

AEROSPACE MATERIAL SPECIFICATION



AMS-L-81846A

Issued APR 2001
Cancelled DEC 2004

Superseded by DOD-L-81846

Lubricating Oil, Instrument, Ball Bearing, High Flash Point

CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of December, 2004, and has been superseded by DOD-L-81846. The requirements of the latest issue of DOD-L-81846 shall be fulfilled whenever reference is made to the cancelled AMS-L-81846. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications, noting that it has been superseded by DOD-L-81846.

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NOTICE

This document has been taken directly from U.S. Military Specification DOD-L-81846B, Amendment 2, Notice 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 DOD-L-81846B, Amendment 2, Notice 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.

1. SCOPE:

1.1 Scope:

This specification covers the requirements for one grade of a specialty lubricating oil for use in precision instrument and miniature ball bearings.

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.

CCC-C-46	Cloth, Cleaning, Nonwoven Fabric
P-D-680	Dry Cleaning Solvent
QQ-S-766	Steel Plates, Sheets, and Strip - Corrosion Resisting
MIL-S-13282	Silver and Silver Alloy
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 Drive, West Conshohocken, PA 19428-2959.

ASTM A 109	Steel, Carbon, Cold-Rolled Strip
ASTM A 331	Steel Bars, Alloy, Cold-Finished
ASTM A 366	Steel, Carbon, Cold-Rolled Sheet, Commercial
ASTM B 36	Brass Plate, Sheet, Strip and Rolled Bar (DoD Adopted)
ASTM D 92	Flash and Fire Points by Cleveland Open Cup
ASTM D 97	Pour Point of Petroleum Oils
ASTM D 445	Kinetic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
ASTM D 972	Evaporation Loss of Lubricating Greases and Oils
ASTM D 974	Neutralization Number by Color - Indicator Titration
ASTM D 1500	ASTM Color of Petroleum Products (ASTM Color Scale)
ASTM D 1748	Rust Protection by Metal Preservatives in the Humidity Cabinet

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 (except for associated detail specifications, specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS:

3.1 First Article:

When specified, a sample shall be subjected to first article inspection (see 4.3 and 6.3).

3.2 Composition:

The lubricating oil shall conform to the composition in percent by weight specified in Table I. Extreme care should be exercised to assure that the lubricating oil contains no silicone defoamer compounds.

3.3 Physical properties:

The physical properties of the lubricating oil shall be in accordance with physical properties appearing in Table II, when tested as specified in 4.6.2 through 4.6.7.

3.4 Material safety data sheet:

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 oil 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 6.2.1e).

3.5 Workmanship:

The lubricating oil shall be a homogeneous, clear and bright liquid free from any visible impurities. Immediately before the oil is packaged, it shall be passed through a 0.5 micrometer membrane filter of an ester-compatible filter medium (see 6.5). Filtration through glass fiber filters is not acceptable.

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.

- 4.1.1 Responsibility for compliance: The oil must 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 specifications shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.2 Classification of inspections:

The inspection requirements specified herein are classified as follows:

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

4.3 First article inspection:

The first article inspection shall consist of performance of any test or examination deemed necessary to determine that the first article sample (see 4.3.1) complies with all the requirements for the physical properties specified in Table II, when tested in accordance with the inspection methods specified in Table IV and 4.6.3 through 4.6.7(see 6.2.2).

- 4.3.1 First articles samples: The first article samples shall consist of two, 1 liter (one-quart) containers of the lubricating oil. 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:

Sample for first article inspection.

LUBRICATING OIL, INSTRUMENT, BALL BEARING, HIGH FLASH POINT

Name of manufacturer.

Location and identity of the plant.

Product code number.

Source, type and composition of ingredients used.

Batch number.

Date of manufacture.

Submitted by (name) (date) for first article inspection in accordance with DOD-L-81846B under authorization of (reference authorizing letter) (see 6.3).

- 4.4 Qualification conformance inspection:

The quality conformance inspection of the lubricating oil shall consist of tests of samples from 4.4.2.2 in accordance with Table III and an examination of samples from 4.4.2.1 for conformance with 4.6.1. Samples shall be labeled completely with information identifying the purpose of the sample, name of product, specification number, date of manufacture, date of sampling, and contract number. Individual samples shall not be mixed, shall be placed in separate air-tight and water-tight containers, and shall be nearly filled, covered and sealed to prevent atmospheric effects.

- 4.4.1 Lot formation: A lot shall consist of all the lubricating oil 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 6.4).

- 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 lubricating oil 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: The sample for tests shall be one container of the lubricating oil taken at random from filled containers from each lot of lubricating oil. The lot shall be unacceptable if the sample fails to comply with any of the requirements for the tests specified in 4.6.2 through 4.6.7.

- 4.5 Inspection conditions:

- 4.5.1 Test conditions: Test conditions shall be in accordance with 4.6 and the physical values specified in Table II apply to the average of determinations made on the sample.