

MIL-G-14931 (MU)
22 November 1968

MILITARY SPECIFICATION

GREASE, SILICONE FOR USE WITH AMMUNITION

1. SCOPE

1.1 This Military Specification covers one type of silicone grease for use in ammunition (see 6.2).

2. APPLICABLE DOCUMENTS

2.1 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.

SPECIFICATIONS

FEDERAL

- QQ-C-501 - Copper, Bars, Plates, Rods, Shapes, Sheets and Strips
- VV-L-791 - Lubricants, Liquid, Fuels, and Related Products; Method of Testing

STANDARDS

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105).
- MIL-STD-109 - Quality Assurance Terms and Definitions
- MIL-STD-129 - Marking for Shipment and Storage
- MIL-STD-650 - Explosive: Sampling, Inspection and Testing

(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).

PUBLICATIONS

- D-972 - Evaporation Loss of Lubrication Grease and Oils
- D-942 - Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method
- D-1264 - Water Washout Characteristics of Lubricating Greases
- D-270 - Sampling Petroleum and Products

FSC: 1375

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(Application for copies should be addressed to the American Society for Testing Materials, 1916 Race Street, Philadelphia, Pennsylvania, 19103.)

3. REQUIREMENTS

3.1 Composition.-The grease shall be a smooth homogeneous mixture of methyl phenyl silicone fluid and a lithium soap free from any abrasive or other undesirable fillers as impurities. Minor proportions of additives to improve oxidation stability, rust inhibition, mechanical stability, texture and wear resistance may be included.

3.2 Appearance.-The grease shall be completely homogeneous and shall be of a smooth consistency, free from lumps or granulation, when tested as specified in 4.3.1.

3.3 Odor.-The grease shall be free from any rancidity or perfume odor.

3.4 Corrosion Resistance.-The grease, when tested with copper, shall show no decomposition, change in color, or consistency. The copper strip shall show no evidence of green or black discoloration, etching or pitting. A brown stain on the copper strip shall not be considered as evidence of corrosion when tested as specified in 4.3.3.

3.5 Viscosity (Consistency).-The viscosity shall comply with Table I when tested as specified in 4.3.4.

TABLE I

<u>Degrees, Fahrenheit (°F)</u>	<u>Viscosity cps</u>
77°F	80,000 to 110,000
165°F	60,000 to 100,000
-65°F	250,000 Maximum (Max.)

3.6 Specific gravity.-The specific gravity at 77°F shall be 0.97 ± 0.02 when tested as specified in 4.3.5.

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3.7 Evaporation.-The evaporation at 200°F for 24 hours shall be no more than 2 percent, max., when tested as specified in 4.3.6.

3.8 Bleeding.-The bleeding at 200°F for 24 hours shall be no more than 25 percent, max., when tested as specified in 4.3.7.

3.9 Oxidation Stability.-The oxidation stability at 200°F for 100 hours shall be no more than 5 psi max. when tested as specified in 4.3.8.

3.10 Water resistance.-The water resistance at 100°F shall be no more than 10 percent max., when tested as specified in 4.3.9.

3.11 Dirt Count.-The dirt count of the grease shall not exceed the amount specified in Table II when tested as specified in 4.3.10.

TABLE II

<u>Microns or above</u>	<u>Per cubic centimeter Max.</u>
25	7500
75	1600
125	None

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.-Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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. Reference shall be made to Standard MIL-STD-109 in order to define terms used herein.

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4.1.1 Submission of product.-At the time the completed lot of product is submitted to the Government for acceptance, the contractor shall supply the following information accompanied by a certificate which attests that the information provided is correct and applicable to the product being submitted:

- a. A statement that the lot complies with all of the quality assurance provisions specified within this specification.
- b. Number of units of product inspected.
- c. Results obtained, by defect code, for all inspections performed.
- d. Drawing, specification number and date, together with an identification and date of changes.
- e. Certificates of conformance on all material purchased by the contractor when such material is controlled by Government or commercial specifications referenced in any of the contractual document.
- f. Number of items in the lot.
- g. Date submitted.

The certificate shall be signed by a responsible agent of the certifying organization. The initial certificate submitted shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certificates unless, during the course of the contract, this authority is vested in another agent of the certifying organization.

4.2 Inspection provisions

4.2.1 Lot formation.-The term "lot" as used throughout this specification refers to an inspection lot, which is defined as an essentially homogeneous quantity of material from which a representative sample is drawn and shall not be construed to represent any prior or subsequent quantities presented for inspection. A lot shall consist of one or more batches produced by one manufacturer, in accordance with the same specification, and specification revision under one continuous set of operating conditions. Each lot shall consist of that quantity of material which has been subjected to the same unit chemical or physical process intended to make the final product homogeneous. The classification of defects shall be in accordance with Standard MIL-STD-105.

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4.2.2 Sampling.-The sample shall be selected in accordance with ASTM Designation D 270. If any sample fails to pass the requirement of paragraph 3, the lot shall be rejected.

4.3 Test methods and procedures

4.3.1 Appearance, Minor defect (see 6.3), Code No. 01001.-A suitable portion of the grease shall be worked with a spatula on a clean glass. During working, the grease shall show no nonuniformity and shall spread with a straight edge to a smooth, glossy, level surface.

4.3.2 Odor, Minor defect, Code No. 02001.-A nasal analysis shall be made of the grease.

4.3.3 Corrosion resistance, Major defect, Code No. 03001.-Prepare a strip of clean copper conforming to specification QQ-C-501, 1.75 by 0.25 by 0.02 inch, bent midway between the ends at an angle of 45° . Dip the copper strip for 15 to 20 seconds into an aqueous solution containing 25 percent by weight H_2SO_4 and 25 percent by weight HNO_3 . Wash immediately in distilled water and give a bright dip for 15 seconds in an aqueous solution of approximately 2 percent H_2SO_4 by weight and 5 percent $K_2Cr_2O_7$ by weight. Wash well in distilled water and dry for 30 minutes in an oven maintained at approximately $212^{\circ}F$. (The metal must not be touched with the fingers at any time during or after cleaning). Remove the copper strip from the oven and cool to room temperature. Place 4 grams of sample grease in a glass dish, insert the copper strip horizontally into the grease so that one-half of the copper strip is immersed and place the test dish into a Norma-Hoffman bomb at $210^{\circ} + 5^{\circ}F$, and $110 + 0.25$ pounds per square inch (p.s.i) initial oxygen pressure. At the end of 20 hours of test, remove the glass dish. Visually examine the copper strip and the sample of grease for compliance with 3.4.

4.3.4 Viscosity, Major defect, Code No. 04001.-The viscosity shall be determined with a Brookfield RVF Viscosimeter with a No. 7 spindle at 4 rpm. The spindle shall be heated or cooled in the grease, depending upon the temperature at which the viscosity is being determined. The test shall be performed in a small cold box at $-65^{\circ}F$. The sample shall not be disturbed for at least 24 hours before the test. The readings shall be taken 1 to 2 minutes after starting the motor.

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4.3.5 Specific gravity, Major defect, Code No. 05001.-The specific gravity shall be determined in accordance with Method 203.2 of Standard MIL-STD-650.

4.3.6 Evaporation, Major defect, Code No. 06001.-The evaporation shall be determined in accordance with ASTM Designation D 972 except that the time shall be 24 hours at 200°F.

4.3.7 Bleeding, Major defect, Code No. 07001.-The bleeding shall be determined in accordance with Method 321.2 of Specification VV-L-791, except that the test shall be conducted at 200°F for 24 hours.

4.3.8 Oxidation stability, Major defect, Code No. 08001.-The oxidation stability shall be determined in accordance with ASTM Designation D 942, except that the test shall be conducted at 200°F for 100 hours.

4.3.9 Resistance, Major defect, Code No. 09001.-The water resistance shall be determined in accordance with ASTM Designation D 1264 at 100°F.

4.3.10 Dirt count, Major defect, Code No. 11001.-The dirt count shall be determined in accordance with Method 3005 of Specification VV-L-791.

5. PREPARATION FOR DELIVERY

5.1 Packing.-The silicone grease shall be packed to insure adequate protection from damage during shipment from source of supply to the first receiving activity. The shipping containers shall comply with common carrier rules and regulations applicable to the mode of transportation.

5.2 Marking.-In addition to any special marking required in the contract or order, unit packages and shipping containers shall be marked in accordance with Military Standard MIL-STD-129.

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6. NOTES

6.1 Ordering data.-Procurement documents shall specify the following:

a. Title, number and date of this specification.

6.2 Intended use.-The material covered by this specification is intended for use as a water-proofing agent in the M605 Mine fuze.

6.3 Inspection code numbers.-The five digit code numbers assigned to the inspections herein are to facilitate future data collection and analysis by the Government.

Custodian:
ARMY-MU

Preparing Activity:
ARMY-MU

Project Number: 1375-A-016

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SPECIFICATION ANALYSIS SHEET			Form Approved Budget Bureau No. 119-R004
INSTRUCTIONS			
<p><i>This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity.</i></p>			
SPECIFICATION			
ORGANIZATION		CITY AND STATE	
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT	
		\$	
MATERIAL PROCURED UNDER A			
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT		<input type="checkbox"/> SUBCONTRACT	
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?			
A. GIVE PARAGRAPH NUMBER AND WORDING.			
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES			
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID			
3. IS THE SPECIFICATION RESTRICTIVE?			
<input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?			
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)			
SUBMITTED BY (Printed or typed name and activity)			DATE

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