

# **BRITISH MILITARY OILS AND LUBRICANTS**

by **Clive Elliott**

Most of us appreciate the importance of servicing of our vehicles, and would generally like to use the proper lubricants or at least their modern equivalents. Some extremists would only feel happy using the product if it came out of a genuine military container, unfortunately as time goes on, the original lubricants may become obsolete and this degree of authenticity is no longer feasible.

Vehicle owners will generally have acquired the appropriate User Handbook, which is full of information including driver maintenance, routine servicing, and capacities for lubricants. Regrettably the nature of the lubricant can only be ascertained from the Servicing Schedule, being rather flimsy documents, they do not survive very well and can be subject to revision if there is a change in role of the vehicle, or if the lubricants become obsolete. Fortunately the Joint Service Road Transport Regulations require that Army and RAF vehicles display the classification of the lubricant to be used. The marking should be in white paint, as close to the component as possible. Where rear axles are painted white for convoy purposes then the lettering should be in black. There is no date to determine when such markings were applied, whereas the Servicing Schedule will indicate the date, which can be helpful in determining the reason why there was a change.

For example I have a Humber Pig which is marked as requiring engine oil OMD-75, so fill it up with OMD-75, I can hear you say. The dilemma is that I have another Humber Pig that which is marked as requiring OMD-110! So what is the correct lubricant? Early Humber Servicing Schedules required OMD-110 to be used, yet a 1973 Servicing Schedule states that OMD-75 should be used. It would be tempting to assume that the more modern recommendation would be the one to follow. But the reason is that OMD-110 became obsolete and OMD-75 was the easiest alternative for the Army to use, but not necessarily the best! OMD-75 has itself now become obsolete, OMD-85 was sometimes used as a replacement, but that also became obsolete, to then be replaced by OMD-80! Consulting the charts that follow you will see OMD-75 is a multi-grade rated as SAE 10W/30, but OMD-110 is a straight SAE 30. Rolls Royce technical data recommends SAE 30, so when hunting to find a present day commercial equivalent it is important to know the proper specification

Containers of British military lubricants will display the British designation and also a NATO code. The purpose of these notes is to define how NATO and British military designations are derived to enable local sourcing of modern equivalents. NATO Code Numbers are determined by the Military Agency for Standardization and consist of a single code letter followed by a number block of two or three or four digits, eg F-18, G-366, S-1714.

## **NATO CLASSES**

**F** - *Fuels*

**O** - *Oils*

**G** - *Greases*

**H** - *Hydraulic fluids*

**C** - *Corrosion preventives*

**S** - *Speciality products*

**P** - *Propellants*

The number block is also specific to the class so even without the code letter; the number would still identify the product. Code Numbers ending in 1 are not used because of the danger of obliteration.

FUELS	F-12	to	F-99	and	F-1012	to	F-1099
OILS	O-112	to	O-349	and	O-1112	to	O-1349
GREASES	G-350	to	G-499	and	G-1350	to	G-1499
HYDRAULIC FLUIDS	H-512	to	H-599	and	H-1512	to	H-1599
CORROSION PREVENTIVES	C-608	to	C-699	and	C-1608	to	C-1699
SPECIALITY PRODUCTS	S-712	to	S-850	and	S-1712	to	S-1850
PROPELLANTS	P-912	to	P-999	and	P-1912	to	P-1999

Within each number block, there are further allocations for Air Force, Army, and Navy applications.

FUELS

AIR FORCE	F-12	to	F-45	and	F-1012	to	F-1045
ARMY	F-46	to	F-74	and	F-1046	to	F-1074
NAVY	F-75	to	F-99	and	F-1075	to	F-1099

OILS

AIR FORCE	O-112	to	O-175	and	O-1112	to	O-1175
ARMY	O-176	to	O-239	and	O-1176	to	O-1239
NAVY	O-240	to	O-349	and	O-1240	to	O-1349

GREASES

AIR FORCE	G-350	to	G-399	and	G-1350	to	G-1399
ARMY	G-400	to	G-449	and	G-1400	to	G-1449
NAVY	G-450	to	G-499	and	G-1450	to	G-1499

HYDRAULIC FLUIDS

AIR FORCE	H-512	to	H-599	and	H-1512	to	H-1539
ARMY	H-540	to	H-569	and	H-1540	to	H-1569
NAVY	H-570	to	H-599	and	H-1570	to	H-1599

CORROSION PREVENTIVES

AIR FORCE	C-608	to	C-639	and	C-1608	to	C-1639
ARMY	C-640	to	C-669	and	C-1640	to	C-1669
NAVY	C-670	to	C-699	and	C-1670	to	C-1699

SPECIALITY PRODUCTS

AIR FORCE	S-712	to	S-749	and	S-1712	to	S-1749
ARMY	S-750	to	S-789	and	S-1750	to	S-1789
NAVY	S-790	to	S-850	and	S-1790	to	S-1850

PROPELLANTS

AIR FORCE	P-912	to	P-949	and	P-1912	to	P-1949
ARMY	P-950	to	P-975	and	P-1950	to	P-1975
NAVY	P-976	to	P-999	and	P-1976	to	P-1999

Markings of containers consist of the approved NATO Code Numbers enclosed in a rectangle. The rectangle may be a continuous or a broken line dependant on whether a stencil is used. It should be as large and conspicuous as practicable, and enclose no other markings.

At the Ministry of Defence it is the role of the Director of Standardization to draw up and review lists of standards for fuels, lubricants and associated products and to provide a Joint Service Designation. These Defence Standards are listings that indicate the properties and uses of the products and their equivalence to International Standardization Agreements and are published approximately every 18 months by HMSO.

The Defence Standards designations eg OMD-75, OEP-220, LG-320, have a quaintness which at least gives some idea of the nature of the product:

**OC** (*Oil, Compounded*) A blended mineral and fatty oil only.

**OEP** (*Oil, Extreme Pressure*) An oil containing additives which enable it to withstand extreme gear tooth pressures.

**OF** (*Oil, Fatty*) A plain fatty oil with or without solvent.

**OM** (*Oil, Mineral*) A plain mineral oil or one containing additives intended to improve its behaviour, without radically altering properties.

**OMD** (*Oil, Mineral, Detergent*) A heavy duty internal combustion engine oil containing detergent or dispersant.

**OX** (*Oil, Miscellaneous*) A synthetic oil or mineral oil containing modifying additives not covered by the above.

**LG** (*Lime-based Grease*) A grease consisting primarily of calcium (lime) soap and mineral oil.

**XG** (*Miscellaneous Grease*) A grease made from unspecified soaps such as those of aluminium or lithium or grease containing fatty oils, synthetic oils, graphite or other non-soap additives.

**ZX** (*Speciality, Miscellaneous*) A material not included in other classes.

**PX** (*Protective, Miscellaneous*) A material which can easily be removed to provide protection against corrosion of metal equipment in storage.

**AL** (*Miscellaneous Fluids*) A material used for engine thrust augmentation, anti-freeze, de-icing, cooling or other miscellaneous applications.

Defence Standard listings include the source of the specifications for the products, the main design authorities are:

**AFS** - Approved Firms Schedules, agreed between manufacturer and MOD, Director of Materials Quality Assurance  
**ASTM** - American Society for Testing and Materials  
**BS** - British Standards Institution  
**CAN** - Standards Council of Canada  
**CS** - Director of Materials Quality Assurance  
**CSA** – Canadian Standards Association  
**DEF** - Defence Materiel Standardization Committee, MOD  
**DEF(Aust)** - Standardization Committee, Dept of Defence, Australia  
**DEF STAN** - MOD, Director of Standardization  
**D Eng D** - MOD, Procurement Executive, Director of General Engines  
**D Eng RD** - MOD, Procurement Executive, Director of General Engines  
**DERD** - MOD, Procurement Executive, Director of General Engines  
**DGS** - MOD, Procurement Executive, Ship Dept  
**DGS 200** - MOD, Procurement Executive, Ship Dept  
**DOD** - US Military Specification  
**DTD** - MOD, Procurement Executive, Director of Research/Materials  
**DTD 900** - MOD, Procurement Executive, Director of Research/Materials  
**3-GP** - Canadian Government Specifications Board  
**MIL** - US Military Specification  
**TEE** - Ministry of Defence, Procurement Executive, Director Underwater Weapon Production  
**TS** - Director of Materials Quality Assurance (see AFS)  
**O** - US Federal Specifications  
**SS** - US Federal Specifications  
**TT** - US Federal Specifications  
**VV** - US Federal Specification

The following list includes the more common products that we may see in Servicing Schedules, although many are obsolete or obsolescent, it is particularly important to know their specifications, as the chance of finding the genuine military product is remote. I have also listed some products that may turn up on the surplus market, which may be of some use, or at least it may help avoid using something that is inappropriate. But bear in mind some products officially designated for aircraft or naval use crop up for vehicular use as well, particularly where low temperatures are involved.

Where there is no NATO number listed then there is no direct equivalent. Where there is an Acceptable Product (AP) or an Emergency Substitute (ES), as defined by the Defence Standard Interchangeability Chart, then that NATO Code Number is included. Some specifications group two or more products under the same number, the current validity of any specification can only be ascertained by consulting the Specification Authority, I'm afraid.

Remember that the American Society of Automobile Engineers (SAE) Classifications of Engine and Gear Oils are made only on the basis of viscosity characteristics when measured by a Standard Method. **The classification for engine oils is entirely different to that for gear oils, and despite an engine oil having the same measured viscosity as a gear oil, they are not interchangeable.**

SAE classifications with the letter 'W' indicate Winter grade; the first number refers to the maximum viscosity at the specified lower temperature, and the second to the minimum viscosity at the specified higher temperature. Where two numbers are shown eg SAE 10W/40 this indicates a multigrade oil which has the viscosity equivalent to the 'W' grade at the lower temperature and the viscosity characteristics of the non 'W' grade at the operating temperatures.

<u>JSP</u>	<u>NATO</u>	<u>Specification</u>	<u>Notes</u>
OC-600	O-208	DEF STAN 91-65/1	Gear oil compounded. Mineral oil 94%, Rape seed oil 6% eg steering box Humber FV1600.
OEP-38	O-186	CS 3000B	Gear oil. SAE 75. Automotive hypoid gear units. Temp range -40°C to 0°C. May not be suitable in systems containing bronze or other copper alloys. (ES= O-227)
OEP-69	O-249	DEF STAN 91-32/1	Gear & steam turbine oil. Certain guided missiles, hydraulic eqpt, propulsion units & turbine machinery in ships. Replaced by OEP-80.
OEP-80		AFS1898	Gear & steam turbine oil. Hydraulic equipment, air compressors & general lubrication equipment
OEP-110			Lubricant, gear universal, Grade 80. (EMER Vehicles General A 399, later EMER Wheeled Vehicles A 019 Misc Instr No 10). Replaced by OEP-38 or OEP-220 depending on temp.
OEP-220	O-220	CS3000B	Gear oil. SAE 90. Automotive hypoid gear units, heavy duty industrial enclosed gear units, steering gears, fluid lubricated universal joints automotive eqpt. May not be suitable in systems containing bronze or other copper alloys. (ES= O-226)
OF-3			Fatty oil, brake fluid. Temp range -40°C to -18°C (EMER Wheeled Vehicles A 029 Misc Instr No 4). Replaced by OX-8.
OF-20			Fatty oil, brake fluid. Temp down to -18°C. (EMER Vehicles General A 399, later EMER Wheeled Vehicles A 019 Misc Instr No 10). Replaced by OX-8.
OF-24			Fatty oil, brake fluid, miscible with commercial Girling fluid. (EMER Wheeled Vehicles A 029 Misc Instr No 4). Replaced by OX-8.
OF-300		DTD 72A Am1	Castor oil, treated. Certain air compressors & oil seals.
OM-1	S-712	MIL-L-5020B	Damping fluid in certain magnetic compasses. FLAMMABLE
OM-13	O-134	DEF STAN 91-44/1	Light mineral oil with 0.05 – 0.10 % stearic acid. Gun mounting recoil system, shock absorbers of vehicles with oil resistant synthetic rubber glands, hydraulic couplings, air compressors at low temperatures, clocks, fire-control instruments, aircraft armaments, submarine torpedo tube fittings, cinema projectors, visor pumps Mk 2 Humber Pigs. (AP= O-135)
OM-15	H-515	DEF STAN 91-48/1	Hydraulic fluid, petroleum, superclean. Light mineral oil with oxidation inhibitor. Hydraulic mechanisms in aircraft equipment, machine guns, liquid springs in certain artillery eqpt Temp range -54°C to +90°C (pressurized systems), -54°C to +135°C (pressurized system). Colour - red.
OM-16	S-756	BS 148: 1972 Ams 1 & 2	Highly refined mineral oil for insulation in switchgear & transformers.
OM-17		DEF STAN 91-36/1	Tasteless, odourless mineral oil used in bakery & canteen eqpt. Also gyro compasses, burning in smoke generators.
OM-18	H-520	DEF STAN 91-48/1	Hydraulic fluid, petroleum. Identical to OM-15 except particulate contamination content is not required. For use from -54°C to +90°C (unpressurized systems) and Temp range -54°C to +135°C (pressurized systems). Used in gun buffers in place of OM-13 at very low temps. Not for use in systems requiring 'superclean' fluid (use OM-15)
OM-21		BS 4475: 1975 TLS-22	Flushing of oil systems of land service engines, piston aero engines & gearboxes. Can be diluted with kerosene as penetrating oil.
OM-22		BS 148: 1972 Ams 1 & 2	Highly refined mineral oil for insulation in switchgear & transformers, where specially low temperatures encountered otherwise identical to OM-16.
OM-24		DEF STAN 91/33/2	Flushing oil for engines & gearboxes. Diluted with kerosene can be used as penetrating oil.
OM-33	H-576	DEF STAN 91-39/1	Hydraulic fluid, machine tools, fork-lift trucks & handling gear systems of HM ships, certain fighting vehicles. Lubrication certain gunnery eqpt, radar, & air compressors In temps not lower than -30°C.
OM-41		BS 4475: 1975 Am 1 Grade TLS-46	Lubricating oil, petroleum, general purpose, light grade.
OM-58		DEF STAN 91-42/1	Certain air compressors, naval breech-blocks, & misc lubrication of eqpt in ambient temp not less than -18°C.
OM-71	O-138	DERD 2479/0	Lubricating oil, petroleum, aircraft turbine engine. Certain artillery equipment & oxygen producing plant. (AP= O-136)

OM-81		BS 4475: 1975 Am 1 Grade TLS-68	Lubricating oil, petroleum, general purpose, medium grade.
OM-108		DEF STAN 91-15/1	Lubricating oil, petroleum, spark ignition engines. SAE 30.
OM-111		BS 4475: 1975 Am 1 Grade TLS-100	Lubricating oil, petroleum, general purpose, heavy grade.
OM-150		DTD 417B	Low temperature lubrication of hinges & open bearings in aircraft down to -55°C, W/T aerial gear.
OM-160		DEF STAN 91-42/1	Certain radar equipment, air compressors, miscellaneous lubrication in temperatures not less than -12°C. Running-in certain land service engines.
OMD-30	O-183	TS 10 033D	SAE 5W/20 Multigrade heavy duty crankcase oil for use in diesel & petrol engines in ambient temp range -50°C to -15°C. Certain gearboxes of ground eqpt & as a hydraulic fluid in certain Army eqpt.
OMD-40	O-176	DEF-2101-D Am 1	SAE 10W. Certain types of automatic transmission & gear boxes. (AP= O-237, O-272) (ES= O-178)
OMD-45		TS 10 111A	Two stroke engine oil. To American Boating Industries Association Certification for Service Two-Cycle Water Cooled Engines (TC-W) Fuel to oil ratio used as recommended by engine manufacturer.
OMD-55	O-1178	DEF STAN 91-68	SAE 5W/30. Heavy duty crankcase oil for use in petrol & diesel engines with AMF(L) & RM commandos only. (ES= O-183, O-1176 depending on temp).
OMD-60	O-178	DEF-2101-D Am 1	SAE 20W/20. Heavy duty crankcase oil for certain engines in RAF ground use at medium ambient temperatures. (AP= O-273) (ES= O-176, O-180) SAE 10. (According to EMER Vehicles General A 399, later EMER Wheeled Vehicles A 019 Misc Instr No 10)
OMD-75	O-180	TS 10 033D	SAE 10W/30. Heavy duty crankcase oil for diesel and petrol engines at ambient temperatures above -15°C. (AP= O-232, O-238, O-274, O-277, O-1176, O-1236) (ES= O-178, O-182) Also certain gearboxes eg Humber FV1600. OMD-75 and OMD-85 are interchangeable in certain applications. Replaced by OMD-80.
OMD-80	O-1176	TS 10033E	SAE 10W/30. Heavy duty crankcase oil for petrol & diesel engines at ambient temps above -15°C. (ES= O-176, O-237, O-238)
OMD-85	O-236	TS 10 033D	SAE 15W/40. Heavy duty crankcase oil for diesel and petrol engines at ambient temperatures above -15°C. Also certain gearboxes. OMD-85 and OMD-75 are interchangeable in certain applications.
OMD-110		DEF-2101-D Am 1	SAE 30. Heavy duty crankcase oil for liquid-cooled & certain air-cooled engines at ambient temp not lower than -10°C. Also certain transmission systems, gearboxes & steering systems. Replaced by OMD-75, then replaced by OMD-80 or OMD-113.
OMD-113	O-278	DEF STAN 91-22/2 Am 1	SAE 30. Main & auxiliary IC engines in Naval ships & craft in all climates. Certain Naval machinery & certain locomotives. Sleeve spindle oil tank of RN Sea King helicopters.
OMD-115	O-238	TS 10 042	SAE 30. Severe duty in high performance diesel & petrol engines, including highly rated turbo-charged diesel engines & air cooled engines. For use at ambient temp above -10°C.
OMD-330	O-182	DEF-2101-D Am 1	SAE 50. For certain compressors & gearboxes. (AP= O-239, O-276) (ES= O-180)
OX-8	H-542	TS 10 145	SAE J 1703 Apr. 1968. Brake fluid for certain hydraulic clutches & most automotive braking systems fitted with cups & seals made from natural rubber & styrene butadiene. Temp range -40°C to +55°C. (AP= H-547)
OX-18	O-190	CS 3118	Lubrication & preservation of machine guns & small-arms at temp range -40°C to +52°C. (AP= O-142)
OX-165		TS 10 134 DEF STAN 91-71/1	Synthetic gear oil (poly alkyl-glycols with additives). Certain vehicle transmission systems employing spiral bevel gears & certain hydraulic steering systems at temp above -40°C Not to be used with conventional hypoid gears. Incompatible with mineral oils, not to be used as a top up fluid for eqpt containing mineral oils.
OX-320	O-218	DEF STAN 91-30/1	Lubrication of gun slides & cradle guideways, certain breech mechanisms & Bofors gun eqpt, & for guided weapon maintenance.
LG-190			Calcium based grease, eg water pumps, from tropical temp down to -40°C (EMER Vehicles General A 399, later EMER Wheeled Vehicles A 019 Misc Instr No 10)
LG-280		DEF STAN 91-17/1	Mineral oil & calcium soap. General purpose marine lubricant for plain bearings & applications where grease is subject to pressure under static conditions in temp -18°C to +60°C

LG-320		DEF STAN 91-17/1	Mineral oil & calcium soap. General purpose grease.
LG-380		DEF-2221-A	Calcium based grease. General purpose grease. Temp range -40°C to -18°C (EMER Vehicles General A 399, later EMER Wheeled Vehicles A 019 Misc Instr No 10)
XG-220		DEF STAN 91-8/1 Ams 1 & 2	60 parts XG-279 & 40 parts ZX-20. Lubrication of heavy duty ball races eg turret races of AFVs, also as electrical conductor for telecommunication purposes.
XG-235	G-363	DEF STAN 91-6/1	Hydrocarbon-resistant grease for lubrication of glands & cocks of bulk fuel & oil supply systems.
XG-250	S-736	DEF STAN 59-10/2	Silicone electrical insulating compound for use as filling & coating material. Tends to cause certain rubbers & plastics to shrink & harden, may stress crack polythene.
XG-261		Proprietary product	Silicone fluid & gelling agent. Silicone grease. Can cause certain rubbers & plastics to shrink or harden, may produce cracking in polyethylene.
XG-264	G-412	DEF STAN 91-18/2	General purpose graphite grease, leaf springs & lift guides, lubrication & protection of wire ropes, lubrication of small-arms & machine guns in hot dusty condition & heavy rain. (ES= G-355)
XG-271	G-382	DEF STAN 91-12/1	Grease, aircraft, general purpose. Temp range -40°C to +120°C (EMER Vehicles General A 399, later EMER Wheeled Vehicles A 019 Misc Instr No 10)
XG-273	G-357	DTD 900/4914A	Synthetic grease containing graphite, for lubrication of Bowden cables
XG-274	G-450	DEF STAN 91-28/1	General purpose grease, for ball & roller bearings.
XG-276	G-353	DEF STAN 91-57/1	Grease, aircraft, synthetic molybdenum disulphide, for heavy splines, & anti-friction bearings carrying high loads, in temp range -75°C to +120°C. Unsuitable for use with natural rubbers or polychloroprene eg Neoprene. It affects certain paints & plastics.
XG-279	G-403	DEF STAN 91-27/1	General purpose lubricant for vehicle & artillery where temp range -54°C to +105°C. (ES= G-382, G-450).
XG-285	G-355	DTD 806B	Grease, aircraft, graphite. Mineral oil with gelling agent & 5% ZX-20. Not recommended for general use. Not to be used in ball & roller races under any circumstances.
XG-286	G-460	DEF STAN 91-34/1	Grease, sea water resisting. Lubrication & protection of mechanisms submerged in sea water.
XG-305		DEF STAN 91-64/1	Grease, molybdenum disulphide, for heavily loaded applications & certain antiseize uses, in temp range -20°C to +120°C. Unsuitable for use with natural rubbers or polychloroprene eg Neoprene. Not suitable for use on ball or roller bearings.
ZX-7	O-200	DEF-2302	Lubricating oil, exposed gear, medium. Petroleum residue or a blend of unblown bitumen & mineral oil. Lubrication & protection of wire ropes & large open gears. (AP= O-203)
ZX-8	O-198	DEF-2302	Lubricating oil, exposed gear, light. Petroleum residue or a blend of unblown bitumen & mineral oil. Similar to ZX-7, but for use at lower temps, where ZX-7 cannot be used. (AP= O-199, O-200, O-203)
ZX-13	S-720	DEF STAN 80-80/1	Equal parts of PX-7 & ZX-20. Anti-seize compound for sparking plugs, & certain other threaded fittings up to +500°C.
ZX-16		AFS 198A	Grease, eyepiece threads, binocular. Sticky grease to keep out moist air, mould spores & dust. Also for certain radio & electronic instrument components. POISONOUS contains lead stearate, wash hands after using.
ZX-20	S-732	DEF STAN 96-1/1 Ams 1,2,3.	Graphite lubricating powder. Ingredient of certain graphited oils, greases, pastes & dry film lubricant coatings.
ZX-30		DTD 900/4639	Stabilized dispersion of colloidal graphite in ethanol. Smooth black paste dry film lubricant for bomb release mechanisms & certain anti-seize applications. Ethanol is HIGHLY INFLAMMABLE.
ZX-33		DEF STAN 68-7/1 Am 1	Trichloroethane with small amounts of LG-280 & zinc oxide. Electrical switch cleaning fluid. TOXIC
ZX-35	S-740	DEF STAN 68-62/1	Molybdenum disulphide powder. Finely divided black powder for treatment of control surface sealing curtains, boundary lubricant, ingredient in certain lubricants.
ZX-36		DEF STAN 900/4877A	Transparent viscous oil for lubrication of sleeves of electrical cables.
ZX-38	S-722	DEF STAN 80-81/1	Molybdenum disulphide. Anti-seize & anti-scuffing compound for metal parts up to 250°C. Not intended as a general purpose lubricant, not to be used on ball or roller bearings.
PX-1	C-614	DEF-2331-A Ams 1,2,3.	Corrosion preventive compound. Thin soft film is left when solvent evaporates, hardens slightly on ageing. Available dyed (green) or undyed. FLAMMABLE. (AP= C-620)

PX-3	C-618	DTD 279C	Corrosion preventive compound. Hard film, cold application. Long-term preservation at medium & high temps, particularly steel & tubing, joints between dissimilar metals. HIGHLY INFLAMMABLE, must not be sprayed because of TOXICITY of zinc chrome. Replaced by PX-32 or PX-28.
PX-4		DEF STAN 80-34/1	Corrosion preventive compound. Oil film type for unexposed internal surfaces where a solid film could not be deposited or removed. Lubrication & preservation of machine guns, small-arms from -18°C upwards. Preservation of engine components, small mechanisms, instruments, certain ammunition & fuse parts, steel & aluminium sheets.
PX-6		DEF STAN 91-38/1	Stiff, rather tacky petrolatum. Brushed or smeared on for preservation of various ordnance stores & torpedoes. Ingredient of PX-11.
PX-7	S-743	DEF STAN 91-38/1	Soft petrolatum. (=Vaseline). Protection of battery terminals, certain torpedo mechanisms & spare parts. Ingredient of ZX-13.
PX-10		DEF STAN 68-11/1	Water displacing compound. Protection of starters & generators during wading. Preliminary treatment of salvaged mechanisms & articles degreased by alkali & water wash. May cause swelling of natural rubber. FLAMMABLE.
PX-11	C-628	DEF-2334	9 parts PX-6 & 1 part beeswax. Corrosion prevention, soft film, hot application. Long term preservation of MT, artillery & small-arms sub assemblies.
PX-15		CS 2486B	Protective, strippable, hot dipping. Removed by cutting & peeling off, can be melted & re-used. Protection of tools, cutting edges from corrosion & mechanical damage.
PX-19		CS 3120	Corrosion prevention, soft film, grease type. Preservation of metal parts including artillery & small-arms sub-assemblies, & on unwrapped heavy engineering & tool stores.
PX-24	C-634	DEF STAN 68-10/2	Water displacing corrosion inhibition compound. Longer protection than PX-10. Also as penetrating fluid. FLAMMABLE
PX-25		TS 10 035A	Corrosion prevention oil, ferrous metals in enclosed systems. Not intended for use in presence of non-ferrous metals & their alloys or rubber components. TOXIC.
PX-28		TS 10 131	Undersealing compound. On interior surfaces of hollow sections, & underbodies of vehicles, certain artillery components. Solvent is FLAMMABLE.
PX-29		TS10 151	Water displacing for electrical equipment up to 120 volts, & corrosion inhibition. Solvent is FLAMMABLE.
PX-30		TS 10 180	Corrosion preventive compound, solvent deposited. Replaces PX-1. Solvent is FLAMMABLE.
PX-31		TS 10 164	Corrosion preventive, hard film, cold application. Bitumen with additives in hydrocarbon solvent. Preservation of single items, small-arms, tools, MT spares. Unsuitable for internal use in engines, sub-assemblies with moving parts, or inaccessible recesses. Solvent is TOXIC & FLAMMABLE
AL-11	S-737	BS 1595: 1965 Am 1	Isopropanol, windscreen de-icer. HIGHLY FLAMMABLE.
AL-14	S-747	BS 506: 1966 Am 1	Methanol anti-freeze. Blended with water to give AL-24 & AL-28. HIGHLY FLAMMABLE & TOXIC.
AL-24		D Eng D 2491 Issue 3	Methanol/Water: Grade 60/40. Thrust augmentation fluid in certain aircraft piston engines. HIGHLY FLAMMABLE & TOXIC.
AL-26		DEF STAN 68-61/1	Coolant in certain radio equipment.
AL-28	S-1744	D Eng D 2491 Issue 3	Methanol/Water: Grade 44/56. Thrust augmentation fluid in certain aircraft turbine engines. FLAMMABLE & TOXIC.
AL-35		BS 3151: 1959	Ethenediol anti-freeze Type B for certain ground & Foden marine engines. Corrosive to certain aluminium alloys.
AL-36		DTD 900/4939	Windscreen washing fluid on certain aircraft.
AL-38		TS 10 067D	AL-31 with an approved corrosion inhibitor in aviation fuels. FLAMMABLE
AL-39	S-757	TS 10 177	Ethenediol & water diluted with water in cooling systems of land bases engines containing both ferrous & non-ferrous components. (ES= S-735, S-750, S-757) In UK, mixture is 50% AL-39, 50% water, gives protection down to -36°C. In arctic mixture 40% AL-39, 60% water, gives protection down to -52°C. Do not exceed this concentration as close to Eutectic Point after which gives progressively LESS protection.
-	S-752	BS 245: 1976 Type A	White spirit, general purpose cleaner, thinner for some paints, removal of certain temporary protectives. FLAMMABLE. (AP= S-753).