MIL-L-83767B
8 February 1980
SUPERSEDING
MIL-L-83767A
28 August 1973

MILITARY SPECIFICATION

LUBRICATING OIL, VACUUM PUMP, MECHANICAL

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

1. SCOPE

*1.1 Scope. This specification covers the requirements for four types of lubricating oils for use in mechanical vacuum pumps (see 6.1).

1.2 Classification. The lubricating oils shall be of the following types, as specified:

Type I	light viscosity
Type II	medium viscosity
Type III	heavy viscosity
Type IV	extra heavy viscosity

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.

STANDARDS

Federal

Fed Test Method Std No. 791	Lubricants, Liquid Fuels, and Related Products: Methods of Testing

Beneficial comments (recommendations, additions, deletions) and pertinent data which may be of use in improving this document should be addressed to: San Antonio ALC/SFRM, Kelly AFB TX 78241, by using the self-addressed standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

Military

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

MIL-STD-290 - Packaging of Petroleum and Related Products

(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)

*2.2 Other Publications

American Society for Testing and Materials (ASTM)

D92 - Flash and Fire Points by Cleveland Open Cup, Test for

D97 - Pour Point of Petroleum Oils, Test for

D130 - Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test, Detection of

D270 - Petroleum and Petroleum Products, Sampling

D445 - Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity), Test for

D524 - Ramsbottom Carbon Residue of Petroleum Products, Test for

D611 - Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents, Test for

D664 - Neutralization Number by Potentiometer Titration, Test for

D892 - Foaming Characteristic of Lubricating Oils, Test for

D972 - Evaporation Loss of Lubricating Greases and Oils, Test for

D1298 - Density, Specific Gravity or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method, Test for

D2270 - Viscosity Index, Calculating

(Contractors and industry groups must obtain copies of ASTM Publications directly from the American Society for Testing and Materials, 1916 Race Street, Philadelphia PA 19103)

(Copies of these documents are stocked by the DOD Single Stock Point, Naval Publications and Forms Center, Philadelphia PA 19120, for issue to DOD activities only).

3. REQUIREMENTS

*3.1 Materials. The lubricating oil shall consist of highly refined petroleum base stocks with such additives as are necessary to provide a product which meets the requirements of this specification.

3.2 Appearance and Workmanship. The finished lubricating oil shall be uniform in appearance and shall be free from sediment and suspended matter when examined visually.

*3.3 Properties. The properties of the finished oil shall be as specified in Table I and paragraphs 3.4 and 3.5.

TABLE I - PROPERTIES OF FINISHED OIL

Property	TYPE I		TYPE II		TYPE III		TYPE IV	
	Min	Max	Min	Max	Min	Max	Min	Max
Specific gravity 25°C/25°C 1/								
Viscosity cSt @ 104°F (40°C)	25	50	60	85	100	120	300	330
Viscosity cSt @ 212°F (100°C) 1/								
Viscosity Index	90		90		90		90	
Flash Point °F	400		430		460		480	
°C	204.4		221.1		237.8		248.9	
Fire Point °C 1/								
Pour Point °F		0		+10		+10		+10
°C		-17.8		-12.2		-12.2		-12.2
Copper Corrosion 212°F (100°C)		1		1		1		1
Total Acid No.		0.3		0.3		0.3		0.3
Evaporation Loss, % @ 210°F (98.9°C)		0.8		0.8		0.8		0.8
Carbon Residue, %		0.2		0.2		0.2		0.4
Aniline Point °F	220		230		240		250	

1/ To be reported - not limited

3 4 Corrosion and Oxidation Stability. The oil shall comply with the following requirements when tested as specified in paragraph 4.5.1, Table III.

3.4.1 Corrosion (72-hour test). The change in weight of copper, steel, aluminum alloy, magnesium alloy, and cadmium shall not exceed ± 0.2 milligrams per square centimeter of surface when subjected to the action of the oil for 72 hours at 250°F (121°C). There shall be no pitting, etching, or visible corrosion on the surface of any of the metals when viewed under a magnification of 20 diameters.

3.4.2 Oxidation The oil shall not have changed more than -5 or +15 per cent from the original viscosity in centistokes at 104°F (40 0°C) after the oxidation-corrosion test. The total acid number shall not have increased by more than 1 0 after oxidation, and there shall be no evidence of separation of insoluble materials or gumming of oils.

3 5 Foaming Characteristics The foaming characteristics of the lubricating oil shall not exceed the limits indicated in Table II.

TABLE II - FOAMING CHARACTERISTICS OF FINISHED OIL

Test	Foaming tendency· max foam volume, ml , at end of 5-minute blowing period	Foam stability max foam volume ml , at end of 10-minutes settling period.
At 75°F (24°C)	250	10
At 200°F (93 5°C)	75	0
At 75°F (24°C) after test at 200°F (93.5°C)	250	0

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 the 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.

4.2 Lot.

4.2.1 Bulk Lot. An indefinite quantity of homogeneous mixture of one type of oil 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 Packaged Lot. An indefinite number of 55-gallon drums or smaller unit containers of identical size and type, offered for acceptance, and filled with a homogeneous mixture of material from one isolated container; or filled with a homogeneous mixture of material manufactured in a single plant run (not exceeding 24 hours) through the same processing equipment, with no change in ingredient materials.

4.3 Sampling

4.3.1 Packaged Lot. Take a random sample of packaged containers from each lot in accordance with MIL-STD-105 at inspection level II and acceptable quantity level (AQL) -2.5 per cent defective. Examine the sample in accordance with 4.4.1.

4.3.2 Sampling for Tests. Take samples for tests in accordance with ASTM Method D270. Test the samples in accordance with 4.5 for compliance to Section 3 requirements.

4.4 Inspection. Perform inspection in accordance with method 9601 of Federal Test Method Std. No. 791.

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

4.5 Test Methods.

4.5.1 The following tests shall be conducted in accordance with the applicable test method given in Table III.

TABLE III - TESTS AND METHODS

	Fed Test Method Standard No. 791	ASTM Method No.
Specific Gravity		D1298
Viscosity		D445
Flash Point		D92
Pour Point		D97
Fire Point		D92
Copper Corrosion		D130
Acid or Base No.		D664
Evaporation Loss		D972
Carbon Residue		D524
Corrosion and Oxidation Stability	5308	
Foaming Characteristics		D892
Aniline Point		D611
Viscosity Index		D2270

*4.6 Reporting A copy of the manufacturer's test report on each lot shall be forwarded to San Antonio ALC/SFQT, Kelly AFB TX 78241

5. PREPARATION FOR DELIVERY

5.1 Packaging, Packing, and Marking. The vacuum pump oil shall be packaged, packed, and marked in accordance with Standard MIL-STD-290. The type and size containers and levels of packaging shall be as specified by the procuring activity (see 6.2)

6. NOTES

*6.1 Intended Use The vacuum pump oil covered by this specification is intended to provide an oil seal, to act as a coolant, and to serve as a lubricant or working fluid for mechanical vacuum pumps The choice of type should be in accordance with the vacuum pump manufacturer's recommendations.

6.2 Ordering Data. Procurement documents should specify the following·

a. Title, number and date of this specification.

b. Type of vacuum pump oil.

c. Type and size of containers (see 5.1).

d. Level of packaging and level of packing (see 5.1).

e. Special markings other than those specified in 5 1, if required

f Quantity in gallons. The material should be purchased by volume, the unit being a US gallon at 60°F (15.6°C)

*6.3 The margins of this specification are marked with an asterisk to indicate changes (additions, modifications, corrections, deletions) from the previous issue. 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 relationship to the last previous issue

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Air Force - 68

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Air Force - 11
DFSC - PS
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Navy - SH

Preparing Activity
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Project No. 9150-0579

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval
No. 22-R255

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DOCUMENT IDENTIFIER AND TITLE

MIL-L-83767B Lubricating Oil, Vacuum Pump, Mechanical

NAME OF ORGANIZATION AND ADDRESS

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

[ ] DIRECT GOVERNMENT CONTRACT [ ] SUBCONTRACT

1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID.

3. IS THE DOCUMENT RESTRICTIVE?

[ ] YES [ ] NO *(If "Yes", in what way?)*

4. REMARKS

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