

MIL-C-22587B

17 August 1983

SUPERSEDING

MIL-C-22587A

15 February 1962

## MILITARY SPECIFICATION

### CARTRIDGES, GREASE, 14 OUNCE (FOR CARTRIDGE-TYPE GREASE GUN)

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

#### 1. SCOPE

1.1 Scope. This specification covers 14 ounce capacity grease cartridges. They are designed for use with cartridge-type grease guns conforming to MIL-G-3859.

##### 1.2 Classification.

1.2.1 Types. The 14 ounce capacity grease cartridges shall be of the following types:

Type I - Petroleum and synthetic type grease cartridge.

Type II - Petroleum type grease cartridge.

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents.

2.1.1 Specifications and standards. Unless otherwise specified, the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

#### SPECIFICATIONS

##### Military

MIL-G-3859

Grease Guns, Hand-Operated, Lever, Push and Screw Type

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

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## SPECIFICATIONS (Continued)

Military (Continued)

MIL-G-10924	Grease, Automotive and Artillery
MIL-G-23827	Grease, Aircraft and Instrument, Gear and Actuator Screw
MIL-G-25013	Grease, Aircraft, Ball and Roller Bearing

## STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-290	Packaging of Petroleum and Related Products
MIL-STD-889	Dissimilar Metals
MIL-STD-1188	Commercial Packaging of Supplies and Equipment

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

2.1.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in the current Department of Defense Index of Specifications and Standards and the supplement thereto, if applicable.

## AMERICAN NATIONAL STANDARDS

ANSI MH3.3	201.5 x 904.5 Grease Cartridge
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(Copies may be repurchased from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.)

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## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 128	Analysis of Lubricating Grease
ASTM E 168	General Techniques of Infrared Quantitative Analysis
ASTM E 311	Sampling and Sample Preparation Technique in Spectrochemical Analysis
ASTM E 334	General Techniques of Infrared Microanalysis

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

## 3. REQUIREMENT

3.1 Qualification. Grease cartridges furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.5).

3.2 Materials. Materials used shall conform to the applicable specifications and as specified herein. Materials which are not covered by applicable specifications or which are not specifically described herein, shall be of the best quality, of the lightest practicable weight, and suitable for the purpose intended. Materials shall be free from defects and imperfections that will affect the serviceability of the grease cartridges. Metals when used shall be coated, plated or corrosion-resistant type and shall resist corrosion for normal service life. Unless suitably protected against electrolytic corrosion, dissimilar metals as defined and classified in MIL-STD-889, shall not be used in intimate contact.

3.3 Design and construction. The grease cartridges shall have a nominal capacity of 14 ounces by weight and shall be designed for use with a grease gun conforming to MIL-G-3859. Suitable end closures which are removable without the use of hand tools shall be provided and shall be removable without damage to the cartridge that would inhibit usage. If gaskets are used, they must be attached positively to the removable caps.

3.4 Physical measurement. The dimensions and tolerances of the grease cartridges are given in ANSI MH3.3.

3.5 Performance. The cartridges shall conform to the requirements of Table I (see 4.6).

3.5.1 Type I cartridge. Type I cartridges shall perform satisfactorily when filled with either petroleum or synthetic type grease. The inner liner shall resist the affects of both petroleum and synthetic type greases.

3.5.2 Type II cartridge. Type II cartridges shall perform satisfactorily when filled with petroleum type grease. The inner liner shall resist the affects of petroleum type greases.

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TABLE I. Performance requirements.

Property	Requirement	Test Paragraph
Operation	No evidence of binding of the grease gun or follower, or separation of the interior plies or inner liner of the cartridge.	4.6.2
Grease retention after operation	Retention of not more than 5.0 percent of original weight of grease contained in full cartridge.	4.6.2
Storage	No evidence of dislocation or corrosion of end closures, swelling or separation of plies, or any other evidence of cartridge deformation or deterioration.	4.6.3
Leakage	Leakage from the cartridge shall not be more than 5.0 percent by weight of the grease contained in the completely filled cartridge.	4.6.3
Compatibility:		
Cartridge absorption of grease constituents	Not more than 2.5 percent by weight of the grease contained in the completely filled cartridge shall be absorbed by the cartridge material.	4.6.4.1
Grease contamination by cartridge constituents.	There shall be no evidence of grease contamination by cartridge constituents.	4.6.4.2

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3.6 Workmanship. The grease cartridges shall be uniform in quality and shall be free from irregularities or defects which would adversely affect serviceability.

#### 4. QUALITY ASSURANCE PROVISIONS

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 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.

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

- a. Qualification inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 Qualification inspection. The qualification inspection tests of the grease cartridges shall consist of all the examinations and tests of this specification.

4.3.1 Qualification sample. Qualification test samples shall consist of eighteen grease cartridges which have been produced by the contractor using the same production process, procedures, and equipment as will be used in fulfilling the contract. Samples shall be forwarded to the Commander, Naval Air Development Center, Warminster, PA 18974, marked Attention: Aircraft and Crew Systems Technology Directorate (Code 60612). Samples shall be identified by securely attached durable tags marked with the following information:

Grease Cartridge

TYPE

Qualification samples

Name of manufacturer (plant in which manufactured)

Manufacturer's designation

Date of manufacture

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4.3.2 Retention of qualification. The retention of qualification of products approved for listing on the Qualified Products List (QPL) shall be maintained by periodic verification to determine compliance of the qualified product with the requirements of this specification. Unless otherwise specified by the activity responsible for the Qualified Products List, periodic verification shall be by certification and such certification shall be at intervals of not more than two years.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of a visual examination to determine compliance with the materials, design and construction, and workmanship requirements of the specification. Quality conformance inspection shall also include the operation and grease retention after operation tests of Table I and the physical measurement test of 4.6.1.

4.4.1 Cerification. The manufacturer shall certify that there has been no manufacturing or process change from that which resulted in the production of the qualification samples (see 6.4).

4.4.2 Inspection lot size. Unless otherwise specified, a lot shall consist of all the grease cartridges of one type fabricated from the same materials by the same manufacturing process and submitted for inspection at one time as part of one contract or order.

4.4.2.1 Sampling and inspection procedures. A random sample of cartridges shall be selected from each inspection lot in accordance with MIL-STD-105. The sample size shall be based on the applicable sample size code letter using Table IIIA, Inspection level II.

4.4.2.1.1 Classification of defects. Defects found during inspection shall be classified as follows:

## Major Defects

(AQL shall be 4.0 percent defective)

- 101. Overall dimensions not within specified tolerances.
- 102. Defective component parts which affect operation.
- 103. Omission of a component part.
- 104. Defective cartridge inner liner.
- 105. Binding of the grease gun or separation of the interior plies.
- 106. Grease retention of more than 5.0 percent of original weight after operation.

## Minor Defects

(AQL shall be 10.0 percent defective)

- 201. Improper fit of end closures.
- 202. Identification markings not as specified.
- 203. Packaging not as specified.
- 204. Packing not as specified.
- 205. Marking illegible or not as specified.

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4.5 Test conditions and equipment.

4.5.1 Standard atmospheric conditions. Unless otherwise specified tests shall be conducted at standard atmospheric pressure and an ambient temperature between 60° and 90°F.

4.5.2 Equipment. The equipment used for the tests shall be a 14 ounce capacity grease gun conforming to the requirements of MIL-G-3859.

4.6 Test methods.

4.6.1 Physical measurement. Measure and record the height, diameter over the seam end, body outside diameter, and overall height (see 3.4).

4.6.2 Operation and grease retention. Weigh and record the weight of two empty cartridges. Fill the two cartridges with 14 ounces of grease. A synthetic type grease shall be used for Type I cartridges and a petroleum type grease shall be used for Type II cartridges. Weigh the filled cartridge. Load one filled grease cartridge into a grease gun conforming to the requirements of specification MIL-G-3859. The gun shall be operated to remove air and to fill the head, extension and hydraulic coupler with grease. The cartridge shall be removed, and the exterior surface of the coupler shall be wiped clean. Reload the gun with the second full cartridge. Operate the gun in a normal manner to dispense a full charge of grease into a tared container. While operating the gun observe evidence of binding or difficulty of operation. When the gun will no longer dispense grease, the weight of the grease shall be determined and the percent of grease retention after operation shall be calculated. The cartridge shall be removed from the gun and shall be examined for damage to the inner liner or separation of the plies or other visible damage (see 3.5).

4.6.3 Storage test. The storage test shall be conducted on the particular type of cartridge to be furnished for the contract or order as follows:

- a. Seven Type I cartridges shall be weighed individually and recorded. Two each shall be filled with greases conforming to the requirements of MIL-G-10924, MIL-G-23827, and MIL-G-25013 respectively, weighed and recorded. One empty cartridge shall be used as a control blank.
- b. Three Type II cartridges shall be weighed individually and recorded. Two shall be filled with grease conforming to MIL-G-10924, weighed and recorded. One empty cartridge shall be used as a control blank.

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4.6.3.1 Storage test procedure. Each applicable group of two filled cartridges with end closures affixed, shall be placed in weighed 250 cc beakers, with one of the filled cartridges in an inverted position with respect to the other filled cartridge, and stored for 6 months at a temperature of  $158^{\circ} + 2^{\circ}\text{F}$ . The empty control blank shall be placed in a weighed 250 cc beaker and shall be stored along with the filled cartridges for the specified time. At the conclusion of the storage period, the cartridges shall be removed from the beakers and examined for evidence of swelling, any indication of deformation or deterioration, and any displacement or corrosion of end closure. oil leakage shall be determined by weighing the beaker before and after the storage test and calculating the percent of leakage. The cartridges shall then be subjected to the operation test of 4.6.2. After the operation test the cartridges and grease will be retained for the compatibility tests (see 3.5).

#### 4.6.4 Compatibility.

4.6.4.1 Cartridge absorption of grease constituents. One each of the cartridge pairs used in the storage test (4.6.3) shall be utilized for this test. A portion of the cartridge material weighing approximately 2 grams shall be cut from each cartridge, wiped free of grease with a clean, dry cloth and weighed to the nearest 0.1 milligram. A like sample shall be cut from the control blank. The inner liner and plies shall be examined for evidence of swelling, separation of plies or other visible damage. Each sample shall be extracted three times with 50 cc portions of grease solvent. The three extracts of each sample of the filled cartridges shall be combined and the solvent evaporated in a tared container. The control blank shall also be extracted separately and the solvent evaporated in a tared container. Each residue shall be dried for 30 minutes in an oven maintained at  $212^{\circ} + 5^{\circ}\text{F}$ , cooled and weighed to 0.1 milligram. A blank determination shall be made using a portion of a cartridge which has not contained grease. The weight of residue obtained from the sample blank shall be subtracted from the weight of residue obtained from each extracted sample. Based on the original weight of the grease contained in the cartridge and the weight of the cartridge empty (with end closures removed) calculate the percentage of grease constituents absorbed by the cartridge material (see 3.5). “

4.6.4.2 Grease contamination by cartridge constituents. One sample of each type grease discharged at the completion of the storage test (4.6.3) shall be examined for contamination from the cartridge constituents by analysis and comparing it to an applicable grease blank. This can be done by test methods ASTM E 168, or ASTM E 334, or ASTM D 128. ASTM E 311 maybe used for sampling and preparation technique.

## 5. PACKAGING

5.1 Empty cartridges. Packaging, packing and marking of empty cartridges shall be in accordance with MIL-STD-1188.

5.2 Filled cartridges. When cartridges conforming to the requirements of this specification are to be furnished filled, the acquiring agency shall specify the specific grease to be furnished (see 6.2). Packaging, packing and marking of filled cartridges shall be in accordance with MIL-STD-290 in the levels and quantities specified by the acquiring activity.



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## 6. NOTES

6.1 Intended use. The cartridges covered by this specification are intended for use in packaging greases for dispensing by cartridge type grease guns conforming to MIL-G-3859.

6.2 Ordering data. Acquiring documents should specify the following:

- a. Title, number, and date of this specification.
- b. Quantity and type of grease cartridges desired and specification number of the grease for which intended.
- c. Level of packaging (for filled cartridges).
- d. Level of packing (for filled cartridges).
- e. Special marking required.
- f. If cartridges are to be filled, specify the specific grease to be furnished (5.2).

6.3 Definition.

6.3.1 Grease cartridges. This term refers to an unfilled cartridge unless otherwise specified.

6.3.2 Grease blank. This term refers to a sample of grease used to fill the cartridge.

6.4 Supplied cartridges. It is understood that the grease cartridges supplied under contract shall be identical in every respect to the samples tested and found satisfactory except for changes previously approved by the acquiring activity. Any unapproved changes from the qualification sample shall constitute cause for rejection.

6.5 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion in the Qualified Products List 22587 whether or not such products have actually been so 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 to 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. The activity responsible for the Qualified Products List is the Naval Air Systems Command, Department of the Navy, Washington, DC 20360; however, information pertaining to qualification of products may be obtained from the Naval Air Development Center, Warminster, Pennsylvania 18794, marked Attention: Aircraft and Crew Systems Technology Directorate (Code 60612).

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6.6 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.

Custodian:

Navy - AS

Army - ME

AF - 99

Preparing Activity:

Navy - AS

(Project No. 4930-0299)

Review Activity:

DLA - PS, CS

User Activity:

Army - AR

Marine - MC

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