm 0.04	<u>1/</u>
Propellant (BB-F-1421, type 12), %	25.0 \pm 0.3		<u>1/</u>

1/ A contractor's certificate of compliance is acceptable for this component. The contractor shall also submit an infrared spectrogram of each lot submitted for acceptance.

TABLE II. Examination of end item.

Examine	Defect
Material	Not as specified
Appearance	Presence of foreign matter

TABLE III. Net content.

Lot size (containers)	Sample size (containers)
Up to 50	5
51 - 500	7
501-35,000	8
35,000 and over	11

MIL-C-81964A(AS)

TABLE IV. Packaging inspection.

Examine	Defect
Container	Evidence of leakage, bulging or distorted
Marking	Missing, incorrect, illegible. Improper size, location or method of application

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS: This form is provided to solicit beneficial comments which may improve this document and enhance its use. DoD contractors, government activities, manufacturers, vendors, or other prospective users of the document are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity. A response will be provided to the submitter, when name and address is provided, within 30 days indicating that the 1426 was received and when any appropriate action on it will be completed.

NOTE: This form shall not be used to submit requests for waivers, deviations or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

DOCUMENT IDENTIFIER (Number) AND TITLE

MIL-C-81964A(AS) CLEANING COMPOUND, AVIONIC COMPONENTS

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

☐ VENDOR ☐ USER ☐ MANUFACTURER

1. ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

A. GIVE PARAGRAPH NUMBER AND WORDING

B. RECOMMENDED WORDING CHANGE

C. REASON FOR RECOMMENDED CHANGE(S)

2. REMARKS

SUBMITTED BY (Printed or typed name and address - Optional)

TELEPHONE NO.

DATE

DD FORM 1426
1 OCT 76

EDITION OF 1 JAN 72 WILL BE USED UNTIL EXHAUSTED

FOLD

DEPARTMENT OF THE NAVY
Naval Air Engineering Center
Lakehurst, NJ 08733

POSTAGE AND FEES PAID
Navy Department
DOD-316



OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

Engineering Specifications and Standards Department (Code 93)
Naval Air Engineering Center
Lakehurst, NJ 08733

FOLD