

MIL-F-46148 (MR)
24 August 1970

MILITARY SPECIFICATION
FATTY OIL
(FOR METAL-WORKING LUBRICANTS)

1. SCOPE

1.1 This specification covers one grade of fatty oil for use in metal working operations (see 6.1).

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

MILITARY

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-290 - Packaging, Packing and Marking of Petroleum and Related Products

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

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.

FSC 9150

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) TEST METHODS

- D 92 - Flash and Fire Points by Cleveland Open Cup
- D 94 - Saponification Number by Color-Indicator Titration
- D 95 - Water in Petroleum and Other Bituminous Materials
- D 96 - Water and Sediment in Crude Oils
- D 97 - Pour Point
- D 270 - Sampling Petroleum and Petroleum Products
- D 445 - Viscosity of Transparent and Opaque Liquids (Kinematic and Dynamic Viscosities)
- D 974 - Neutralization Number by Color-Indicator Titration
- D 2161 - Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furol Viscosity

(The ASTM test methods listed above are included in Part 17 or Part 18 of the Annual Book of ASTM Standards.)

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

Specifications and standards of technical societies are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

3. REQUIREMENTS

3.1 Material. The fatty oil shall consist of oil obtained from animal sources, with such additives as may be necessary to meet the specified requirements.

3.2 Physical and chemical requirements. The fatty oil shall conform to the physical and chemical requirements specified in table I when tested in accordance with 4.6 (table II).

Table I. Physical and chemical requirements

Properties	Values
Viscosity at 100°F (37.8°C) Kinematic, centistokes (Saybolt, S.U.S.) ^{1/}	40 - 47 (186.8 - 219)
Four point °F, maximum (°C, maximum)	45 (7)
Flash point °F, minimum (°C, minimum)	440 (227)
Water content, percent, maximum	0.5
Saponification number	190 - 200
Neutralization number, maximum	10
Sediment, percent, maximum	0.05

^{1/}For information only. To be converted from kinematic viscosity.

3.3 Workmanship. The fatty oil shall be transparent and homogeneous in appearance when examined visually by transmitted light at 72° ± 5°F (22° ± 3°C).

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 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.

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4.2 Lot.

4.2.1 Bulk lot. An indefinite quantity of fatty 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 drums or other unit containers of identical size and type, offered for acceptance, and filled with fatty oil from a single isolated container; or filled with fatty oil 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.

4.3.1 Sampling for examination of packed containers. Take a random sample of packed containers from each lot in accordance with MIL-STD-105 at inspection level II and acceptable quality level (AQL) = 2.5 percent defective.

4.3.2 Sampling for tests. Take samples for tests in accordance with ASTM method D 270.

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

4.4.1 Examination of packed containers. 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 sampling plan of MIL-STD-105, reject the lot represented by the sample.

4.5 Classification of tests. All tests are classified as quality conformance tests.

4.6 Test methods. Perform tests in accordance with the applicable test methods given in table II.

Table II. Test methods

Test	ASTM Test Method No.
Viscosity, kinematic	D 445
Viscosity, conversion of kinematic to Saybolt	D 2161
Four point	D 97
Flash point	D 92
Water content	D 95
Saponification number	D 94 .
Neutralization number	D 974
Sediment	D 96 (Method A)

5. PREPARATION FOR DELIVERY

5.1 Packaging, packing, and marking. Unless otherwise specified in the contract or order (see 6.2), packaging, packing, and marking shall be in accordance with MIL-STD-290.

6. NOTES

6.1 The fatty oil covered by this specification is intended primarily as an anti-weld and lubricity additive for cutting fluids used in machining ferrous and nonferrous metals.

6.1.1 Storage conditions. The fatty oil can be stored at temperatures ranging from -70°F to $+120^{\circ}\text{F}$ (-57°F to $+49^{\circ}\text{C}$).

6.2 Ordering data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Quantity of fatty oil. The unit of purchase is the U. S. gallon (231 cubic inches) at 60°F (15.6°C).
- c. Type and size of container (see 5.1).
- d. Level of packaging and packing (see 5.1).
- e. Special marking, if required.

Custodians:
Army - MR

Preparing activity:
Army - MR

Review activities:
Army - MU, AV, WC

Project No. 9150-A243

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Army Materials and Mechanics Research Center
Watertown, Massachusetts 02172**

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SPECIFICATION ANALYSIS SHEET		Form Approved Budget Bureau No 119-R004
INSTRUCTIONS		
This sheet is to be filled out by personnel either Government or contractor involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity.		
SPECIFICATION MIL-F-46148(MR), Fatty Oil (for Metal-Working Lubricants)		
ORGANIZATION		CITY AND STATE
CONTRACT NO	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$
MATERIAL PROCURED UNDER A <input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT		
1 HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? A GIVE PARAGRAPH NUMBER AND WORDING		
B RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES		
2 COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID		
3 IS THE SPECIFICATION RESTRICTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES" IN WHAT WAY?		
4 REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)		
SUBMITTED BY (Printed or typed name and activity)		DATE

DD FORM 1426
APR 63

REPLACES NAVSHIPS FORM 4863 WHICH IS OBSOLETE