

VV-L-751D
 October 30, 1981
 SUPERSEDING
 Fed. Spec. VV-L-751C
 April 8, 1969

FEDERAL SPECIFICATION

LUBRICATING OIL: CHAIN, WIRE-ROPE, AND EXPOSED-GEAR

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal Agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers the requirements for corrosion inhibiting lubricating oils for use on chains, wire ropes, and exposed gears under most environmental conditions.

1.2 Classification. This specification covers one type and three grades of lubricating oil:

<u>Grade</u>	<u>Military symbol</u>	<u>NATO code number</u>
1 - Light	CW - IIA	0 - 199
2 - Medium	CW - IIB	-----
3 - Heavy	CW - IIC	0 - 203

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:

FEDERAL SPECIFICATIONS:

O-M-232	- Methanol (Methyl Alcohol).
TT-N-95	- Naphtha Aliphatic.

FEDERAL STANDARD

FED-STD-791	- Lubricants, Liquid Fuels and Related Products; Methods of Testing.
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(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and commercial item descriptions. The index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, US Government Printing Office, Washington, D.C. 20402.

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(Single copies of this specification and other federal specifications and commercial item description required by activities outside the Federal Government for bidding purposes are available without charge at the General Services Administration Regional Offices in Boston; New York; Washington, D.C.; Atlanta; Chicago; Kansas City, MO.; Fort Worth, Houston; Denver; San Francisco, and Seattle, WA.

(Federal Government activities may obtain copies of Federal specifications, standards, and commercial item descriptions and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

MILITARY STANDARDS

- | | |
|-------------|---|
| 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 Military Specifications and Standards 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. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on the date of invitation for bids or request for proposals shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) TEST METHODS

- | | |
|------|--|
| A109 | - Steel, Carbon, Cold-Rolled Strip. |
| D92 | - Flash and Fire Points by Cleveland Open Cup. |
| D95 | - Water in Petroleum and Other Bituminous Materials. |
| D97 | - Pour Point. |
| D270 | - Sampling Petroleum Products. |
| D445 | - Viscosity of Transparent and Opaque Liquids (Kinematic and Dynamic Viscosities). |

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 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 Material. The lubricating oils shall consist of petroleum base material with or without additives as necessary to improve the adhesion, corrosion-protection, and other properties.

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3.2 Physical requirements. The lubricating oils shall conform to the physical requirements specified in table I and in 3.3 and 3.4.

TABLE I. Physical requirements

Properties	Values		
	Grade 1	Grade 2	Grade 3
Viscosity at 100° C (212° F)			
Centistokes	45-105	145-250	275-500
Flash point: ° C, minimum	176	190	204
(° F, minimum)	(348.8)	(374)	(399)
Pour point: ° C, maximum	16	26	38
(° F, maximum)	(60.8)	(78.8)	(100.4)
Water content, percent by volume maximum	0.5	0.5	0.5

3.3 Corrosion-protection (salt spray). After completion of the corrosion-protection test (6 days exposure to a 5 percent salt-solution spray), the total number of corrosion spots on the three test panels shall not exceed three (an average of one spot per panel). None of the corrosion spots shall exceed one millimeter in length, width, or diameter. The test shall be performed in accordance with 4.6.1.

3.4 Workmanship. The lubricating oil shall be mixed thoroughly to form a homogenous product, free from visible lumps, dirt, grit, or other visible foreign matter.

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 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 that supplies and services conform to prescribed requirements.

4.2 Lot.

4.2.1 Bulk lot. An indefinite quantity of a homogeneous blend of one grade of lubricating 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 a homogeneous blend of one grade of lubricating oil from a single isolated container; or filled with a homogeneous blend of one grade of oil manufactured in a single plant run (not exceeding 24 hours), through the same processing equipment, with no change in the ingredient materials.

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4.3 Sampling.

4.3.1 Sampling for examination of filled containers. Take a random sample of filled 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 test in accordance with ASTM method D270.

4.4 Inspection. Perform inspection in accordance with method 9601 of FED-STD-791.

4.4.1 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, packaging, packing, and marking requirements. Reject any container that has one or more defects or is under the required fill. Reject the lot represented by a sample if the number of defective or underfilled containers in the sample exceeds the acceptance number for the appropriate sampling plan of MIL-STD-105.

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

4.6 Test methods. Perform tests in accordance with table II and with 4.6.1, as applicable.

TABLE II. Test methods.

Test	ASTM Test method No.
Viscosity, kinematic	D445
Flash point (COC)	D92
Pour point	D97
Water content (distillation)	D95

4.6.1 Corrosion-protection (salt-spray).

4.6.1.1 Test panels. The test panels shall comply to ASTM specification A109 with a rockwell hardness from B70 to B85. The finish shall be either a No. 2 or No. 3 commercial finish. The panels shall be 75x50x3 mm (3x2x1/8-inch) with rounded edges.

4.6.1.2 Preparation of test panels. Polish three test panels with a No. 280 grit polishing medium. Dip the panels in hot (nearly boiling) methanol conforming to O-M-232, grade A. Remove the panels from the methanol and permit them to flash-dry. Dip the panels in hot (nearly boiling) naphtha conforming to TT-N-95, type I. Remove the panels from the naphtha and permit them to flash-dry. Repeat the dipping and flash-drying process in hot (nearly boiling)

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methanol. Heat the lubricating oil to a temperature of $100^{\circ}\text{C} \pm 1^{\circ}\text{C}$ ($212^{\circ}\text{F} \pm 2^{\circ}\text{F}$). Suspend the dried panels in the hot lubricating oil for 10 ± 1 minute. Remove the panels and permit them to drain in a vertical position at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ ($77^{\circ}\text{F} \pm 2^{\circ}\text{F}$) for 1 hour \pm 5 minutes.

4.6.1.3 Procedure. Expose the lubricant-coated panels to a 5 percent sodium chloride-solution spray in a salt-spray cabinet, in accordance with method 4001 of FED-STD-791, for 6 days \pm 1 hour. Remove the panels from the cabinet and rinse them in warm water to remove any remaining salt residue. Rinse the panels in hot (nearly boiling) naphtha conforming to TT-N-95, type 1, to remove the lubricant coating. Examine the panels visually for conformance with the requirements of 3.3. Disregard any corrosion appearing on the outer 6.4 mm (1/4-inch) of the panels.

WARNING:

The methanol and naphtha used in the above procedure are toxic and flammable. Flammability is greatly increased when the solvents are hot. Use these solvents only in a well-ventilated hood when performing this test procedure.

5. PREPARATION FOR DELIVERY

5.1 Packaging, packing, and marking. Unless otherwise specified in the contract or order (see 6.2), and except as specified in 5.1.1, packaging, packing, and marking shall be in accordance with MIL-STD-290.

5.1.1 Special marking. In addition to the marking required by MIL-STD-290 and as may be required by the contract or order, all unit containers shall be marked as follows:

WARNING!

This lubricating oil must not be used in food machinery on surfaces that touch food. The oil must not be allowed to contaminate foodstuffs for either human or animal consumption.

6. NOTES

6.1 Intended use. The oils covered by this specification are intended for use as lubricants and corrosion preventives for chains, cables, wire ropes and exposed gears. It may be necessary to heat the oils before application. The intended temperature ranges for each grade are as follows:

Grade 1:	-35°C to -1°C (-30°F to 30°F)
Grade 2:	-1°C to 27°C (30°F to 80°F)
Grade 3:	27°C to 54°C (80°F to 130°F)

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6.2 Ordering data. Purchases should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Grade of lubricating oil required (see 1.2).
- (c) Quantity required.
- (d) Type and size of containers required (see 5.1).
- (e) Level of packaging and level of packing required (see 5.1)

6.3 Identification of material. The lubricating oils covered by this specification are also known by the following names:

Chain, cable, or wire-rope preservative
Chain, cable, or wire-rope dressing
Chain, cable, or wire-rope grease
Gear shield

6.4 International standardization agreement. Certain provisions of this specification are the subject of international standardization agreement (NATO STANAG 1135). When amendment, revision, or cancellation of this specification is proposed which would affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels, including departmental standardization offices, if required.

6.5 Grade classification. Grades 1, 2, and 3 of this revised specification are equivalent, respectively, to type II (Protective) grades A, B, and C of the previous ("b") revision. Type I (Regular) grades are no longer covered by VV-L-751.

MILITARY INTERESTS:

Custodians

Army - ME
Navy - YD
Air Force - 68

Review Activities

Army - MD, MI, SM
Navy - SA
DLA - PS, GS

User Activities

Army - AT, AV
Navy - MC

INTERNATIONAL INTERESTS: (see 6.4)

CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:

Army - ME

Project No. 9150-0636

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.

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NOTE: This form shall not be used to submit requests for 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.

DOCUMENT IDENTIFIER (Number) AND TITLE

VV-L-751D Lubricating Oil: Chain, Wire-Rope, and Exposed-Gear

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

☐ VENDOR ☐ USER ☐ MANUFACTURER

1. ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

A. GIVE PARAGRAPH NUMBER AND WORDING

B. RECOMMENDED WORDING CHANGE

C. REASON FOR RECOMMENDED CHANGE(S)

2. REMARKS

SUBMITTED BY (Printed or typed name and address — Optional)

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DATE

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