

**DEPARTMENT OF THE ARMY TECHNICAL BULLETIN**  
**SPECIFICATION LIST OF STANDARD LIQUID FUELS,**  
**LUBRICANTS, PRESERVATIVES AND RELATED PRODUCTS**  
**AUTHORIZED FOR USE BY THE US ARMY**

**Headquarters, Department of the Army, Washington, D.C.**  
**6 July 1972**

**SECTION I**

**INTRODUCTION**

1. This bulletin furnishes specification and package data of liquid fuels, lubricants, preservatives and related products, hereinafter referred to as standard petroleum products, authorized for use in military equipment and materiel by U.S. Army activities in Continental United States and oversea commands.

2. Petroleum products listed in this bulletin are the only standard petroleum products authorized for use by U.S. activities. Request for proprietary (Brand Name) items not included herein will be submitted with complete justification to the Director, U.S. Army General Materiel and Parts Center, New Cumberland Army Depot, New Cumberland, Pa. 19101, in accordance with the provisions of AR 703-1.

3. Requisitioning and special instructions for standard petroleum products listed herein are contained in Federal Supply Catalog C9100 and the C-MLA.

4. Only basic specifications are listed in this bulletin. The latest revision or amendment of the specification will be used at all times. Nomenclature of petroleum products listed are the approved Federal Item Identification and do not necessarily correspond to the specification title. Only those petroleum products delineated by type, class or grade are standard. Other petroleum products listed by type, class or grade which may be covered by the same specification are not standard.

5. The proponent for this bulletin is the U.S.

Army Materiel Command. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications) to the Commanding General, U.S. Army Materiel Command, ATTN: AMCSU-DC, Washington, DC 20315.

## SECTION II

## Specification List of Standard Liquid Fuels, Lubricants, Preservatives, and Related Products

No.	Nomenclature and Specifications	Usage	Symbol (MIL) NATO	Type class or grade	Container size
1	Gasoline, Automotive MIL-G-3056	<i>Type I.</i> Used in Automotive and stationery gasoline engines at temperatures above 0°F.	F-49	Type I	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA 500 Gal Drum-Fabric Bulk
		<i>Type II.</i> Use when temperatures are consistently below 32°F.	F-48	Type II	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
2	Gasoline, Automotive VV-G-76	<i>Premium.</i> Used in motor vehicles and gasoline consuming stationary and marine power plants when specifically recommended by mfgr		Premium Class A, B, C, D and E	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		<i>Regular.</i> Use when premium grade is not specifically recommended by mfgr.		Regular Class A, B, C, D and E	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
3	Gasoline, Automotive, Low Lead or Unleaded V-G-00169	Used in spark-ignition internal-combustion auto motive, marine and stationary engines. Gasolines covered by this specification are not intended for static storage nor should they be stored in stand-by equipment for more than 60 days. Consult operation manual for use of Special, Regular and Premium grades.		Special Premium Regular	Bulk Bulk Bulk
4	Gasoline, Aviation MIL-G-5572	Used in aircraft reciprocating engines where specified.	(80/87) F-12	80/87	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		Used in aircraft reciprocating engines where specified	(100 /130) F-18	100/130	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		Used in aircraft reciprocating engines where specified.	(115/145) F-22	115/145	55 Gal Drum-16 GA 55 Gal Drum-18 GA 500 Gal Drum Bulk

5	Turbine Aviation Fuel, MIL-T-5624	Used in aircraft turbine engines.	(JP-4) F-40	JP-4	55 Gal Drum-16 GA 55 Gal Drum-18 GA 500 Gal Drum-Fabric Bulk
		Used in aircraft turbine engines.	(JP-5) F-44	JP-5	55 Gal Drum-18 GA Bulk
6	Diesel Fuel VV-F-800	For use in high speed automotive type diesel engines and in pot type burner space heaters, in areas where mean ambient temperatures are lower than -25°F and where it is impractical to obtain or store diesel and burner fuels. Not to be used for slow speed stationary engine applications.	(DF-A) F-56	DF-A Arctic	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		For use in high speed automotive type diesel engines in areas where ambient temperatures are low as -25°F occur. May be used for medium speed stationary engine applications where fuel heating facilities are not available	(DF-1)	DF-1 Winter	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		For use in all automotive high speed diesel engines and in medium speed stationary engine applications where the ambient temperatures are above 20°	(DF-2) F-54	DF-2 Regular	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
7	Fuel Oil, Burner W-F-815	For use in burners of the vaporizing type	(FO-1)	FS No 1	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		For use in atomizing type burners.	(FO-2)	FS No 2	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		Used in burners without pre-heating facilities.	(FO-4)	FS No 4	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
		Used for burners with pre-heating facilities requiring an oil of lower viscosity than FS No. 6.	(FO-5)	FS No 5	Bulk
		Used for burners having pre-heating facilities.	(FO-6)	FS No 6	Bulk
8	Kerosene W-K-211	Used in wick-fed lamps, stoves and heaters. Also used as a cleaner for machinery and tools and as a diluent for honing compounds where no fire hazard exists	(K) F-58		5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk

No.	Nomenclature and Specifications	Usage	Symbol (MIL) NATO	Type class or grade	Container size
9	Brake Fluid, Automotive, W-B-680	Used in automotive hydraulic brake systems. Not to be used as preservative for parts and components nor for use in brake systems subjected to prolong storage.	(HB) H-542		1 Pt Can 1 Gal Can
10	Brake Fluid, Automotive, MIL-H-13910	Polar type, all weather, one grade for automotive brake systems at ambient temperatures from + 131°F to -67°F. Not to be used as preservative for parts and components	(HBA)		1 Gal Can
11	Preservative Fluid, Automotive Brake Systems and Components, MIL-P-46046	Used to preserve automotive hydraulic systems in storage; also as a packaging preservative for wheel and master cylinder assemblies.			1 Gal Can
12	Castor Oil, Technical JJJ-C-86	Used for treatment of leather and other special purposes.		Grade 1 Grade 2	1 Gal Can 1 Gal Can
13	Cutting Oil (100% Lard Oil (C-o-376)	Used for lubrication of tools, for pipe cutting and threading. May be used as a lubricity additive to cutting oils for machining of ferrous and non-ferrous metals.			1 Pt Can 1 Gal Can 5 Gal Can 55 Gal Drum-18 GA
14	Cutting Oil (Emulsifiable Oil) VV-C-846	For use as a coolant and lubricant when cutting copper, brass, cast iron and aluminum when diluted with water to approx 5% by volume.	(OS) 0-214	Type I	2 oz Btl 5 Gal Pail 55 Gal Drum-18 GA
		Used as a coolant and lubricant when cutting bronzes, low carbon and annealed high carbon steel.		Type II	5 Gal Can 55 Gal Drum
		Used as a coolant and lubricant for difficult to machine high alloys or stainless steels and titanium.		Type III	5 Gal Pail 55 Gal Drum
15	Cutting Oil (Mineral Base) W-C-850	Used for coolants and lubricants for machining low carbon steels with tools running at high speed.	0-216	Type II Grade D	1 Gal Can 5 Gal Can 55 Gal Drum
16	Cutting Oil (Mineral) W-0-241	For lubrication of tools for cutting where a straight mineral oil is satisfactory.		Type I Type II	55 Gal Drum
17	Damping Fluid (Silicone Base) VV-D-1078	For use as damping fluids, transducer fluids, lubricants, heat transfer fluids, dielectric fluids, mold release agents, water repellents, hydraulic fluids, protective dressings and impregnants.	S-1714 S-1718 S-1720 S-1724 S-1726 S-1728 S-1732		3/4 lb Can 1 Gal Can 1 Pt Can 1 Qt Can

18	Fluid, Automotive Transmission (No spec)	Automotive transmission fluid designed for synthetic rubber seals, GM, Chrysler and AMC automatic transmission. (DEXTRON) Used in Ford automatic transmissions. (FSCM 23040)		Type F	1 Qt Can 1 Qt Can
19	Fog Oil MIL-F-12070	Used in mechanical smoke generators at all temperatures	F-62	Type SGF-2	55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
20	Grease, Aircraft and Instrument MIL-G23827	For use in ball, roller, and needle bearings, gears, and on sliding or rolling surface of instruments, cameras, electronic gear, aircraft control systems, and aircraft actuator screws, and other aircraft actuator screws, and other equipment requiring a lubricant with high load carrying capacity. Effective temperature range -100°F to 250°F.	(GIA) G-354		1 oz Tube 8 oz Tube 1 lb Can 5 lb Can 35 lb Pail
21	Grease, Ball and Roller Bearing MIL-G-25013	Used for ball and roller bearings over the temperatures range of -100°F to +450°F.	(BRH) G-372		8 oz Tube 1 lb Can
22	Grease, Pneumatic System, MIL-G343	Used as a lubricant between rubber and metal parts, under dynamic conditions, in aircraft pneumatic systems.	(GPS) G-392		8 oz Tube
23	Grease, Aircraft (Helicopter) MILG-25537	For use in bearings having oscillatory motion of small amplitude over the temperature range of +160°F to -65°F.	(GOB) G-366		1 lb Can 5 lb Can 35 lb Pail
24	Grease, Automotive and Artillery MILG-10924	Used for lubrication of chassis, wheel bearings and water pumps of all automotive and artillery components.	(GAA) G-403		2 1/4 oz Tube 1 lb Can 5 lb Can 35 lb Pail 120 lb Drum
		For use with grease gun, Type I FSN 4930-253-2478	(GAA) G-403		14 oz Cartridge
25	Grease, Ball and Roller Bearing MIG-18709	For use in ball and roller bearings operating at medium speeds over a range of +125°F to +200°F and for short intermittent service at +225°F.	(BR)		8 oz Tube 1 lb Can 5 lb Can 35 lb Pail
26	Grease, General Purpose, VV-G-632	Used on ball and roller bearings and other machinery which is lubricated by means of compression cups. Not to be used on automotive or artillery equipment.		Grade 1	5 lb Can

No.	Nomenclature and Specifications	Usage	Symbol (MIL) NATO	Type class or grade	Container size
27	Grease, General Purpose MILG-23549	Intended for general use for environments requiring high temperatures (400°F), low speed, high load, salt water and contact with high pressure steam. Suitable for lubrication of catapult foot pad, automotive and ground support equipment,	(GGP)		8 oz Tube 1 lb Can- 5 lb Can 35 lb Pail
28	Grease, Graphite VV-G-671	For use in compression grease cups for bearings of machinery operating at temperatures not in excess of 150°F. Grade 1-Light pressure, high speeds Grade 2-Medium pressures and speeds Grade 3-High pressure and slow speeds	(GG-1) G-408  (GG-2)  (GG-3) G-410	Grade 1  Grade 2  Grade 3	1 lb Can 5 lb Can 35 lb Pail  1 lb Can 5 lb Can 1 lb Can
29	Grease, Graphite Silicone (No Spec)	30% Graphite, silicone, 500°F maximum. FSCM 01139 P/N G-392)			1 lb Can
30	Grease, Ground Glass (No Spec)	General laboratory use for high vacuum application. (FSCM 71983)			2 oz Jar
31	Grease, Laboratory Apparatus, Stopcock (No Spec)	General laboratory applications. Graphite-For metal stopcocks under high. temperatures Petroleum-General laboratory applications Trifluorvinyl Chloride-For use in aircraft oxygen systems			1 oz Tube 2 oz Jar  25 Gm Tube 4 oz Tube
32	Grease, Molybdenum MIL-G-21164	Used to lubricate high load sliding steel surfaces operating in a wide temperature range.	(GMD) G-353		1 lb Can
33	Grease, Plug Valve MILG-6032	Used in tapered plug valve service in systems where gasoline, oils, alcohol or water resistance is desired. This grease may be used as a gasket lubricant or sealer.	(GRG) G-363	Type I  Type II Class A= Class B Class C Class D Class F	8 oz Can 1 lb Can  Box-24 Sticks Box-24 Sticks Box-24 Sticks Box-24 Sticks Box-24 Sticks
34	Grease, Valve (No Spec)	Petroleum oil and Aluminum soap base. Salt water resistant  Silicone type synthetic base. Acid, alcohol, alkali, organic solvents, salt water and water resistant			Box-24 Sticks  8 oz Jar

		Silicone type synthetic base. Water, tar, pitch, and asphalt resistant. (FSCM 91393, P/N ACF 101)			Box-24 Sticks
35	Grease, Rifle MILG-46003	Used as a lubricant for rifles and other small arms, when such weapons are used under conditions of sustained rain.			2.5 cc Tube 1 lb Can
36	Grease, Silicone Insulated Electric Motors, MIL-L-15719	For ball and roller bearings only. Primarily intended for lubricating Class "H" electric motors with heat stabilized ball bearings. Temperature range 0° -300°F.	(GHT)		8 oz Tube
37	Grease, Silicone Insulated Electric Motors (No Spec)	As above, polymethylphenyl silicone fluid and lithium soap base. Temperature range -100° to 400°F. (FSCM 01139, P/N G300)			2 oz Tube
38	Grease, Wire Rope, Exposed Gear MILG-18458	Used for lubrication and corrosion protection of running ropes and exposed gear.			35 lb Pail 120 lb Drum
39	Hydraulic Fluid, Fire Resistant, MILH-19457	Used in hydraulic systems and air compressors where specified.	(HFR-I) H-580	Type I	5 Gal Drum
40	Hydraulic Fluid, Non Combustible (No Spec)	Used in hydraulic systems where specified. (FSCM 61637, P/N UCON Hydrolube 150-CP)			5 Gal Can
41	Hydraulic Fluid, Catapult, MILH-22072	Used as a power transmission medium for hydraulically actuated systems in aircraft launching catapults.			1 Qt Can 5 Gal Pail
42	Hydraulic Fluid, Non Petroleum Base Aircraft (No Spec)	For synthetic rubber seal. Use in Hawk Systems as heat transfer medium in closed hydraulic systems. Can function as dielectric fluid over a wide temperature range. MIS 14752		Type II	1 Qt Can 5 Gal Pail
		For synthetic rubber seals (FSCM 76541, P/N OS45)			1 Gal Can
43	Hydraulic Fluid, Petroleum Base (No Spec)	(FSCM 05030, P/N MIS 10137)			1 Gal Can
44	Hydraulic Fluid, Petroleum Base; Aircraft, Missile, and Ordnance MILH-5606	Used in automatic pilots, shock absorbers, brakes, flap-control mechanisms, missile hydraulic servo control systems, and other hydraulic systems using synthetic sealing materials	(OHA) H-515		1 Qt Can 1 Gal Can 5 Gal Pail 55 Gal Drum
45	Hydraulic Fluid, Petroleum Base Preservation and Testing, MIL-H-6083	Used as a preservative for hydraulic systems and components in aircraft and ordnance equipment	(OHT) C-636		1 Qt Can 1 Gal Can 5 Gal Pail 55 Gal Drum

No.	Nomenclature and Specifications		Usage	Symbol (MIL) NATO	Type class or grade	Container size
46	Hydraulic Petroleum Base, Artillery Recoil, MIL-H-13866	Fluid, Base,	Used in hydro-spring and hydro-pneumatic artillery recoil mechanism.			1 Qt Can 1 Gal Can
47	Hydraulic Petroleum Base, Fire Control MIL-H-13919	Fluid, Base,	Used in fire control variable-speed gears in the temperature range from -10°F to +275°F. Also used in hydraulic systems where corrosion protection is required and in systems using synthetic seals	(OH) H-540		1 Qt Can 1 Gal Can 5 Gal Can
48	Hydraulic Power Transmission, MIL-F-17111	Fluid,	Used in hydraulic transmission of power.	H-575		5 Gal Can 55 Gal Drum
49	Hydraulic Petroleum Base, for Machine Tools, MIL-H-46001	Fluid, Base, for Tools,	Used in hydraulic systems of metal working machine tools.		Type I Type II Type III Type IV	5 Gal Can 55 Gal Drum 5 Gal Can 55 Gal Drum 5 Gal Can 55 Gal Drum 5 Gal Can 55 Gal Drum
50	Hydraulic Petroleum Missile Base, MIL-H-46004	Fluid, Base,	Used in guided missile hydraulic systems at temperatures below 20°F.	(OHL) H-585		1 Gal Can 5 Gal Can
51	Hydraulic, Petroleum Ultra-Low Temperature, MILH-81019	Base	Used in aircraft missile and ordnance hydraulic systems in the temperature range of -90°F to +210°F.			1 Gal Can 5 Gal Can
52	Lubricant, Interlocking Fastener (No Spec)	Slide	Used as a lubricant for zipper type fasteners. FSCM 96980 P/N zippercage.			Box-24 Sticks
53	Lubricant, Film MIL-L-46010	Solid	A film lubricant used to reduce wear, prevent galling and seizure and provide corrosion protections-; suitable for aluminum, aluminum alloys, copper, copper alloys, steel, stainless steel, titanium, chromium and nickel bearing surfaces.			1 Qt Can 1 Gal Can
54	Lubricant, Film MIL-L-8937	Solid	For use on steel, titanium, aluminum, aluminum alloys and other metals where other conventional lubricants are difficult to apply or retain.			1 Pt Can 1 Gal Can
55	Lubricant, Film Air Drying, MIL-L-23398	Solid	For use on steel, titanium, or aluminum bearing surfaces where moderate wear life and corrosion protection are desired	S-749	Type II	12 oz Aerosol Can



56	Lubricating Aircraft Engine MIL-L-22851	Oil Piston	Used in aircraft reciprocating engines as specified in the Technical Bulletin.	(LAD-II) 0-128 (LAD-III) 0-123	Type II  Type III	1 Qt Can 1 Gal Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
57	Lubricating Aircraft Jet Engine, MIL-L-6081	Oil, Jet Engine,	Used in aircraft turbine engines as specified in the Technical Bulletin	0-138	Grade 1010	1 Qt Can 1 Gal Can 55 Gal Drum-18 GA Bulk
58	Lubricating Aircraft Engine MIL-L-7808	Oil, Turbine	Used in aircraft turbine engines and helicopter transmissions as specified in appropriate Technical Bulletin.	(LGT) 0-148		1 Qt Can 55 Gal Drum
59	Lubricating Oil, Air-Turbine Engine MIL-L-23699	Oil, Air-Turbine Engine	Used in aircraft turbine engines, helicopter transmissions and other aircraft gear boxes as specified in appropriate Technical Bulletin. Temperature operating range -40°F to +400°F.	0-156		1 Qt Can 5 Gal Can 55 Gal Drum-18 GA
60	Lubricating Refrigerant Compressor(No Spec)	Oil,	Modified lubricating oil meeting MIL-L-23699 specification, which has been treated by heating to remove all traces of moisture. Used to lubricate compressor or cryogenic refrigerators by means of wick evaporation (FSCM 08079, P/N L-11-1).			1 Qt Can
61	Lubricating Colloidal, Graphite, MIL-372	Oil,	Used for lubrication of machine gun housing guide, windshield wipers, and other lightly loaded sliding mechanisms exposed to the weather.	(LCG)	Grade A Light	2 oz A/A Pkg 1 Qt Can 1 Gal Can
62	Lubricating Compounded, MIL-L-15019	Oil,	Used in special applications, generally involving moisture, worm gear or wick feed lubrication systems.	(4065) 0-254		5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
				(6135)		5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
				(8190)		5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
63	Lubricating Internal Combustion Engine, MIL-L-21260A	Oil,	Used as a preservative and break-in oil in spark or compression ignition engines used in all types of ground equipment at ambient temperatures above -10°F. These oils are completely opera-		Type I Grade 10	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA

No.	Nomenclature and Specifications	Usage	Symbol(MIL) NATO	Type class or grade	Container size
63	(Contd)  **NOTE. Lubricating oils qualified/procured under MIL-L21260 are not break-in/drive away oils and must be drained and replaced with proper type and grade of oil prior to operating the engine	tional and need not be changed until the first scheduled oil change as specified in the appropriate LO. These oils should be used for preservation of engines for storage and as a factory-fill and break-in oil for all new or rebuilt engines. Type I is used in engines operating at output levels up to 150 psi BMEP. Type II is used in supercharged compression ignition engines operating at output levels of 150 psi BMEP and above. Consult appropriate LO for proper type and grade.		Grade 30	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
				Grade 50	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
				Type II	5 Gal Can
				Grade 10	55 Gal Drum-16 GA 55 Gal Drum-18 GA
				Grade 30	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
				Grade 50	5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
64	Lubricating Oil, Internal Combustion Engine MIL-L-10295	Used for crankcase lubrication of internal combustion (spark ignition) engines under all conditions of service when ambient temperatures are in the range of 0°F to -65°F.	(OES) 0-183		1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
65	Lubricating Oil, Internal Combustion Engine (Heavy-Duty) MIL-L-2104C**  **MIL-2104C supersedes and replaced MIL-L-45199. Oils qualified/procured under MIL-L-2104A or MIL-L-2104B are not authorized replacements for MIL-L-45199.	Used for lubrication of internal combustion spark or compression ignition engines used in ground support equipment of all types and under all conditions of service where the ambient temperatures are above -20°F. Lubrication Orders specify grades to be used.	(OE/HDO-10)	Grade 10	1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
			(OE/HDO-30)	Grade 30	1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA Bulk
			(OE/HDO-40)	Grade 40	1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
			(OE/HDO-50)	Grade 50	1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA

66	Lubricating Oil, Internal Combustion Engine MIL-L-8383	Used in specific models of airborne power plants.	(LIC)		1 Qt Can
67	Lubricating Oil, Internal Combustion Engine Administrative Service MIL-L-46152	Used for crankcase lubrication of commercial type vehicles used for administrative service typical of (1) Gasoline engines in passenger and light to medium duty trucks operating under manufacturer warranties; and lightly super-charged diesel engines operated in moderate duty service. The oils covered by this specification are intended for use, as defined by vehicle manufacturer, when ambient temperatures are above -20°F. These oils are not authorized for use in tactical/combat type vehicles.		Grade 10W Grade 30 Grade 10W-30 Grade 20W-40	1 Qt Can 1 Gal Can 5 Gal Can
68	Lubricating Oil, Exposed Gear, VV-L751	Used in treatment of wire ropes, chains, cables and exposed gears	(CW-IIA) 0-199	Grade 1	5 lb Can 35 lb Pail 120 lb Pail
			(CW-IIB)	Grade 2	5 lb Pail 35 lb Pail 120 lb Drum
			(CW-IIC) 0-203	Grade 8	5 lb Pail 35 lb Pail 120 lb Drum
69	Lubricating Oil, Gear MIL-L-6086	Used for lubrication of aircraft gears, Grade L is for extreme low temperature operations.	(OGL) 0-153	Grade L	1 Gal Can 5 Gal Can
		Grade M is intended for general use in aircraft gear trains, exclusive of engines.	(OGR) 0-155	Grade M	1 Pt Can 1 Gal Can
70	Lubricating Oil, Gear(No Spec) FSCM 80732, P/N PEN-O-LED EP3	Used for lubrication of scanner drive gears of radar equipment.			35 lb Pail
71	Lubricating Oil, Gear MIL-L-2105	For lubrication of automotive gear units, heavy duty industrial type enclosed gear units, steering gears and fluid lubricated universal joints of automotive equipment. Grade 80 for general use below 0°F. Grade 90 for general use above 6°F Grade 140 to be used when temperature range is 110°F and/or when service is severe and when leakage of the gear case is a factor	(GO-80) 0-227	Grade 80	5 Gal Drum 55 Gal Drum-16 GA 55 Gal Drum-18 GA
			(GO-90) 0-226	Grade 90	1 Qt Can 5 Gal Drum 55 Gal Drum-16 GA 55 Gal Drum-18 GA
			(GO-140) 0-228	Grade 140	1 Qt Can 5 Gal Pail 55 Gal Drum-16 GA 55 Gal Drum-18 GA

No.	Nomenclature and Specifications	Usage	Symbol(MIL) NATO	Type class or grade	Container size
72	Lubricating Oil, General Purpose W-L-800	Used for lubrication and protection against corrosion of small arms and automatic weapons and in other applications where a general purpose, water displacing, low temperature lubricating oil is required.	(PL-S) 0-190		2 oz Can 4 oz Can 15 oz Pressure Spray Can 1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
73	Lubricating Oil, General Purpose VV-L-820	Used in the lubrication and corrosion protection of certain small arms and automatic weapons and wherever a general purpose oil is required. Also used for typewriters, sewing machines, etc.			1/2 oz Btl 1 oz Btl 4 oz Can 1 Qt Can-Screw Top
74	Lubricating Oil, General Purpose MIL-L-7870	Used wherever a general purpose, low temperature lubricating oil is required. Designed for use where a oil of low evaporation and rust protective is desired.	(OGP) 0-142		4 oz Can 1 Qt Can 1 Gal Can
75	Lubricating Oil, Hydraulic & Light Turbine MIL-L-17672	For use in steam turbines, water wheel type generators, hydraulic turbine governors, and other applications requiring a high grade lubricating oil.	(2075TH)		1 Pt Can 1 Gal Can 5 Gal Can 55 Gal Drum
			(2110TH)		1 Gal Can 5 Gal Can 55 Gal Drum-18 GA Bulk
			(2135TH)		1 oz Can 1 Pt Can 1 Qt Can 5 Gal Pail 55 Gal Drum, 18 GA Bulk
76	Lubricating Oil, Reciprocating Compressor, MIL-L26087	Used in high pressure reciprocating air compressors used in ground support of aircraft in ambient temperature range from 0°F to 130°F.	(ORC)	Grade I Grade II	1 Gal Can 5 Gal Can
77	Lubricating Oil, Enclosed Gear, W-L-765	Used as an enclosed gear lubricant and similar parts where design and/or operating conditions do not require the use of an extreme pressure lubricant and where temperatures exceed 175°F.	(M-250)	Grade 250	5 lb Can-Spec exception 120 lb Drum
78	Lubricating Oil, Gear, Sub-Zero, MIL-L-10324	Used for lubrication of automotive gear units, heavy duty industrial type enclosed gear units, hypoid gear units, and fluid lubricated universal joints in temperature range from 0°F to -65°F	(GOS)		1 Qt Can 5 Gal Can 55 Gal Drum-18 GA

79	Lubricating Oil, General Purpose (No spec)	Oil,	Contains additives for clinging to metals, FSCM 09135, P/N 502			1 Gal Can
80	Lubricating Oil, General Purpose MIL-L-15016	Oil,	Used for all applications which require other than special lubricants.	(3050)		1 Qt Can 5 Gal Drum 55 Gal Drum-16 GA 55 Gal Drum-18 GA
80	Lubricating Preservative MIL-L-3150	Oil,	Used in lubrication and preservation of ferrous and non-ferrous metals, interiors of gear assemblies, transmissions, differentials, etc. against corrosion. It is not intended for use in the protection of internal combustion engines.	(PL-M) 0-192		4 oz Can 1 Qt Can 5 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
81	Lubricating Hydraulic MIL-S-81087	Oil,	Used in lubricating, hydraulic damping and related applications in temperatures ranging from -73°F to +218°F.		Type I	2 lb Can
82	Lubricating Instrument, MIL-L-6085	Oil, Aircraft	Used in aircraft instruments, electronic equipment or where a low evaporation, oxidation and corrosion resistant oil is required. It is suitable for both high and low temperature applications.	(OAI) 0-147		1 ½ oz Btl 4 oz Spout Can 1 Qt Can
83	Lubricating Oil, Steam Cylinder VV-L-1071	Oil,	Used in lubricating steam cylinders. MS 5190 is used in lubricating saturated and superheated steam systems. MS 5230 is used to lubricate uniflow steam engine cylinders.	(5190) 0-258		5 Gal Drum 55 Gal Drum-16 GA 55 Gal Drum-18 GA
				(5230)		5 Gal Drum 55 Gal Drum-18 GA
84	Lubricating Molybdenum Disulfide MIL-L-25681	Oil,	Used on slow-sliding surfaces operating at temperatures to +750°F, also used as an antiseize compound on threaded parts which operate at temperatures up to +1400°F	S-1735		1 lb Can
85	Lubricating Oil, Railway Car and Locomotive VV-I-822	Oil, Rail-way Car and Locomotive	Used as a lubricant for journal bearings in rail-way cars, locomotives and railway gun carriages.	0-204		5 Gal Drum 55 Gal Drum-16 GA 55 Gal Drum-18 GA
86	Lubricating Oil, Gear Locomotive, MIL-L-13914	Oil, Gear Locomotive,	Used in lubricating locomotive traction motor gears. Grade 1 for use in ambient temperature ranges below 32°F. Grade 2 is used in ambient temperature ranges above 32°F.	(LGL-1)	Grade I	35 lb Pail 120 lb Drum
				(LGL-2)	Grade 2	35 lb Pail 120 lb Drum
87	Lubricating Refrigerant Compressor, VV-L-825	Oil, VV-L-	Used for the lubrication of the compressor unit of refrigeration equipment. Type I used in equipment using Sulfur Dioxide as a refrigerant. Type II used in equipment using Dichlorodifluoromethane, Methylchloride or ammonia as a refrigerant.	(RCO-1) 0-282	Type I	1 Qt Can 1 Gal Can

No.	Nomenclature and Specifications	Usage	Symbol(MIL) NATO	Type class or grade	Container size
		Type III used in equipment, such as two-staged rotary compressors.	(RCO-2) 0-283	Type II	1 Qt Can
			(RCO-3) 0-284	Type III	1 Qt Can 1 Gal Can
88	Lubricating Oil, Semi Fluid, MIL-L-46000	Used as a lubricant for M39, M61 and related automatic weapons under conditions of extreme pressure and in temperatures ranging from -65°F to +260°F. LSA permits the M16 to operate in temperatures as low as -30°F.	(LSA) 0-158		2 oz Btl oz Btl 1 Qt Can 1 Gal Can
89	Lubricating Oil, Steam Turbine MIL-L-17331	Used for lubricating steam turbines and specified hydraulic equipment.	(2190-TEP) 0-250		5 Gal Drum 55 Gal Drum-16 GA 55 Gal Drum-18 GA
90	Lubricating Oil, Instrument, MIL-L-3918	Used to lubricate steel pivots and jeweled bearings.	(OCWL)		5 cc Btl 1/2 oz Btl
91	Lubricating Oil, Aircraft Weapons, MIL-L-14107	Used to lubricate automatic aircraft weapons to insure efficient operation at low temperatures.	0-157		1 oz Can 1 Qt Can
92	Lubricating Oil, Contact, MIL-L-46002	Used in the preservation of enclosed systems where volatile components will provide protection above the oil level. Should not be used where magnesium, cadmium plate or rubber is present	(LCV-1)	Grade 1	1 Qt Can 5 Gal Can
93	Lubricating Oil, Rock Drill, (No Spec)	FSCM 30719, P/N DA 500, FSCM 99748, P/N EPH, SAE 50	Grade 8		55 Gal Drum
94	Lubricating Oil, Compounded Steam Engine VV-L-795	Used as a lubricant for steam engines using saturated steam and operating at high pressures.			5 Gal Pail 55 Gal Drum-18 GA
95	Penetrating Oil VV-P-216	Used to free corroded or rusted parts			1 Pt Can 1 Qt Can
96	Petroleum, Technical VV-P-236	Used as a light lubricant; not recommended for use in hot running or heavy loaded bearings.	(PET) S-743		1 lb Can 5 lb Can 35 lb Pail 120 lb Drum 1 Gal Can
97	Preservative Fluid, Automotive Brake Systems, MIL-P-46046	Used to preserve automotive hydraulic systems in storage; also as a packaging preservative for wheel and master cylinder assemblies.			
98	Beeswax, Technical C-B-191	Used for industrial purposes such as polishes, leather dressing and in the manufacture of ammunition.			1 oz Pkg 1 lb Pkg

99	Insulating Electrical Spec)	Oil, (No	Used in Hawk System as heat transfer medium and dielectric fluid in temperatures ranging from -85°F to +350°F			1 Qt Can
			Temperature range -80F to +550°F. Army Missile Spec 14752	Type III		1 Gal Can
100	Insulating Electrical, 530	Oil, VV-I-	Used as a insulating and cooling medium in electrical transformers, circuit breakers, and switches. Class 1 contains no additive packages. Class 2 contains an additive	(OT)	Class 1 Class 2	1 Qt Can 1 Gal Can 55 Gal Drum-16 GA 55 Gal Drum-18 GA
101	Insulating Electrical, Spec (FSCM29700, P/N Bayol 35)	Oil, No	Highly refined petroleum fluid.			1 Qt Can
102	Tallow, Inedible C-T-91		Tallow covered by this specification intended for industrial use.			4 oz Can
103	Wax Carnauba, Refined JJJ-W-141		Used in polishes.	Type I		5 lb Bag
104	Wax Machine Stitching MIL-W-43061		Used in machine stitching wax for stitching leather and canvas.			1 oz Bag 1 lb Cake
105	Wax, Microcrystalline MIL-W-12465		Used for treatment of electrical equipment to protect against fungus.			10 lb Cake
106	Wax, Paraffin, Technical VV-W-95		Refined paraffin used in manufacture of candles and in waterproofing, impregnating and coating of materials, radioactive shielding and as an embedding compound.	Type I Grade A		1 lb Cake 11 lb Cake 60 lb Cake 375 lb Cake
				Grade AA		10 lb Cake
				Grade B		400 lb Cake
				Grade C		1 lb Cake
107	Wax, Ski (FSCM 04016)			Purple (paste) Blue (stick) Purple (stick)		2 oz Tube 20 oz Can 2 oz Can

By Order of the Secretary of the Army:

BRUCE PALMER, JR.  
*General, United States Army Official  
Acting Chief of Staff*

VERNE L. BOWERS  
*Major General, United States Army  
The Adjutant General*

Distribution:


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<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p style="margin: 0; font-weight: bold;">BE EXACT   PIN-POINT WHERE IT IS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; text-align: center; font-size: 0.8em;">PAGE NO.</td> <td style="width: 25%; text-align: center; font-size: 0.8em;">PARA- GRAPH</td> <td style="width: 25%; text-align: center; font-size: 0.8em;">FIGURE NO.</td> <td style="width: 25%; text-align: center; font-size: 0.8em;">TABLE NO.</td> </tr> <tr> <td style="height: 500px;"></td> <td></td> <td></td> <td></td> </tr> </table> </div> <div style="width: 65%;"> <p style="margin: 0; font-weight: bold;">IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.</p> <div style="border: 1px solid black; height: 450px; margin-top: 10px;"></div> </div> </div>				PAGE NO.	PARA- GRAPH	FIGURE NO.	TABLE NO.				
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1 JUL 79PREVIOUS EDITIONS  
ARE OBSOLETE.P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR  
RECOMMENDATION MAKE A CARBON COPY OF THIS  
AND GIVE IT TO YOUR HEADQUARTERS.

## The Metric System and Equivalents

### Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

### Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
 1 decagram = 10 grams = .35 ounce  
 1 hectogram = 10 decagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

### Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

### Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

### Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

## Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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