SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS-G-6032

Issued JUN 1999

Grease, Plug Valve, Gasoline and Oil Resistant, NATO Code Number G-363, Metric

FSC 9150

NOTICE

This document has been taken directly from U.S. Military Specification MIL-G-6032D, Amendment 1 and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-G-6032D, Amendment 1. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this SAE technical document.

QUESTIONS REGARDING THIS DOCUMENT: (724) 772-7121 FAX: (724) 776-0243
TO PLACE A DOCUMENT ORDER: (724) 776-4970 FAX: (724) 776-0790
SAE WEB ADDRESS: http://www.sae.org

1. SCOPE:

1.1 Scope:

This specification covers the requirements for two types of gasoline and oil resistant grease for lubrication of tapered plug valves, gaskets, and for other applications in fuel and oil systems. The type I grease is identified by NATO symbol G-363 (see 6.4).

1.2 Classification:

The grease shall be furnished in the following types and classes, as specified (see 6.2).

1.2.1 Types:

Type I - Bulk
Type II - Stick in the form of cylindrical sticks of the size, shown in 1.2.2.

1.2.2 Classes:

Class	Diameter, mm (inches)	Length, mm (inches)	Sticks per box	Boxes per carton
A	6.35 (1/4)	22.23 (7/8)	24	30
B	10.32 (13/32)	34.93 (1 3/8)	24	150
C	13.89 (35/64)	50.80 (2)	24	120
D	16.67 (21/32)	73.02 (2-7/16)	24	80
G	21.83 (55/64)	85.73 (3-3/8)	24	24
J	37.31 (1-15/32)	104.78 (8-3/4)	6	10
K	38.89 (1-17/32)	254.00 (10)	6	10

2. APPLICABLE DOCUMENTS:

The following publications, 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.

2.1 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

O-E-751 Ether, Petroleum, Technical-Grade
P-D-680 Dry Cleaning Solvent

MIL-S-7952 Steel, Sheet and Strip, Uncoated, Carbon (1020 and 1025) (Aircraft Quality)

2.1 (Continued):

FED-STD-313	Material Safety Data Sheets, Preparation and Submission of
FED-STD-791	Lubricants, Liquid Fuels and Related Products, Methods of Testing
MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-290	Packaging of Petroleum and Related Products
49 CFR	Transportation - Hazardous Materials

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor, West Conshohocken, PA 19428-2959.

ASTM D 1403	Cone Penetration of Lubricating Grease Using One-Quarter and One-Half Scale Cone Equipment
ASTM D 2265	Dropping Point of Lubricating Grease Over Wide Temperature Range
ASTM D 4048	Detection of Copper Corrosion From Lubricating Grease by the Copper Strip Tarnish Test
ASTM D 4057	Manual Sampling of Petroleum and Petroleum Products
ASTM D 4177	Automatic Sampling of Petroleum and Petroleum Products

2.3 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI Z129.1	American National Standard for the Precautionary Labeling of Hazardous Industrial Chemicals

2.4 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.

3. REQUIREMENTS:

3.1 Qualification:

The grease 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 6.3).

3.2 Materials:

The grease shall be a mixture consisting of animal, vegetable or synthetic oil, or a combination thereof, and a suitable gelling agent. The grease shall contain no solid fillers such as graphite, mica, sulfur, clay, asbestos or chalk.

3.3 Physical properties:

Physical properties of the grease shall be in accordance with Table I, when tested in accordance with 4.6.2 through 4.6.4.

3.4 Material safety data sheets:

Material safety data sheets shall be prepared and submitted in accordance with FED-STD-313. Material safety data sheets shall also be forwarded as specified in 4.3.2. The grease 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 (see 4.3.2 and 6.2.1h).

3.5 Workmanship:

The grease, when examined visually, shall appear smooth and homogeneous, free of lumps, crusts, and separated oil.

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 inspection requirements specified herein are classified as follows:

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

4.3 Qualification inspection:

Qualification inspection shall consist of a review of the manufacturer's test report (see 4.3.2) to determine that the qualification inspection sample (see 4.3.1) complies with all the requirements for the physical properties specified in Table I, when tested in accordance with the inspection methods specified in Table III, 4.6.3 and 4.6.4.

4.3.1 Qualification inspection sample: The qualification inspection samples shall consist of five, 0.5 kg (one pound) cans of type I grease and five boxes, each containing 24 sticks, of class B, type II grease. The samples shall be forwarded to the Aircraft and Crew Systems Technology Directorate, Code 60612, Naval Air Development Center, Warminster, PA 18974. The samples shall be plainly identified by securely attached durable tags or labels, marked with the following information:

Samples for qualification inspection
GREASE, PLUG VALVE, GASOLINE AND OIL RESISTANT, NATO CODE NUMBER G-363.
Name of manufacturer.
Product code number.
Batch number.
Date of manufacture.
Submitted by (name) (date) for qualification inspection in accordance with MIL-G-6032D under authorization of (reference authorizing letter) (see 6.3).

4.3.2 Test reports: Two copies of the manufacturer's test report, containing complete test data showing that material submitted for qualification conforms to the requirements of this specification, shall be submitted with the qualification sample. Location and identity of the plant which produced the sample tested plus complete information as to the source and type of base stock and gelling agent used shall also be supplied. Material safety data sheets on toxicity, prepared as specified in 3.4, shall be submitted to the qualifying laboratory (see 4.3.1).

4.3.3 Retention of qualification: In order to retain qualification of a product approved for listing on the Qualified Products List (QPL), the manufacturer shall verify by certification to the qualifying activity, that the manufacturer's product complies with the requirements of this specification. The time of periodic verification by certification shall be in two-year intervals from the date of original qualification. The Government reserves the right to re-examine the qualified product whenever deemed necessary to determine that the product continues to meet any or all of the specification requirements.

4.4 Quality conformance inspection:

The quality conformance inspection of the grease shall consist of tests of samples from 4.4.2.2 in accordance with Table IV and an examination of samples from 4.4.2.1 for conformance with 4.6.1.

4.4.1 Lot formation: A lot shall consist of all the grease produced by one manufacturer, at one plant, from the same materials and under essentially the same conditions, provided the operation is continuous and does not exceed a 24 hour period. In the event the process is a batch operation, each batch shall constitute a lot (see 6.5).

4.4.2 Sampling:

4.4.2.1 For examination of filled containers: A random sample of filled containers, fully prepared for delivery, shall be selected from each lot of grease in accordance with MIL-STD-105, inspection level II with an acceptable quality level (AQL) of 2.5 percent defective.

4.4.2.2 For tests: Samples for tests shall be selected in accordance with ASTM D 4057 or ASTM D 4177. The lot shall be unacceptable if any sample fails to comply with any of the requirements for the tests specified in 4.6.2 through 4.6.4.

4.5 Test conditions:

Test conditions shall be in accordance with 4.6 and the physical values specified in Table I apply to the average of determinations made on the sample unless otherwise specified, all tests shall be conducted on unworked grease.

4.6 Methods of examinations and tests:

4.6.1 Examinations: Each of the filled containers, selected in accordance with 4.4.2.1, shall be examined for defects of the container and closure, for evidence of leakage and for unsatisfactory markings to determine conformance with 5.1 and 5.1.1. Each type I sample container shall also be weighed to determine the amount of contents. Each type II sample shall also be examined for number of grease sticks per box and for number of boxes per carton. If the number of defective containers exceeds the acceptance number of the sampling plan specified in 4.4.2.1, the lot shall be rejected.

4.6.2 Tests: Tests shall be performed in accordance with Table III, 4.6.3 and 4.6.4 to determine conformance with the requirements specified in 3.3.

4.6.3 Film stability and corrosion on steel: Surface ground test panels of 1020 steel, MIL-S-7952, measuring 3.2 by 50.8 by 101.6 mm, shall be employed. Aluminum shims, measuring 0.4 by 25.4 by 50.8 mm, shall be employed as spacers. The test panels shall be cleaned in hot dry cleaning solvent conforming to type I of P-D-680, followed by immersion in petroleum ether conforming to O-E-751. One of the shims shall be placed at each end of a panel so as to provide a test area measuring approximately 50 by 50 mm. Approximately 2000 milligrams of the grease shall be placed in the center of the test panel. Another panel shall be placed on top and the two panels shall be pressed together and clamped to form the test assembly. Grease which exudes from the test assembly shall be cleaned off with a spatula. The test assembly shall then be placed in an oven maintained at 100° ± 1°C for 1 week. Upon removal from the oven, the test assembly shall be opened and the grease shall be examined for indications of hardening, separation and evident changes other than color. The areas of the test panels which were in contact with the grease shall be examined for evidence of corrosion.

4.6.4 Dimensions (type II only): Type II grease sticks shall be measured for conformance to the dimensions of 1.2.2 and the tolerances of Table II. The dimensions shall be determined with the use of any suitable measuring device.

5. PACKAGING:

5.1 Packaging and packing:

The grease shall be packaged, and packed in accordance with MIL-STD-290. The type and size of the containers and the level of packaging and packing shall be as specified by the acquiring activity (see 6.2.1).

5.1.1 Marking: All unit, intermediate and shipping containers shall be marked in accordance with MIL-STD-290 and Title 49 of the Code of Federal Regulations and any other additional special markings specified by the acquiring activity (see 6.2.1h). All unit and intermediate packs of toxic and hazardous chemicals and materials shall also be labeled in accordance with the applicable laws, statutes, regulations, and ordinances, including Federal, State, and Municipal requirements. In addition, unit and intermediate containers, including unit containers that serve as shipping containers, such as pails and drums, shall be marked with the applicable precautionary information detailed in ANSI Z129.1.

6. NOTES:

6.1 Intended use:

The grease is intended for use in tapered plug valves. The two types provide for the use of high pressure lubrication equipment or for servicing those valves which require a stick type lubricant. The grease may be used also as a gasket lubricant or seal and for general plug valve service in systems where gasoline, oil, alcohol or water resistance is required.

6.2 Ordering data:

6.2.1 Acquisition requirements: Acquisition documents should specify the following:

a. Title, number and date of this specification.
b. Type desired (see 1.2.1).
c. Selection of class, if type II is desired (see 1.2.2).
d. Quantity desired.
e. Size and type of container for grease (see 5.1).
f. Applicable levels of packaging and packing and other options (see 5.1).
g. Special markings when required (see 5.1.1).
h. Specify DAR Clauses 7-104.98 and 1-323.2.

6.3 Qualification:

With respect to products requiring qualification, awards may be made only for products which are, at the time set for opening of bids, qualified for inclusion in Qualified Products List (QPL-6032) 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 Commander, Naval Air Systems Command, Attn: AIR-5304C1, Washington, DC 20361; however, information pertaining to qualification of products and letter of authorization for submittal of sample may be obtained from the Aircraft and Crew Systems Technology Directorate, Code 60612, Naval Air Development Center, Warminster, PA 18974.

6.3.1 Qualification information: It is understood that the grease furnished under this specification subsequent to final approval should be of the same composition and shall be equal to products upon which approval was originally granted. In the event that the grease furnished under contract is found to deviate from the composition of the approved product, or that the product fails to perform satisfactorily, approval of such products will be subject to immediate withdrawal from the Qualified Products List.

6.4 International standardization agreements:

Certain provisions of this specification (see 1.1) are the subject of international standardization agreement, ASCC Air Standard 15/1, NATO STANAG NAT-STD-1135. When amendment, revision, or cancellation of this specification is proposed, which will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels including departmental standardization offices to change the agreement or make other appropriate accomodations.

6.5 Batch:

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

6.6 This paragraph was deleted as it did not pertain to the converted SAE document.

PREPARED UNDER THE JURISDICTION OF AMS COMMITTEE “M”