

DOD-L-25681D  
5 September 1979  
SUPERSEDING  
MIL-L-25681C  
16 August 1966

## MILITARY SPECIFICATION

### LUBRICANT MOLYBDENUM DISULFIDE, SILICONE

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

#### 1. SCOPE

1.1 This specification covers one grade of lubricant for use on sliding surfaces subject to high temperatures in aircraft gas turbine engines. This lubricant is identified by NATO symbol S-1735.

#### 2. APPLICABLE DOCUMENTS

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

#### SPECIFICATIONS

##### MILITARY

|            |  |
|------------|--|
| MIL-M-7866 | Molybdenum Disulfide, Technical, Lubrication Grade |
|------------|--|

#### STANDARDS

##### FEDERAL

|                                      |   |
|--------------------------------------|---|
| Fed. Test Method<br>Standard No. 791 | Lubricants, Liquid Fuels, and Related Products;<br>Methods of Testing |
|--------------------------------------|---|

##### MILITARY

|             |  |
|-------------|--|
| MIL-STD-105 | Sampling Procedures and Tables for Inspection<br>by Attributes |
| MIL-STD-290 | Packaging of Petroleum and Related Products                    |

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

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

FSC 9150

DOD-L-25681D

- \* 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.

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

|             |  |
|-------------|--|
| ASTM D 92   | Flash and Fire Points by Cleveland Open Cup  |
| ASTM D 270  | Sampling Petroleum and Petroleum Products  |
| ASTM D 445  | Viscosity of Transparent and Opaque Liquids<br>(Kinematic and Dynamic Viscosities) |
| ASTM D 1500 | ASTM Color of Petroleum Products (ASTM Color Scale)                                |

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

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

## 3. REQUIREMENTS

3.1 Materials. The lubricant shall be of the following composition:

- a. Molybdenum disulfide (50 percent by weight,  $\pm 1\%$ )
- b. Silicone oil (50 percent by weight,  $\pm 1\%$ )

3.2 Chemical characteristics. The chemical characteristics of each component shall be as follows:

- a. The molybdenum disulfide shall conform to MIL-M-7866.
- b. The silicone oil shall be methyl phenyl polysiloxane.  
A corrosion inhibitor shall be permitted.

3.3 Physical characteristics. The physical characteristics of each component shall be as follows:

- a. Molybdenum disulfide - conforming to MIL-M-7866.
- b. Silicone oil - as specified in table I.

\* TABLE I. Physical characteristics of silicone oil component.

| Characteristics                | Limit                       |
|--------------------------------|-----------------------------|
| Color (ASTM Union Colorimeter) | 2.0 (maximum)               |
| Flash point                    | 274°C (minimum)             |
| Viscosity at (kinematic) 100°C | 16 to 22 mm <sup>2</sup> /s |
| Viscosity at (kinematic) 40°C  | 65 to 85 mm <sup>2</sup> /s |

3.4 Homogeneity. The two components shall be thoroughly and uniformly blended together to form a homogeneous mixture at the time of packaging. (The molybdenum disulfide tends to settle to the bottom of the container.)

- \* 3.5 Workmanship. When examined visually, the finished oil shall contain no adulterations and, after blending, shall be uniform in appearance.

#### 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 facilities 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 Quality conformance inspection.

4.2.1 Inspection. Inspection shall be in accordance with Method 9601 of Federal Test Method Standard No. 791.

- \* 4.2.2 Lot.

- \* 4.2.2.1 Bulk lot. An indefinite quantity of a homogeneous mixture of lubricant offered for acceptance in a single, isolated container, or manufactured in a single plant run (not exceeding 24 hours), through the same processing equipment, with no change in the ingredient materials.

- \* 4.2.2.2 Packaged lot. An indefinite number of 209-liter drums or smaller unit containers of identical size and type, offered for acceptance, and filled with a homogeneous mixture of lubricant manufactured in a single plant run (not exceeding 24 hours), through the same processing equipment, with no change in the ingredient materials.

- \* 4.3 Sampling. Samples shall be taken in accordance with ASTM method D 270.

4.3.1 Sampling of filled containers. A random sample of filled containers shall be selected from each lot for acceptance in accordance with MIL-STD-105 inspection level I, acceptance quality level of 2.5 percent defective.

- \* 4.3.2 Examination of filled containers. Examine samples taken in accordance with 4.3.1 for compliance with MIL-STD-290 with regard to fill, closure, sealing, leakage, packing, packaging, and marking requirements. Reject any container which has one or more defects or is under the required fill. If the number of defective or under-filled containers exceeds the acceptance number for the appropriate sampling plan of MIL-STD-105, reject the lot represented by the sample.

DOD-L-25681D

#### 4.4 Test.

- \* 4.4.1 Color. The color of the silicone oil component shall be determined in accordance with ASTM D 1500.
- \* 4.4.2 Flash point. The flash point of the silicone oil component shall be determined in accordance with ASTM D 92.
- \* 4.4.3 Kinematic viscosity. The kinematic viscosity of the silicone oil component shall be determined in accordance with ASTM D 445.

4.5 Packaging, packing, and marking. Preparation for delivery shall be examined for conformance to section 5.

#### 5. PREPARATION FOR DELIVERY

5.1 Packaging and packing. Packaging and packing shall conform to MIL-STD-290.

5.2 Marking. Interior and exterior containers shall be marked in accordance with MIL-STD-290. In addition, each unit container shall be marked as follows:

"STIR WELL IMMEDIATELY BEFORE USING"

#### 6. NOTES

6.1 Intended use. The lubricant is intended for use on slow-speed sliding surfaces operating at temperatures up to 400°C and for use as an antiseize compound on threaded parts which operate at temperatures up to 760°C. This material has not been investigated for use in antifriction bearings.

6.2 Ordering data. Procurement documents should specify:

- a. Title, number, and date of this specification.
- b. Size and type of container desired (see MIL-STD-290).
- c. Total quantity in pounds.
- d. Applicable levels of packaging and packing (see MIL-STD-290).

6.3 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationships to the last previous issue.

DOD-L-25681D

6.4 International standardization agreement. Certain provisions of this specification are the subject of international standardization agreement ASCC 15/1, STANAG 1135. When amendment, revision, or cancellation of this specification is proposed, the departmental custodians will inform their respective Departmental Standardization Offices so that appropriate action may be taken respecting the international agreement concerned.

Custodian:

Army - MR  
Navy - AS  
Air Force - 11

Preparing activities:

Air Force - 11

(Project No. 9150-0512)

Reviewer activities:

Army - AR, MI  
Navy - AS  
Air Force - 68, 99  
DLA - PS, GS

User activities:

Army - MI

International interest (see 6.4)

**INSTRUCTIONS.** In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

**NOTE** This form may not be used to request copies of documents, nor to request 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.

---

(Fold along this line)

---

(Fold along this line)

DEPARTMENT OF THE AIR FORCE



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

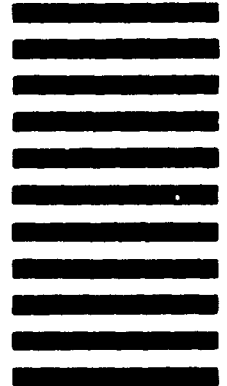
OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE \$300

**BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO 73236 WASHINGTON D C

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE AIR FORCE

ASD/ENESS  
Wright-Patterson AFB, OH 45433



**STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL***(See Instructions – Reverse Side)***1 DOCUMENT NUMBER****2 DOCUMENT TITLE****3a. NAME OF SUBMITTING ORGANIZATION****4 TYPE OF ORGANIZATION (Mark one)**☐**VENDOR**☐**USER**☐**MANUFACTURER**☐**OTHER (Specify)** \_\_\_\_\_**b ADDRESS (Street, City, State, ZIP Code)****5 PROBLEM AREAS****a. Paragraph Number and Wording****b Recommended Wording****c Reason/Rationale for Recommendation****6 REMARKS****7a NAME OF SUBMITTER (Last, First MI) – Optional****b WORK TELEPHONE NUMBER (Include Area Code) – Optional****c MAILING ADDRESS (Street City, State ZIP Code) – Optional****8 DATE OF SUBMISSION (YYMMDD)**