

MIL-L-22851C  
2 January 1979  
SUPERSEDING  
MIL-L-22851B  
12 October 1970

## MILITARY SPECIFICATION

### LUBRICATING OIL, AIRCRAFT PISTON ENGINE, (ASHLESS DISPERSANT)

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

#### 1. SCOPE

1.1 Scope. This specification covers lubricating oil for aircraft piston engines.

1.2 Classification. The ashless dispersant oil shall be furnished in the following types as specified (see 6.2):

<u>TYPE</u>	<u>NATO Code No.</u>	<u>Description</u>
I	None	Additive concentrate
II	0-128	Lubricating oil blend (see 3.2.2) ((93-125 SUS) (18.7-26.1 cs) at 98.9°C(210°F))
III	0-123	Lubricating oil blend (see 3.2.3) ((62-84 SUS) (10.8-16.5 cs) at 98.9°C(210°F))

#### 2. APPLICABLE DOCUMENTS

2.1 Issues of documents. 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:

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Engineering Specifications and Standards Department (Code 93), Naval Air Engineering Center, Lakehurst, New Jersey 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 9150

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## SPECIFICATIONS

## MILITARY

MIL-L-6082                      Lubricating Oil, Aircraft Reciprocating  
Engine (Piston)

## STANDARDS

## FEDERAL

Fed. Test Method              Lubricants, Liquid Fuels and Related Products,  
Std. No. 791                      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

## \* TECHNICAL MANUALS

## NAVY

NA-17-15-BF-62                      Fluid Analysis Spectrometer, Type A/E35U-3,  
Operation Instructions and Maintenance  
Instructions

(Copies of specifications, standards, drawings, and publications required by suppliers 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.

## \* American Society for Testing and Materials (ASTM)

ASTM D 92                      Flash and Fire Points by Cleveland Open  
Cup, Test for

ASTM D 97                      Pour Point of Petroleum Oils, Test for

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ASTM D 129	Sulfur in Petroleum Products (General Bomb Method), Test for
ASTM D 130	Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test, Test for Detection.
ASTM D 189	Conradson Carbon Residue of Petroleum Products, Test for
ASTM D 270	Petroleum and Petroleum Products, Sampling
ASTM D 287	API Gravity of Crude Petroleum and Petroleum Products (Hydrometer Method), Test for
ASTM D 445	Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity), Test for
ASTM D 482	Ash from Petroleum Products, Test for
ASTM D 892	Foaming characteristics of Lubricating Oils, Test for
ASTM D 2161	Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furol Viscosity
ASTM D 2270	Calculating Viscosity Index from Kinematic Viscosity
ASTM D 2273	Trace Sediment in Lubricating Oils, Test for
ASTM D 2622	Sulfur in Petroleum Products (X-Ray Spectrographic Method)

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

Coordinating Research Council, Inc.

## CRC Deposit Rating Scale

\* (Application for copies should be addressed to the Coordinating Research Council, 30 Rockefeller Plaza, New York, New York 10020.)

\* (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.)

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## 3. Requirements

3.1 Qualification. The Type I, Type IIb and Type IIIb materials furnished under this specification shall be products which are qualified for listing on the applicable Qualified Products List at the time set for opening of bids (see 4.3 and 6.3).

\* 3.1.1 Requalification. Requalification may be required in the event any change is made in the quality, composition, source of ingredient or source of supply of the finished lubricant. Requalification is mandatory if any changes are made in the lubricant base stocks.

3.2 Materials.

3.2.1 Type I. The Type I additive concentrate shall be a blend of petroleum lubricating oil and additives to impart oxidation stability and dispersant properties to the aircraft engine oils qualified under MIL-L-6082, Grade 1100 and Grade 1065, when mixed in the proportions by volume of one part concentrate to nine parts oil. The lubricating oil used in the preparation of the concentrate shall be a principle component of either a qualified MIL-L-6082, Grade 1100 oil or of the base oil used in the Type IIb material.

3.2.1.1 Type I qualification. Qualification of a Type I additive concentrate will be based on the prior approval of a Type IIb material and on the ability of blends of the additive concentrate and MIL-L-6082 oils, Grade 1100 and Grade 1065 selected by the qualifying agency, to meet all of the requirements of the specification, except flight tests.

\* 3.2.2 Type II. The Type II lubricating oil blend shall be one of the following:

- (a) A blend by volume of one part of qualified Type I material and nine parts of a lubricating oil qualified under and conforming to MIL-L-6082, Grade 1100. Qualification of product blended in this manner is not required.
- (b) A petroleum lubricating oil blend containing additives to impart oxidation stability and dispersant properties. The base oil, prior to addition of additives, shall have a viscosity between 93 and 103 SUS (18.7 and 21.1 cs) at 98.9°C (210°F). Additives used in this blend shall be acceptable for preparing a Type I additive concentrate.

Type II materials prepared under subparagraph (a) or (b), from the same Type I concentrate shall be equal in additive concentration.

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\* 3.2.3 Type III. The Type III lubricating oil blend shall be one of the following:

- (a) A blend by volume of one part of qualified Type I material and nine parts of a lubricating oil qualified under and conforming to MIL-L-6082, Grade 1065. Qualification of product blended in this manner is not required.
- (b) A petroleum lubricating oil blend containing additives to impart oxidation stability and dispersant properties. The base oil, prior to addition of additives, shall have a viscosity between 62 and 68 SUS (10.8 and 12.4 cs) at 98.9°C (210°F). The additive combination used in this blend shall be the same as one previously qualified under Type I and Type IIb and the concentration of the additives shall be at least equal to that of the equivalent Type IIb oil.

### 3.3 Properties.

3.3.1 Chemical and physical properties. The lubricating oils shall conform to the chemical and physical requirements specified in Table I and in 3.3.2 through 3.3.9.

\* TABLE I

PROPERTIES		
Properties	Type II blend	Type III blend
Gravity, °API	<u>1</u> /	<u>1</u> /
Ash, max., percent	0.0025	0.0025
Carbon residue, max., percent <u>2</u> /	1.2	0.75
Pour point, max.	-18°C (0°F)	-24°C (-10°F)
Flash point, min.	244°C (470°F)	216°C (420°F)
Sulfur, max., percent <u>3</u> /	1.2	1.2
Trace sediment, max., ml./100 ml. oil	0.005	0.005

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\* TABLE I (cont'd)

Properties	Type II blend	Type III blend
Copper strip corrosion		
3 hrs. at 100°C ± 1°C (212°F ± 2°F), max.	1	1
3 hrs. at 204°C ± 1°C (400°F ± 2°F), max.	3	3
Viscosity at 98.9°C (210°F)		
Saybolt universal seconds, SUS	93 - 125	62 - 84
Kinematic viscosity, cs	18.7 - 26.1	10.8 - 16.5
Viscosity index, min.	95	100
Trace metal content, ppm, max. <u>4</u> /		
Iron (Fe)	5	
Silver (Ag)	2	
Aluminum (Al)	7	
Chromium (Cr)	5	
Copper (Cu)	3	
Magnesium (Mg)	3	
Nickel (Ni)	3	
Lead (Pb)	5	
Silicon (Si)	10	
Tin (Sn)	10	
Titanium (Ti)	2	
Molybdenum (Mo)	4	

- 1/ The American Petroleum Institute (API) gravity of the oil shall be determined but not limited on qualification inspection of Type IIb and Type IIIb oil blends. For quality conformance inspection the gravity shall be within ±1.0° API (±0.006 sp. gr.) of the qualification value, or within a 2.0°API (0.012 sp. gr.) range selected by the manufacturer to bracket the qualification value. The range to be used will be specified on the Qualified Products List.
- 2/ For quality conformance inspection of Type IIb and Type IIIb oil blends, the value for carbon residue shall be within ±0.2 of the qualification value and shall not exceed the limits listed above. This range will be specified on the QPL.

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3/ For quality conformance inspection of Type IIb and Type IIIb oil blends, the sulfur content shall be within  $\pm 0.15$  percent of the qualification value or within a 0.3 percent range selected by the manufacturer to bracket the qualification value. The range to be used will be specified on the Qualified Products List.

4/ When tested in accordance with 4.6.3.

3.3.2 Foaming characteristics. The lubricating oil shall not exceed the following values when tested as specified in 4.6.

- (a) Initial aeration test at  $24^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ( $75^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ). No limit on the amount of foam immediately following the bubbling period, but not more than 300 ml. shall remain after 10 minutes of foam collapse.
- (b) Intermediate aeration test at  $93.5^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ( $200^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ). No limit on the amount of foam immediately following the bubbling period, but not more than 25 ml. shall remain after 10 minutes of foam collapse.
- (c) Final aeration test sequence at  $24^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ( $75^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ). No limit on the amount of foam immediately following the bubbling period, but not more than 300 ml. shall remain after 10 minutes of foam collapse.

3.3.3 Contamination. The oil shall not contain foreign solid particles in excess of 15 milligrams per gallon when filtered through a 200-mesh sieve, as specified in 4.6. Fibrous material, if present, shall not exceed 5 mg. per gallon.

3.3.4 Oxidation and thermal stability. When tested in a CLR oil test engine for 40 hours, as specified in 4.6, the lubricating oil shall be noncorrosive to alloy bearing and to ferrous and non-ferrous engine components. It shall prevent the sticking of piston rings and the clogging of oil passages and shall minimize the formation of varnish and sludge deposits. The piston deposit ratings, using the CRC Deposit Rating Scale shall not fall below the values given in the following tabulation:

<u>Parts to be rated for deposits</u>	<u>Deposit rating</u>
Piston skirt	6.5 min.
Pin boss area	7.5 min.
Piston underside	7.5 min.

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<u>Parts to be rated for deposits</u>	<u>Deposit rating</u>
Ring lands, average	Report
Ring sticking, average	8.5 min.
Ring grooves, average	4.0 min.
Oil ring plugging, percent	20 max.

3.3.5 Low temperature dispersancy and detergency. When tested in a CLR oil test engine, as specified in 4.6, the lubricating oil shall minimize the formation of sludge deposits. The time required for the lubricating oil to reach an average sludge rating of 9.5 shall not be less than that established for the reference oil of Fed. Test Method Std. No. 791, Method 347.

3.3.6 Storage stability.

\* 3.3.6.1 Fourteen-day storage test. When stored at  $5^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ( $40^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ) and  $-18^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ( $0^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ) on alternate days for a period of 14 days as specified in 4.6.1.1, the oil shall show no separation.

\* 3.3.6.2 Twelve-month storage test. When stored at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  ( $77^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ) away from light as specified in 4.6.1.2, the oil shall show no separation.

3.3.7 Compatibility. When tested as specified in 4.6, Type II and Type III materials shall be compatible with all materials previously qualified under this specification. At the end of the test period, the mixtures shall not be turbid nor have a trace sediment greater than 0.005 ml./100 ml. of oil.

3.3.8 Flight tests. Type IIb and Type IIIb oils shall give satisfactory performance when flight tested for a period of not less than 1,000 hours or one complete overhaul period, whichever is the shorter. At least two engines shall be operated on each candidate Type IIb or Type IIIb oil.

3.3.9 Approval of a Type IIb oil is contingent upon the ability of the supplier to also furnish a Type I concentrate material which when blended with a MIL-L-6082, Grade 1100 oil in the concentration specified, will be a satisfactory lubricant for all aircraft reciprocating engines.

\* 3.3.10 Workmanship. The lubricating oil shall be a clear homogeneous blend when examined visually by transmitted light. It shall exhibit no separation or fallout of the additive package. Any jelly-like substance or very viscous material observed in the bottom of the container will be considered evidence of additive fallout.



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## 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 order, the supplier may use his own or any other facility 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 Classification of inspection. The inspection and testing of the lubricating oil shall be classified as follows:

- (a) Qualification inspection (4.3)
- (b) Retention of qualification (4.4)
- (c) Quality conformance inspection (4.5)

4.3 Qualification inspection. The qualification inspection of Type IIb and Type IIIb oils shall consist of all of the tests of this specification including the flight tests (see 3.3.8).

\* 4.3.1 Qualification inspection samples. The qualification inspection samples shall consist of 100 gallons of the finished lubricating oil, 10 gallons of the Type I concentrate and 5 gallons of the base oil used in the concentrate, and 100 grams of each additive ingredient used in the concentrate. All component and additive samples must be from the same manufacturing batch as used in the finished lubricating oil sample. Samples of components and additives shall be identified by chemical composition, manufacturer and trade name and forwarded to the activity designated in the letter of authorization (6.3).

4.3.2 Test report. The manufacturer shall forward a certified test report to the activity responsible for qualification before the qualification test sample is supplied (see 6.3). The test report shall contain laboratory data showing the results on all tests required by this specification with exception of storage stability, compatibility and flight tests. In addition the manufacturer shall furnish the formulation of the lubricant in terms of percentages of neutral and bright stock and the percentage, trade name and manufacturer of each of the additives used.

4.4 Retention of qualification. In order to retain qualification of products approved for listing on the Qualified Products List (QPL),

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the manufacturer shall verify by certification to the qualifying laboratory that the products comply with the requirements of this specification. Unless otherwise specified by the qualifying laboratory, the time of periodic verification by certification shall be in two-year intervals from the date of original qualification.

## \* 4.5

Quality conformance inspection.

- (a) Tests for acceptance of individual lots of Type I material normally will not be performed. This material, if received in the packaged form, may be accepted on the basis of proper identification of the package, and, if received in bulk form, may be accepted on the basis of adequate documentation, such as a test report, a certification, or the proper nomenclature on the bill of lading covering the shipment.
- (b) Tests for acceptance of individual lots of Type II and Type III material shall consist of tests for all requirements specified in Section 3, except for the following:
  - (1) Low temperature dispersancy and detergency (3.3.5)
  - (2) Twelve month storage test (3.3.6.2)
  - (3) Compatibility (3.3.7)
  - (4) Flight tests (3.3.8)
- (c) The oxidation and thermal stability test (CLR engine) and the fourteen-day storage test shall be performed on the first production batch of oil offered by a supplier and on a batch produced every twelve months thereafter. This requirement applies to the first production batch of Type IIa, Type IIb, Type IIIa, and Type IIIb oils blended at each approved plant of the supplier. Each time a supplier changes the source of MIL-L-6082 oil or changes the source of the Type I concentrate, the oxidation and thermal stability test and fourteen-day storage test shall be repeated on the finished Type IIa and Type IIIa oils.

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4.5.1 Failure of production lots to pass any of the quality conformance tests shall be cause for rejection of the lot. When Type IIa material is furnished, quality conformance inspection shall also be performed on the Grade 1100 or Grade 1065 in accordance with the requirements of MIL-L-6082 as well as on the one to nine concentrate-oil blend.

4.5.2 Inspection lot

4.5.2.1 Bulk lot. A bulk lot is defined as an indefinite quantity of a homogeneous mixture of one type of oil offered for acceptance in a single container; or manufactured in a single plant run (not exceeding 24 hours) through the same processing equipment, with no change in ingredient material.

4.5.2.2 Packaged lot. A packaged lot is defined as 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 one type of oil from one isolated container; or filled with a homogeneous mixture of one type of oil manufactured in a single plant run (not exceeding 24 hours) through the same processing equipment, with no change in ingredient materials.

4.5.3 Sampling.

4.5.3.1 Sampling for quality conformance tests. Each bulk lot or packaged lot shall be sampled in accordance with ASTM Method D 270 and subjected to quality conformance tests specified in 4.6.

4.5.3.2 Sampling for examination of filled containers. Each packaged lot of filled containers shall be sampled in accordance with MIL-STD-105, Inspection Level II, Acceptable Quality Level (AQL) 2.5 percent defective and examined in accordance with 4.5.4.2.

4.5.4 Inspection.

4.5.4.1 Inspection of material. Inspection shall be performed in accordance with Method 9601 of Fed. Test Method Std. No. 791.

4.5.4.2 Examination of filled containers. Examine samples taken in accordance with 4.5.3.2 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, the lot represented by the samples shall be rejected.

\* 4.6 Test methods. Tests shall be performed in accordance with the applicable test methods specified in Table II, 4.6.1, and 4.6.3.

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TABLE II

TEST METHODS		
Requirement	Fed. Test Method Std. No. 791	ASTM standard
Gravity, API	-	D 287
Ash	-	D 482
Carbon residue, (Conradson)	-	D 189
Pour point	-	D 97
Flash point	-	D 92
Sulfur	-	D 129 or D 2622
Copper strip corrosion <sup>1/</sup>	-	D 130
Viscosity (kinematic) <sup>2/</sup>	-	D 445
Viscosity index (calculation)	-	D 2270
Foaming test	-	D 892
Contamination	<sup>3/</sup> 3006	-
Compatibility	3403	-
Trace sediment in lubricating oils	-	D 2273
Oxidation and thermal stability	3407	-
Low temperature dispersancy and detergency	347	-

<sup>1/</sup> To be performed at 100°C ±1°C (212°F ±2°F) for 3 hours and at 204°C ±1°C (400°F ±2°F) for 3 hours.

<sup>2/</sup> Convert to Saybolt universal viscosity, using ASTM Method D 2161.

<sup>3/</sup> Use centrifuge tube described in ASTM Method D 2273.

#### 4.6.1 Storage stability.

\* 4.6.1.1 Fourteen-day storage test. A clean, capped or stoppered 1 quart glass bottle shall be half filled with test oil and stored on alternate days ±1 hour at 5 ±1°C (40 ±2°F) and -18 ±1°C (0 ±2°F) by daily transferring from one cold box to another. Examine the sample for evidence of additive separation immediately after removal from the 40°F storage. Note optical clarity and invert the bottles to see if deposits adhere to the bottom. Also slowly pour 10-15 ml. of cold oil over the lip of the bottle and observe carefully any unevenness in fluid texture. Deposits or suspended material may be present even though the sample is optically clear, because of similar refractive indices. The test cycle shall be repeated for 14 days.

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4.6.1.2 Twelve-month storage test. A 1-gallon sample shall be stored in a clean, capped or stoppered wide-mouth glass container for a period of 12 months at  $25 \pm 3^{\circ}\text{C}$  ( $77 \pm 5^{\circ}\text{F}$ ) away from light. At the end of the storage period the oil shall then be examined visually for separation of components.

4.6.2 Flight tests. Flight tests shall be performed in nongovernment aircraft. Flight tests on Type IIb and Type IIIb oil shall be performed in piston engine aircraft acceptable to the Government. When engines are removed from aircraft for overhaul, Government representatives shall inspect the disassembled engine prior to cleaning and overhaul.

\* 4.6.3 Trace metal content. The trace metal content of the oil shall be determined by or under the direction of the Technical Support Center, Joint Oil Analysis Program (TSC-JOAP), Building 780, Naval Air Station, Pensacola, Florida 32508. The trace metal content of the oil shall be determined with an atomic emission (A/E 35U-3) spectrometer. Using Joint Oil Analysis Program Spectrometric calibrating standards, the spectrometer shall be standardized in accordance with paragraphs 4-32, 4-33, 4-46 and 4-47 of Technical Manual Navair 17-15-BF-62. Immediately after standardizing the spectrometer by correcting for zero/offset and adjusting at 100 ppm as given in NA-17-15-BF-62, the sample shall be analyzed a minimum of five (5) times and the average for each metal reported. Information on sample size, test periods and procedures shall be obtained from the TSC-JOAP.

## 5. PREPARATION FOR DELIVERY

5.1 Packaging, packing and marking. Packaging, packing, and marking shall be in accordance with MIL-STD-290.

## 6. NOTES

6.1 Intended use. The lubricating oil covered by this specification is intended for use in aircraft piston engines.

6.2 Ordering data. Procurement documents should specify the following:

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

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\* 6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in the applicable Qualified Products List, whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Air Systems Command, Attn: AIR-53645, Department of the Navy, Washington, D.C. 20361, and information pertaining to qualification of products may be obtained from that activity.

6.4 Blending instructions. Suppliers furnishing a Type IIa or Type IIIa material prepared by blending an approved MIL-L-6082 oil and an approved Type I additive concentrate are cautioned that the dispersant additives can cause the loosening of deposits in blending tanks, lines, and storage tanks. It is therefore necessary that all of the equipment used in blending the material be thoroughly cleaned prior to use. Failure to observe these precautions can cause the blended oil to exceed the specification for ash content and result in rejection of the oil by the Government representative. In addition to these precautions, suppliers should have heating and blending equipment which will insure a homogeneous blend of the base oil and the additive concentrate.

\* 6.4.1 Component utilization precautions. All possible combinations of MIL-L-6082 aviation oils and approved Type I concentrates have not been subjected to the oxidation and thermal stability test or the fourteen day storage test. Therefore, as a precautionary measure, suppliers should assure themselves that any proposed combination of MIL-L-6082 oil and Type I concentrate they propose to offer the Government as Type IIa or Type IIIa oil in case of a contract award will conform to the oxidation and thermal stability and the fourteen day storage requirements.

6.5 International standardization agreement. Certain provisions of this specification are the subject of international standardization agreement with NATO (STANAG NO. 1135) and ASCC (AIR STD. 15/1). When amendment, revision, or cancellation of this specification is proposed which will 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.

6.6 Marginal indicia. The margins of this revision are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous revisions were made.

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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 revision.

Custodians:

Army - MR  
Navy - AS  
Air Force -11

Review activities:

Army - AV, ME  
Air Force - 68  
DLA - PS

User activity:

Navy - MC

Preparing activity:

Navy -AS  
Project No. 9150-0514

International interest:

(see 6.5)

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**NOTE:** This form may not be used to request copies of documents, nor to request 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.

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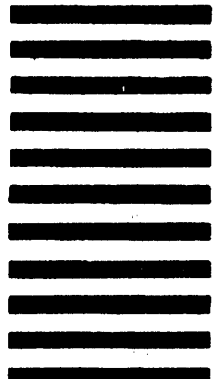
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## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

☐ VENDOR☐ USER☐ MANUFACTURER☐ OTHER (Specify): \_\_\_\_\_

b. ADDRESS (Street, City, State, ZIP Code)

## 5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

## 6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)

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