

INCH-POUND

MIL-L-87177A
9 February 1990
SUPERSEDING
MIL-L-87177
9 September 1983

MILITARY SPECIFICATION

LUBRICANTS, WATER DISPLACING, SYNTHETIC

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

1. SCOPE

1.1 Scope. This specification covers synthetic, water displacing lubricant, compounds which may be applied from gas pressurized containers, or by dipping or brushing.

1.2 Classification. The compound shall be furnished in the specified types and grades (see 6.2).

1.2.1 Types. The compound types shall consist of the following:

- a. Type I: Pressurized spray container (for spray application).
- b. Type II: Bulk form.

1.2.2 Grades. The compound grades shall be designated as follows:

- a. Grade A: Lubricant, water displacing, synthetic.
- b. Grade B: Lubricant, water displacing, synthetic, with added corrosion inhibitor.
- c. Grade C: Lubricant, dry spray, synthetic.

2.1 Government documents

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

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: ASD/ENES, Wright-Patterson AFB OH 45433-6503 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 9150

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

MIL-L-87177A**2. APPLICABLE DOCUMENTS****SPECIFICATIONS****FEDERAL**

A-A-51126	Anodes, Cadmium
QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet
QQ-B-626	Brass, Leaded and Nonleaded Rod, Shapes, Forgings and Flat Product TH Finished Edges (Bar and Strip)
QQ-C-576	Copper Flat Products with Slit, Slit and Edge-Rolled, Sheared, Sawed or Machined Edges, (Plate, Bar, Sheet, and Strip)
QQ-M-44	Magnesium Alloy Plate and Sheet (AZ31b)
TT-N-95	Naphtha, Aliphatic
TT-T-291	Thinner, Paint, Mineral Spirits, Regular and odorless
MMM-A-250	Adhesive, Water-Resistant (For Closure of Fiberboard Boxes)
PPP-B-636	Box, Shipping, Fireboard
PPP-C-96	Can, Metal, 28 Gage and Lighter

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MIL-S-7952	Steel, Sheet and Strip, Uncoated, Carbon (1020 and 1025) (Aircraft Quality)
MIL-A-18001	Anode, Corrosion Preventative, Zinc, Slab Disc and Rod Shaped
MIL-S-22805	Spray Kit, Self Pressurized

STANDARD**FEDERAL**

FED-STD-313	Material Safety Data Sheets Preparation and the Submission of
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MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-290	Packing of Petroleum and Related Products

(Unless otherwise indicated, copies of federal and military specifications and standards are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.2 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 cited in the solicitation (see 6.2)

MIL-L-87177A**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

- ASTM B 117 Method of Salt Spray (Fog) Testing (DoD adopted)
- ASTM D 740 Methyl Ethyl Ketone
- ASTM D 877 Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes (DoD adopted)
- ASTM D 942 Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method (DoD adopted)
- ASTM D 1310 Flash Point of Liquids by Tag Open-Cup Apparatus (DoD adopted)
- ASTM D 2266 Wear Preventive Characteristics of Lubricating Grease (Four-Ball Method) (DoD adopted)

(Applications for copies should be addressed to American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

DEPARTMENT OF TRANSPORTATION

- 29 CFR 1910.2100 Material Safety Data Sheet, Preparation and Submission of
- 49 CFR 173.300 Department of Transportation Hazardous Materials Regulation

(Application for copies should be addressed to Department of Transportation, 400 7th Street, SW, Washington, DC 20590.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

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

3. REQUIREMENTS

3.1 First article. When specified (see 6.2.2.1), a sample shall be subjected to first article inspection in accordance with 4.4.

3.2 Material safety data sheet. Material safety data sheets shall be prepared in accordance with FED-STD-313 and 29 CFR 1910.2100. When FED-STD-313 is at variance with the CPR, 29 CFR 1910.2100 shall take precedence, modify and supplement FED-STD-313.

3.3 Properties. The compound shall conform to the properties specified in table I.

3.3.1 Type I compound. The type I compound (See table I) shall be contained in a gas pressurized container with a 80 percent volume of the compound and 2.7 percent volume of carbon dioxide.

3.3.2 Type II compound. The type II compound (see table I) shall be in bulk form.

3.3.3 Type packaging

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3.3.3.1 Packaging of compound in gas pressurized containers. The pressurized containers shall hold 16 ounces. The containers shall conform to class 2, type IX of PPP-C-96 with a valve opening diameter suitable for the specified valve.

3.3.3.2 Nonpressurized containers. Nonpressurized packaging of the compound shall be in containers conforming to PPP-C-96, type VIII.

3.4 Performance

3.4.1 Type I – pressurized container. The pressurized container shall meet requirements specified herein and shall meet Department of Transportation requirements.

3.4.1.1 Leakage. The pressurized container shall not leak or become distorted when tested as specified in section

3.4.1.2 Content. The pressurized containers shall contain a minimum of 16 ounces when tested as specified in section

3.4.1.3 Performance of compound. The compound packaged in the pressurized containers shall spray uniformly, adhere to the panel, and shall not foam excessively or sag when tested as specified in section 4.

3.4.2 Type II – bulk form. When tested as specified as applicable in section 4, the compound shall meet the properties of table I.

3.4.3 Corrosivity. Grade A compound shall show no evidence of corrosivity as specified in table I when tested as specified in section 4.

3.4.4 Corrosion resistance. Grade B compound shall show no evidence of corrosion as specified in table I when tested as specified in section 4.

3.4.5 Toxicity. The compound shall have no adverse effect on the health of personnel when used for its intended purpose. Questions pertinent to this effect shall be referred by the contracting activity to the appropriate departmental medical service who will act as an advisor to the contracting agency.

3.5 Workmanship. The compound shall be homogeneous, free from grit, abrasives, water, inorganic chlorides and other impurities. A typical formulation is given in table I. The exterior orifice of the pressurized containers shall be symmetrical and free of ragged edges, and the exterior orifice, if drilled, shall be symmetrical and in direct alignment with angle of discharge.

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

MIL-L-87177A**TABLE I. Physical and chemical properties.**

<u>Characteristics</u>	<u>Limits</u>
Dryness	0.0100 gram (max)
Flash point	243°C(470°F)(min)
Grade A Synthetic sea water displacement	No visible corrosion. Fine localized pitting shall not be cause for rejection
Dielectric breakdown	25,000 volts (min)
Lubricity	1.20 mm wear scar diameter (max)
Residue soluble trichlorotrifluoroethane	No visible residue
Oxidation stability	Less than 5 pounds per 100 hours
Grade A corrosivity	No visible pitting, etching, or dark discoloration. No weight change (milligrams/ cm ²) greater than 0.5 for magnesium, cadmium and zinc; nor greater than 0.2 for aluminum, copper and brass.
Grade B corrosion	No evidence of corrosion on the resistance base metal when exposed for 168 hours in accordance with methods specified in section 4.
Sprayability	Sprayable.
Grade C shall meet all the physical and chemical properties in table I except the corrosivity (Grade A) and corrosion resistance (Grade B) requirements.	

4. QUALITY ASSURANCE PROVISIONS

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspections, as part of manufacturing operations, is an acceptance practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material,

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either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (4.4)
- b. Quality conformance inspection (4.5).

4.3 Inspection conditions

4.3.1 Test conditions. In general, physical tests contained in this specification shall be made under controlled atmospheric conditions having a relative humidity of 50 + 5 percent and a temperature range of from 21°C to 27°C (70°F to 80°F). Waiver of this requirement may be permitted where proper conditioning facilities are not available for control testing. However, for referee purposes, the specified tests shall be made upon the compound under the specified atmospheric conditions.

4.3.2 Specimen for test

4.3.2.1 Materials. The material for the test disks and panels shall be carbon steel conforming to composition 1020 of MIL-S-7952.

4.3.2.2 Size of test disk and panels. Test panels for tests requiring compound coatings shall be 2 by 4 by 1/8 inches; the dryness tests shall require disks with a diameter of 2-1/8 inches and a thickness of 1/16 inch.

4.3.2.3 Preparation of test panels (or disks). Panels (or disks) shall have all sharp edges and burrs removed and shall have all holes chamfered to prevent injury in handling. The panels (or disks) shall be surface ground and hand polish with a 240 grit silicon carbide or aluminum oxide cloth or paper to produce a surface finish of 10 to 20 microinches (rms). Iron oxide or so-called "wet or dry" papers or cloths shall not be used.

4.3.2.4 Cleaning test panels (or disks). The utensils and cloths used in the cleaning of test panels (or disks) shall be clean and free of contamination. Solvents shall be fresh and renewed frequently. In all stages of treatment the handling of panels (or disks) with the bare hands shall be avoided. The panels (or disks) shall not be permitted to contact contaminated surfaces during the cleaning procedure and shall be handled by tongs and hooks during and after dipping. After polishing, they shall be cleaned with a surgical gauze swab, in a beaker of hot mineral spirits conforming to type I of TT-T-291. Cleaning and scrubbing shall be followed by dipping in (1) a second container of hot mineral spirits, (2) boiling 95 percent methanol, and (3) boiling absolute methanol. The panels (or disks) shall be allowed to dry and shall then be stored in a desiccator until ready for use. If storage of more than 24 hours occurs, the surface preparation shall be repeated starting with the hand polishing.

4.3.2.5 Coating of the test panels (or disks). Application of the compound to the test panels (or disks) shall be carried out under the atmospheric conditions of 4.3.1. The panels (or disks) shall be held at an angle of 30 degrees from the horizontal. A coating of the compound shall be sprayed on the panels (or disks) from a pressurized container or a container conforming to MIL-S-22805 held 12 inches away. After ten minutes, a second coating shall be sprayed on. The combined thickness of the two coats after drying shall be 1.2 to 1.5 mils. After application they shall be conditioned for 24 hours

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under the atmospheric conditions of 4.3.1 in a draft-, dust- and fume- free atmosphere.

4.3.3 Inspection lot. An inspection lot shall consist of all material produced during a single batch operation and offered for acceptance at one time.

4.4 First article inspection

4.4.1 Waiver of article sample inspection. If a contractor has previously furnished the compound in accordance with the requirements of this specification and his product has been found to be satisfactory, the requirement for a first article sample and its submittal for any subsequent contract or order may be waived at the discretion of the procuring activity.

4.4.2 First article samples. First article sample shall consist of at least five type I filled pressurized containers (see 3.3.1), or 5 quarts of the type II compound (see 3.3.2). Samples shall be selected at random from materials (see 3.1) which have been manufactured or used for filling the contract.

4.4.2.1 Identification of samples. Samples shall be plainly identified by securely attached durable tags marked with the following information:

LUBRICANT, CORROSION PREVENTIVE COMPOUND, WATER
DISPLACING, SYNTHETIC GRADE _____

Samples of material subjected to first article

Name of Manufacturer (Plant in which material is manufactured)

Manufacturer's Designation

Date of Manufacture

Submitted by (Name) (Date) for Contract No. _____

The manufacturer shall submit a copy of test results with the samples showing conformance with all the requirements of this specification and the applicable requirements of regulation 49 CFR 173.300 of the Department of Transportation. The manufacturer shall submit a certified statement specifically identifying each ingredient in the compound by chemical name, source and percentage by weight.

4.4.3 First article tests. First article sample(s) shall be subjected to all the tests specified in table II to determine compliance with the requirements of section 3 herein.

4.5 Quality conformance inspection. Samples shall be labeled completely with information identifying the purpose of the sample, name of product, specification number, lot and batch number, date of sampling and contract number.

4.5.1 Sampling plan A. One type I filled pressurized container (see 3.3.1) and one quart of the type II compound (see 3.3.2) shall be selected in accordance with MIL-STD-105, inspection level S-3 with an AQL 4.0 percent defective and shall be subjected to the tests specified in table III.

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TABLE II. <u>First article testing</u> <u>1/</u>			
<u>Characteristics</u>	<u>Requirements</u>	<u>Test method</u>	<u>ASTM</u>
Dryness	3.3, table I	4.6.1	
Flash point	3.3, table I		D1310
Grade A synthetic sea water displacement	3.3, table I	4.6.2	
Dielectric breakdown	3.3, table I		D877
Lubricity	3.3, table I		D2266 <u>2/</u>
Residue soluble in trichlorotrifluoroethane	3.3, table I	4.6.3	
Leakage	3.4.1.1	4.6.4	
Content	3.4.1.2	4.6.5	
Performance of pressurized containers	3.4.1.2	4.6.6	
Oxidation stability	3.3, table I		D942
Grade A corrosivity	3.4.3	4.6.7	
Grade B corrosion resistance	3.4.4	4.6.8	
Sprayability	3.3, table I	4.6.9	
Grade C shall meet all the first article testing in table II, except the corrosivity (Grade A) and corrosion resistance (Grade B) requirements.			

1/ Refer to 4.3.1

2/ Compound shall be weathered before loading into ball pot.

4.5.2 Sampling Plan B. A random sample of type I filled containers shall be selected in accordance with MIL-STD-105, inspection level I with an AQL 2.5 percent defective from each inspection lot (see 4.3.3). The sample container(s) shall be subjected to the tests specified in table II.

4.5.3 Certification. The manufacturer shall certify that there has been no formulation or process change from that which resulted in the production of the first article inspection sample(see 4.4.2). Each ingredient material shall be identified with the name of its manufacturer and that manufacturer's trade name and formula number.

MIL-L-87177ATABLE III. Quality conformance inspection ^{1/}

<u>Inspection</u>	<u>Requirement paragraph</u>	<u>Test paragraph</u>
Grade A Corrosivity	3.4.3	4.4, 4.5 4.6, 4.6.7
Grade B Corrosion resistance	3.4.4	4.4, 4.5 4.6, 4.6.8
Leakage	3.4.1.1	4.6.4
Contents	3.4.1.2	4.6.5
Performance of pressurized containers	3.4.1.3	4.6.6

^{1/} Refer to 4.5.

4.5.4 Inspection of packaged containers. The packaging containers, packing, and marking of type I and type II compound shall be inspected to determine conformance to the requirements of section 5. Selection shall be in accordance with MIL-STD-105, inspection level S-2, 2.5 percent defects per 100 units. Sample units used in sampling plans A and B shall be used for this inspection (see 4.4.2).

4.6 Method of inspection

4.6.1 Dryness test. Three test disks (4.3.2.2) prepared as specified in 4.3.2.3 shall be cleaned as specified in 4.3.2.4, coated as in 4.3.2.5, and allowed to hang in a vertical position for two hours. They shall then be weighed and completely immersed vertically in talcum powder and withdrawn immediately. They shall then be reweighed to the nearest 0.0001 gram. The average change in weight shall be recorded. This procedure shall be repeated with test disks which have not been coated. These shall be used as controls. The average weight increase of the coated panels as compared with the weight increase of the uncoated panels shall be the measure of dryness.

4.6.2 Grade A— synthetic sea water displacement procedure. Panels prepared as specified in 4.3.2.3 and 4.3.2.4 shall be so placed that one 2-inch end shall be raised one inch above a horizontal surface. The panels shall then be sprayed with the synthetic sea water so that the entire upper surface of specimen is covered with tiny droplets. Within one minute after spraying, one milliliter of the test compound shall be poured along the upper 2-inch edge of the panels and allowed to run slowly down the specimen so as to completely cover the test panel. After another minute, a second milliliter of the test compound shall be poured and allowed to run down the panels in a like manner. After waiting an additional minute, the panels shall be picked up and held in a vertical position for one minute and shall then be placed flat (test side up) above distilled water at 7°F in a closed desiccator. After 24 hours they shall be removed and cleaned with mineral spirits, and then evaluated for presence of visible corrosion.

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4.6.3 Determination of solubility in Freon TF. At least three dip clean coated test panels shall be dipped in boiling 95 percent methanol and let stand for one hour. After one hour, the test panels shall be rinsed twice with fresh Freon TF and examined visually. There shall be no visible residue on panels.

4.6.4 Leakage test. The pressurized container shall be completely submerged for five minutes in water maintained at 130°F + 2°F during which it shall be observed for the emission of bubbles. Distortion of the container or the emission of bubbles from any part of the container shall be considered evidence of leakage.

4.6.5 Determination of container weight. A sample container shall be weighed and then shall be sprayed at three minute periods with one-minute intervals until the container is exhausted. The container shall be re-weighted. The net difference shall be at least 16 ounces by weight.

4.6.6 Performance of pressurized containers. Panels as described in 4.6.1 shall be used. A panel shall be supported such that the longer dimension forms a 45 degree angle with the horizontal. Type I packaged in accordance with 5.2.1 shall be sprayed on the panel from a distance of 12 inches. The panel shall be examined for uniformity of spray, foaming, and adherence to the substrate. After a 10 second pause the same panel shall be resprayed and examined for adhesion and sagging. After a 5 second pause the same panel shall be resprayed again and likewise examined.

4.6.7 Grade A – corrosivity test

4.6.7.1 Specimen preparations

4.6.7.1.1 Specimens of the following metals shall be used in this test:

Magnesium, QQ-M-44
Cadmium, A-A-51126
Zinc, MIL-A-18001
Aluminum, QQ-A-250/4
Copper, QQ-C-576
Brass, QQ-B-626

NOTE: Suggested specimen size is 3 x 1/2 x 1/16 inches.

4.6.7.1.2 Specimen procedure. Three specimens of each of the above metals shall be polished to remove pits, burrs, and irregularities from all faces and edges. The panels shall be finished and cleaned as specified in 4.3.2.3 and 4.3.2.4.

4.6.7.2 Test procedure. After weighing, the specimens shall be coated as specified in 4.3.2.5. After a one hour drying period the specimens shall be placed in a humidity chamber maintained at 130°F +2°F and 75 percent relative humidity for seven days (168 hours). Upon completion the coating and any loose corrosion products shall be removed by cleaning in acetone. Reweigh the specimens and calculate the weight loss or gain in milligrams per square centimeter. The specimens shall meet the requirements of 3.4.3.

4.6.8 Grade B – corrosion resistance test. The corrosion resistance test shall be conducted in accordance with the procedure specified in ASTM B 117 to determine conformance with 3.4.4.

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4.6.9 Sprayability (in pressurized container) test. A filled pressurized container shall be cooled to 0°F held at that temperature for 3 hours, and then stored at 40°F for 20 hours. Immediately after conditioning, the container shall be shaken vigorously for 15 seconds and the material sprayed for 30 seconds. The material shall be considered as having passed the test if it can be satisfactorily sprayed.

5. PACKAGING

5.1 Packaging. Packaging shall be Level A or C in accordance with MIL-STD-290 as specified in the contract or order. Neither the container, nor any component thereof (closure, lining, etc.), shall interact with or alter the contents in any way so as to adversely affect their purity or quality. All containers shall be new and free from contaminants.

5.2 Packing. Except as specified in 5.2.1 packing shall be Level A, B, or C in accordance with MIL-STD-290 as specified in the contract or order (see 6.2).

5.2.1 Packing of filled pressurized containers

5.2.1.1 Level A. Twenty-four dispensers shall be packed in a fiberboard box conforming to PPP-B-636, Style F.O.L., compliance symbol V3s or V3c. The twenty-four dispensers shall be arranged: six in length, four in width and one in depth, and shall be separated by slotted partitions providing an individual cell for each dispenser. Partitions shall be B or C flute, double faced corrugated board. Box liners of the same material as the partitions shall be provided. The corrugations of the liners shall run vertically. Liners shall be cut so that on placement the ends abut in the middle of one side of the box. Box and all components shall be fabricated of material having not less than 200 pounds per square inch bursting strength.

5.2.1.1.1 Level A closure. All flaps of the box shall be securely sealed with a water-resistant adhesive conforming to MMM-A-250. The adhesive shall be applied throughout the entire area of contact between the flaps.

5.2.1.2 Level B. Twenty-four dispensers shall be packed in a domestic type corrugated or solid fiberboard container. Style F.O.L. (less 1 inch) conforming to PPP-B-636. Arrangement shall be: six in length, four in width, and one in depth. Slotted partitions shall be employed to form an individual cell for each dispenser. Partitions shall be B or C Flute, double faced corrugated board. Box liners of the same material as the partitions shall be provided. The corrugations of the liners shall run vertically. Liners shall be cut so that on placement the ends abut in the middle of one side of the box. Box and all components shall be fabricated of material having not less than 200 pounds per square inch bursting strength. All flaps shall be sealed with a good quality adhesive applied throughout the entire area of contact between flaps.

5.2.1.2.1 Strapping. Strapping shall be in accordance with the appendix of PPP-B-636.

5.3 Marking. Marking of the containers shall be in accordance with MIL-STD-290, except as specified herein. Marking shall be legible, shall be accomplished by lithographing or silkscreen process and shall be white on an orange label or as specified in the contract. Paper coated labels on pressurized containers are not acceptable; any special marking specified in the contract or order shall also be included. In addition, the following information shall be included on each gas pressurized container and bulk container as applicable (when not already required by MIL-STD-290 or the contract or order):

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Front Face:

(Stock No.)
 LUBRICANT, WATER DISPLACING, SYNTHETIC GRADE _____
 MIL-L LOT _____ DATE MFG _____
 CONTRACT NO.)
 MANUFACTURER'S NAME)
 (MANUFACTURER'S ADDRESS)
 (MANUFACTURER'S PRODUCT NO.)
 CONTAINER SIZE BY VOLUME

IMPORTANT! For best results follow instructions on reverse side of container.

USES

This material will displace salt water and moisture leaving a corrosion preventive film. It is intended for use on areas which are unpainted metal, where the paint has cracked or been damaged such as: around fasteners, seams, access panels, etc. It is intended for use on moving parts which require a lubricated surface.

Instructions – for best results

1. Wipe off dirt and excess moisture from surface to be protected prior to applying the corrosion preventive compound.
2. Apply a thin uniform coat of corrosion preventive compound directly on area to be protected.
3. Allow to dry for one half hour.
4. Apply a second uniform coat of corrosion preventive compound.
5. Application by wiping is not recommended. Reapplication of compound is necessary after solvent cleaning or where coating has been damaged by abrasion.

NOTE: May be removed with methyl ethyl ketone
 ASTM D 740 or aliphatic naphtha TT-N-95.

CAUTION (for spray containers)

Contents pressurized. Do not puncture, incinerate, or store above 120° F. Do not place can near open flame or other heat source. Use with adequate ventilation and avoid breathing vapor.

6. NOTES

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

6.1 Intended use. The compounds covered by this specification may be used on any metal surfaces. They are primarily intended for in-service treatment of moving parts. The ability of these materials to lubricate, to prevent corrosion, to displace water and to be used at temperatures up to 20°C (40°F) make these particularly suited for service use. The temperature durability is a particular advantage of this material.

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6.2 Ordering data. Requests, requisitions, schedules, and contracts or orders should specify the following:

- a. Title, number, and date of this specification.
- b. Grade and type.
- c. Quantity. (Specify number of containers.)
- d. Packaging desired (see 5.1)
- e. Level of packing required (see 5.2)
- f. Labeling or other special marking required (see 5.3)

6.2.1 Completed material safety data sheets. Contracting officers will identify those activities requiring copies of completed material safety data sheets prepared in accordance with 3.2. The pertinent government mailing addresses for submission of data are listed in appendix B of FED-STD-313.

6.2.2 Contract provision. Contracts shall specify the following provision for first article inspection.

6.2.2.1 First article. When a first article is required for inspection and approval (see 3.1, 4.4, and 6.2), the contract shall specify the following provision for first article inspection. When a contractor is in continuous production of the compound from contract to contract, consideration should be given to waive the first article inspections. If inspection is required, indicate:

- a. If first article inspections are conducted at the contractor's plant or a government approved laboratory, an inspection report shall be forwarded to the procuring activity for certification.
- b. That the approval of first article samples or the waiving of the first article inspection shall not relieve the contractor of his obligation to fulfill all other requirements of the specification and contract.

6.3 Typical formulation of compound for Grade A & B. A typical formulation is given in table IV. Grade B is intended for applications where severe corrosion is possible. Both Grade A and B can be used for control of surface static electricity and as a barrier film to minimize surface contamination.

6.3.1 Ingredients. The ingredients of table IV which, when properly processed, have produced a compound meeting the requirements of this specification for Grade A. The list of approved proprietary raw materials is not to be construed as an endorsement thereof or as precluding similar materials from other proprietary sources. Such products may prove equivalent or even superior in performance to the ones listed.

6.4 Samples. Samples shall be furnished at no cost to the Government, and the manufacturer shall pay the transportation charges to and from the designated point where tests are to be made. In the case of failure of the sample or samples submitted, considerations will be given to the request of the manufacturer for additional test only after it has been clearly shown that changes have been made in the product which the Government considers sufficient to warrant additional tests, and a new designation is given the material by the manufacturer.

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TABLE IV. <u>Grade A typical formulation.</u>		
<u>Parts by Weight</u>	<u>Component Description (Formula) (Proprietary Name or Trade Name)</u>	<u>Supplier</u>
96.61	Freon TF	E.I. DuPont De Nemours and Company (Inc) Wilmington DE 19898
2.36	Selig 1121 (A proprietary mixture registered with Environmental Health and Safety Department)	Selig Chemical Industries Atlanta GA 30336
1.03 (6 centistokes at 99°C [210°F])	Poly Alpha Olefin	Gulf Oil Corporation Pittsburgh PA 15219
NOTE: Grade B has proprietary corrosion inhibiting compound added.		

6.5 Heat testing of metal containers. Section 173.306 of the Department of Transportation Regulations specifies that each completed metal container filled for shipment must be heated until the contents reaches a minimum temperature of 130oF without evidence of leakage, distortion, or other defects.

6.6 Subject term (key word) listing

Synthetic sea water
Gas pressurized containers
Compound

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

Custodians:

Army – CR
Navy – AS
Air Force – II

Preparing activity:

Air Force – 11
(Project No. 9150–1033)

Review activities:

Air Force – 68

User Activities:

Army – AR
Navy – EC