METRIC

MIL-PRF-27601C
17 February 1998
SUPERSEDING
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PERFORMANCE SPECIFICATION

HYDRAULIC FLUID, FIRE RESISTANT, HYDROGENATED POLYALPHAOLEFIN BASE, HIGH TEMPERATURE, FLIGHT VEHICLE, METRIC

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

1. SCOPE

1.1 Scope. This specification covers the general requirement for a synthetic hydrocarbon base hydraulic fluid for use from -40°C to 290°C.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in *sections 3* and *4* of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of these lists, document users are cautioned that they must meet all specified requirements documents cited *in sections 3* and *4* of this specification, whether or not they are listed.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: ASC/ENSI, , 2530 Loop Road West, Wright-Patterson AFB OH 45433-7101, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A **FSC 9150**

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the *Department of Defense Index of Specifications and Standards (DoDISS)* and supplement thereto, cited in the solicitation (see *6.2*).

SPECIFICATIONS

FEDERAL

TT-T-656	-	Tricresyl Phosphate

MILITARY

MIL-PRF-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, Metric
MIL-PRF-87257	-	Hydraulic Fluid, Fire Resistant, Low Temperature, Synthetic Hydrocarbon Base, Aircraft and Missile

STANDARDS

FEDERAL

FED-STD-791	-	Lubricants, Liquid Fuels and Related Products, Methods of Testing

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Printing Service Detachment Office, Bldg 4D, 700 Robbins Avenue, Philadelphia PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PUBLICATIONS

CODE OF FEDERAL REGULATIONS

49 CFR FAR Clause 52.223-3	-	Transportation

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington DC 20402.)

DEPARTMENT OF LABOR (DOL)

OSHA 29 CFR 1910.1200	-	Federal Register, Part IV, Department of Labor, OSHA Hazardous Communication: Final Rule

(Application for copies should be addressed to the OSHA Publication Office, Room S-4203, 200 Constitution Avenue NW, Washington DC 20210.)

(Copies of specification, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the acquisition activity or as directed by the contracting officer.)

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the issue of the *DoDISS* cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the *DoDISS* are the issues of the documents cited in the solicitation (see *6.2*).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 92	-	Flash and Fire Points by Cleveland Open Cup, Standard Test Method for (DoD adopted)
ASTM D 97	-	Pour Point of Petroleum Oils, Standard Test Method for (DoD adopted)
ASTM D 130	-	Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test, Standard Method for Detection of (DoD adopted)
ASTM D 445	-	Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity), Standard Test Method for (DoD adopted)
ASTM D 664	-	Neutralization Number by Potentiometric Titration, Standard Test Method for (DoD adopted)
ASTM D 892	-	Foaming Characteristics of Lubricating Oils, Standard Test Method for (DoD adopted)
ASTM D 1298	-	Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method, Standard Test Method for
ASTM D 1744	-	Water in Liquid Petroleum Products by Karl Fischer Reagent, Standard Test Method for (DoD adopted)
ASTM D 4057	-	Manual Sampling of Petroleum and Petroleum Products, Standard Practice for
ASTM D 4172	-	Wear Preventive Characteristics of Lubricating Fluid (Four-Ball Method), Standard Test Method for
ASTM D 4177	-	Automatic Sampling of Petroleum Products, Standard Test Method for (DoD adopted)
ASTM D 4636	-	Corrosiveness and Oxidation Stability of Hydraulic Oils, Aircraft Turbine Engine Lubricants, and Other Highly Refined Oils, Standard Test Method for
ASTM D 4898	-	Insoluble Contamination of Hydraulic Fluids by Gravimetric Analysis, Standard Test Method for
ASTM D 5306	-	Linear Flame Propagation Rate of Lubricating Oils and Hydraulic Fluids, Standard Test Method for
ASTM F 312	-	Microscopical Sizing and Counting Particles from Aerospace Fluids on Membrane Filters

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

AEROSPACE MATERIAL SPECIFICATIONS (AMS)

AMS 3217/4	-	Test Slabs, Fluoroelastomer (FKM), 65-75

(Applications for copies should be addressed to Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale PA 15096-0001.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.4 Order of Precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. The hydraulic fluids furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see *4.2* and *6.3*).

3.2 Materials. The materials used in formulating this hydraulic fluid shall consist of synthetic hydrocarbon base and shall contain additives as specified in *3.2.1*. A 4 cSt hydrogenated polyalphaolefin based fluid may be used but is not mandatory. The hydraulic fluid shall contain no admixture of resins, soaps, gums, fatty oils, or oxidized hydrocarbons. The contractor shall certify that no carcinogenic constituents are present as defined under *OSHA 29 CFR 1910.1200*. Certification to this effect shall be made available to the contracting officer or the contracting officer's representative.

3.2.1 Additives. There shall be no restriction on the types of materials used as additives in the fluid except for those listed and those imposed by technical requirements of this specification. No pour point depressant materials or viscosity index improvers may be used.

3.2.1.1 Oxidation inhibitors. Oxidation inhibitors of the phenolic type shall not exceed a concentration of 1.5 percent by weight.

3.2.1.2 Anti-wear agent. Anti-wear agents, such as tricresyl phosphate (TCP) conforming to *TT-T-656*, shall be blended in sufficient quantity, not to exceed 2.0 weight percent, to permit the finished oil to meet the lubricity requirements specified in *3.3.9*. If TCP is used, the finished fluid shall contain less than 0.02 weight percent of the ortho-isomer.

3.3 Finished fluid. The properties of the finished fluid shall be as specified in *table I* and *3.3.1* through *3.3.12*

TABLE I. Properties of finished fluid.

Property	Requirement	Unit
Kinematic viscosity		
-40°C, maximum	3000	cSt
40°C, minimum	15.0	cSt
100°C, minimum	3.5	cSt
Pour point, maximum	-54	°C
Flash point, minimum	200	°C
Fire point, minimum	230	°C
Neutralization number, maximum	0.20	mg KOH/gm
Bulk modulus (isothermal secant) 0 to 6.9×10^4 kPa at 40°C, min (10,000 psi at 100°F, min)	1.379×10^6 (200,000)	kPa psi

3.3.1 Specific gravity. The specific gravity of the hydraulic fluid shall be determined but shall not be limiting. Samples of the hydraulic fluid submitted for quality conformance tests shall not vary more than ± 0.008 at 15°C/15°C from the sample originally approved for qualification.

3.3.2 Corrosiveness and oxidation stability. When tested as specified in *4.4.2*, the change in weight of steel, aluminum alloy, magnesium alloy and cadmium-plated steel subjected to the action of the hydraulic fluid shall not be greater than ± 0.2 milligrams per square centimeter (mg/cm^2) of surface. The change in weight of copper under the same conditions shall be no greater than ± 0.6 mg/cm^2 of surface. There shall be no pitting, etching, nor visible corrosion on the surface of the metals when viewed under magnification of 20 diameters. Any corrosion

produced on the surface of the copper shall not be greater than No. 3 of ASTM copper corrosion standards (*ASTM D 130*). A slight discoloration of the cadmium shall also be permitted.

3.3.2.1 Resistance to oxidation. When tested as specified in *4.4.2*, the fluid shall not have changed more than 10 percent from the original viscosity in centistokes at 40°C after the oxidation corrosion test. The neutralization number shall not have increased by more than 1.0 over the acid or base number of the original sample. There shall be no evidence of separation of insoluble materials nor gumming of the fluid.

3.3.3 Solid particle contamination. When tested with *4.4.2*, the number of solid contaminant particles per 100 ml of the fluid shall not exceed the number specified in *table II*, nor shall the weight of the residue exceed 0.3 mg. The filtering time for each determination shall be 15 minutes maximum.

TABLE II. Solid contaminant particle.

Particle size range (largest dimension) micrometers	Allowable number (max) each determination, automatic count
5 - 15	10,000
16 - 25	1,000
26 - 50	150
51 - 100	20
Over 100	5

3.3.4 Foaming characteristics. The foaming characteristics of the hydraulic fluid shall not exceed the limits indicated in *table III* when tested as specified in *4.4.2*.

TABLE III. Foaming characteristics of finished fluid.

Test Temperature	Foaming tendency Foam volume, ml, at end of 5 min blowing period	Foam stability Foam volume, ml, at end of 10 min settling period
25°C	65 ml (max)	Complete collapse [1/]

[1/] *A ring of small bubbles around the edge of the graduate may be considered complete collapse.*

3.3.5 Water content. The fluid shall contain less than 100 parts per million (ppm) total water when tested as specified in *4.4.2*.

3.3.6 Flammability.

3.3.6.1 Flame propagation. When tested as specified in paragraph *4.4.2*, the flame propagation rate shall be not more than 0.3 cm/sec.

3.3.7 Lubricity. When tested in accordance with *4.4.2*, wear values for hydraulic fluid shall be as specified in *table IV*.

TABLE IV. Wear values.

Load (kg)	Scar diameter mm (max)
1	0.21
10	0.30
40	0.65

3.3.8 Storage stability. The fully blended product shall show no separation of ingredients nor evidence of crystallization, shall be clear and transparent when examined visually and shall conform to the requirements of *section 3* after 12 months storage as specified in *4.4.2*.

3.3.9 Compatibility. The hydraulic fluid shall be compatible in all concentrations with each of the fluids approved under this specification when tested as specified in *4.4.3* from -40°C to 290°C in that no formation of resinous gums, sludges, or insoluble materials will occur.

3.3.10 Thermal Stability. When tested in accordance with *4.4.5*, the change in fluid viscosity at 40°C shall not exceed 25 percent. The neutralization number of the fluid shall not increase more than 0.4 and there shall be no formation of precipitate or insoluble material.

3.3.11 Low temperature stability. When tested as specified in *4.4.2* for 72 hours at a temperature of -40°C ± 1°C, the fluid shall show no evidence of gelling, clouding, crystallization, or separation of ingredients.

3.3.12 Swelling of synthetic rubber. When tested as specified in *4.4.2*, the volume increase of the standard synthetic rubber FKM (as referenced in *AMS 3217/4*) by the fluid shall be within the range of 0.0 to 10.0 percent. Shrinkage of the rubber is not allowed.

4. VERIFICATION

4.1 Classification of inspection.

a. Qualification inspection (see *4.2*).

b. Quality conformance inspection (see *4.3*).

4.2 Qualification inspection.

4.2.1 Qualification inspection sample. The qualification sample shall consist of two one-gallon containers of the finished fluid, one quart of the base stock(s) without additives, one ounce of the anti-wear additive, one ounce of the oxidation inhibitor and one ounce each of any additional additives used in the finished fluid. In the event that additives are supplied as concentrated solution, an equivalent quantity of the solution shall be furnished.

4.2.2 Qualification tests. Qualification sample(s) shall be subjected to all the tests specified in *table V*.

TABLE V. Quality conformance tests.

Inspection	Paragraph Requirement	Test Method
Pour point	*3.3*	4.4.2
Flash point	*3.3*	4.4.2
Fire point	*3.3*	4.4.2
Neutralization number	*3.3*	4.4.2
Viscosity (finished fluid)	*3.3*	4.4.2
Specific gravity	*3.3.1*	4.4.2
Low temperature stability	*3.3.13*	4.4.2
Solid particle contamination	*3.3.4*	4.4.7
Foaming characteristics	*3.3.5*	4.4.2
Water content	*3.3.6*	4.4.2
High temperature-high pressure spray ignition	*3.3.8.1*	4.4.2
Flame propagation	*3.3.8.2*	4.4.6
Lubricity	*3.3.9*	4.4.2
Rubber swell	*3.3.14*	4.4.2
Inspection of filled containers	5.1	4.4.7
Thermal stability	*3.3.12*	4.4.5

4.2.3 Retention of qualification. In order to retain qualification of approved products for listing on the Qualified Products List (QPL), the manufacturer shall verify, by certification to the qualifying activity, that the manufacturer's product complies with the requirements of this specification. The time of periodic verification by certification shall be in two-year intervals from the date of original qualification. The Government reserves the right to re-examine the qualified product whenever deemed necessary to determine that the product continues to meet any or all of the specification requirements.

4.3 Quality conformance inspection. Quality conformance inspection shall consist of examination of the sample filled containers (see *4.4.7*), determination of the solid particle contamination count (see *4.4.2*) and testing the sample against all requirements specified in *table V*. In the event of a solid particle contamination count failure, the referee method shall be the microscopic method *ASTM F312*. Samples shall be labeled completely with information identifying the purposes of the sample, name of the product, specification number, lot and batch number (see *6.7*), date of sampling, and contract number.

4.4 Methods of inspection

4.4.1 Inspection. Inspection shall be in accordance with *method 9601b* of *FED-STD-791* and *4.4* of this specification.

4.4.2 Tests. The hydraulic fluid properties shall be determined in accordance with the applicable methods specified in *table VII* and *4.4.3* through *4.4.6*. Physical and chemical values specified in *section 3* apply to the average of the determinations made on the samples.

TABLE VI. Sample for particle contamination.

Container	Sample size (ml) [1/]	Number of determinations per sample
8 ounces	100	1
1 quart	100	1
1 gallon	200	2
5 gallons	300	3
55 gallons	600	6

[1/] *Each determination shall be made on 100 ml portion of the sample. Should the particle count on any individual determination be considered excessive, the two additional determinations on another sample from the same container may be used. The container shall be thoroughly shaken immediately prior to withdrawing each 100 ml portion for such additional determinations. The arithmetic average of the two closer particle counts shall be considered the particle count for the sample.*

4.4.3 Compatibility. Samples of candidate fluid in amounts of 29 ml, 100 ml, and 180 ml shall be mixed with samples from each of the fluids previously approved under this specification. Total volume of each mixture shall be 200 ml. Mixtures shall be prepared in 250 ml stoppered flasks. The flasks shall be thoroughly agitated and then stored in an oven at 135°C for 2 hours. At the end of this time, none of the mixtures shall show any sign of sediment, turbidity, or crystallization. The samples shall then be stored at -54°C for a period of 2 hours. Slight turbidity at this time, which later disappears, will be permitted in the samples.

4.4.4 Bulk modulus. Bulk modulus will be determined in accordance with *4.4.4* in *MIL-PRF-87257*.

TABLE VII. Test methods for hydraulic fluid properties.

	Test Method	
Characteristic	**FED-STD-791**	**ASTM**
Pour point		*D 97*
Flash point		*D 92*
Fire point		*D 92*
Specific gravity		*D 1298*
Viscosity		*D 445*
Solid particle contamination 1/	*3009*	
Foaming		*D 892*
Water		*D 1744*
Neutralization number		*D 664*
High temperature-high pressure spray ignition	*6052*	
Corrosiveness and oxidation stability 2/		*D 4636*
Low temperature stability	*3458*	
Lubricity 3/		*D 2532*
Swelling of synthetic rubber 5/	*3603*	
Flame propagation		*D 5306*

1/ *Particulate contamination may also be measured by the use of automatic particle counters in lieu of the optical procedure detailed in method 3009 of FED-STD-791. HiAc counter, Models PC-202, PC-203, PC-305, or equivalent, counting to the limits specified in table III. Directions in the manual for the respective instruments shall be followed. A gravimetric determination shall also be made by ASTM D 4898.*

2/ *Bath, constant temperature, 175°C. Test time, 48 hours. Use metals as shown in figure 1. Substitute heptane or acetone as the solvent material. Use hexane, heptane, and/or acetone to clean coupons. Use Alternate Procedure 2.*

3/ *A 10 ± 0.5 ml sample shall be used, and the test shall be conducted for 1 hour at each load specified in table V.*

4/ *Test at 204°C for 70 hours. Use standard FKM (see 3.3.14 and 6.4) within 6 months of date of manufacture.*

4.4.5 Thermal stability. The thermal stability test shall be conducted in a 46 ml capacity stainless steel pressure cylinder conforming to *figure 1*. Catalysts of each M-10 tool steel, 52100 steel and naval bronze shall be in the form of 1.27 cm balls. The cylinder shall be charged with a 20 ml sample of the candidate hydraulic fluid, and the catalysts placed in the cylinder. The system shall be purged with nitrogen, sealed at atmospheric pressure and the test begun. The temperature shall be raised to 315°C and maintained for 22 hours. The nitrogen pressure is approximately 1.38×10^5 Pa. Change in viscosity at 40°C, catalyst weight loss, and neutralization number shall be reported

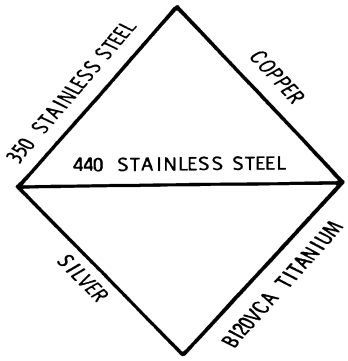

FIGURE 1. Configuration of test specimen.

5. PACKAGING

5.1 Packaging For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see *6.2*) When actual packaging is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity with the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The hydraulic fluid covered by this specification is intended for use in hydraulic systems of flight vehicles over the temperature range of -40°C to 290°C.

6.1.1 Storage conditions. Prior to use in the intended equipment, the product may be stored under conditions of covered or uncovered storage in geographic areas ranging in temperature from -57°C to 49°C (-70°F to 120°F).

6.1.2 Cleaning agents.

6.1.2.1 Chlorinated solvents. Chlorinated solvents should not be used for cleaning hydraulic components. Residual solvent contaminates the hydraulic fluid and may lead to corrosion.

6.1.2.2 Recommended solvents. The recommended solvents are *P-D-680* type II (Stoddard solvent) or other petroleum distillate type solvents.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.

b. Issue of *DoDISS* to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see *2.1.1* and *2.2*).

c. Type and size of containers (see *5.1*).

d. Quantity.

e. Selection of applicable levels of packaging and packing with requirements in detail (see *5.1*).

f. *FAR Clause 52.223-3*.

6.2.2 Basis of purchase. The fluid covered by this specification should be purchased by volume, the unit being a U.S. gallon of 231 cubic inches at 15°C.

6.2.3 List of qualified products. Products considered acceptable under this specification are listed in *QPL-27601* and subsequent revisions thereto.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion into the applicable QPL 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 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 QPL is AFRL/MLSE Bldg 652, 2179 Twelfth St , Room 122, Wright-Patterson AFB OH 45433-7718, and information pertaining to qualification of products may be obtained from that activity.

6.3.1 Qualification information. It is understood that the material furnished under this specification subsequent to final approval will be of the same composition and will be equal to products upon which approval was originally granted. In the event that the fluid furnished under contract is found to deviate from the composition of the approval product, or that the product fails to perform satisfactorily, approval of such products will be subjected to immediate withdrawal from the QPL.

6.3.2 Data to accompany qualification samples. The samples will be accompanied by a test report from the manufacturer or a commercial laboratory containing complete information as to the following: source and type of base stock and additive materials used, the formulation and composition of the finished fluid and laboratory data showing quantitative results of all tests required by this specification except storage stability. Separate qualification inspections will be required for each base stock used. Submission of the material safety data sheet is a requirement. One copy of the material safety data sheet will be sent with each sample submitted for test. The samples, material safety data sheets and reports will be forwarded to the Air Force Research Laboratory, Materials Directorate, System Support Division (AFRL/MLSE), 2179 Twelfth St ,Room 122, Wright-Patterson AFB OH 45433-7718. The samples will be plainly identified by securely attached durable tags or labels marked with the following information:

Sample for Qualification Inspection
HYDRAULIC FLUID, FIRE RESISTANT, SYNTHETIC HYDROCARBON BASE, HIGH TEMPERATURE, FLIGHT VEHICLE, METRIC
Name of ingredient (for ingredient material)
Name of manufacturer
Product code number
Date of manufacture
Submitted by (name) and (date) for qualification inspection in accordance with the requirements of *MIL-PRF-27601* under authorization of (reference authorizing letter) (see *6.3*).

6.3.2.1 Formulation sheets. An example of a satisfactory form for the formulation sheet, indicating the percent by weight and purpose of each ingredient, is as follows:

Base stock(s) (composition and source)	percent
Anti-wear additive (composition and source)	percent
Oxidation inhibitor (composition and source)	percent
Other additives (composition and source)	percent

6.4 Standard rubber samples. Samples of the standard synthetic rubber FKM (see *3.3.12*for the test specified in *table VII* may be obtained from either Precision Rubber Products, Phoenix AZ, or the University of Akron, Akron OH.

6.4.1 Rubber swell data. Samples of *AMS 3217/2*, *AMS 3217/4* and *AMS 3217/5* have been tested in a 4cSt polyalphaolefin base stock fluid to *FTMS 791, method 3603*. The tests were run at 135°C for 168 hours. Typical data is shown in the table below.

TABLE VIII. Typical rubber swell data.

AMS	Percent swell
3217/2	6.0 - 6.5
3217/4	0.0 - 0.5
3217/5	0.0 - 0.5

6.5 Contractual notes. In addition to qualification and quality conformance testing, the Air Force will perform final acceptance testing on each contract awarded. Specific requirements and instruction addressing this matter will be called out in each contract. Questions in regard to this action should be forwarded to: Commander, SA-ALC/SFTT, Kelly AFB TX 78241-5000.

6.6 Disposal actions.

6.6.1 Background. The accumulated waste fluid will be disposed of through a waste oil recovery program unless prohibited by local law. Otherwise, the product will be disposed of in accordance to local law and regulations promulgated by the U.S. Environmental Protection Agency under *Public Law 94-580, Resource Conservation and Recovery Act of 1976.*

6.6.2 Handling and safety precautions. Personnel handling the product will wear appropriate impervious clothing to prevent repeated or prolonged skin contact. Local appraisal is required for exact health and safety implications and to prescribe precise application of protective clothing. If skin or clothing becomes moistened with the product, personnel will promptly wash with soap or mild detergent and water. Respirators are not required unless there is an inhalation exposure to mists. Personnel will wear protective clothing when using the product and when cleaning up spills.

6.6.3 Depot-type operations. Additionally, the used product, which has been drained from the hydraulic systems, will be combined with unused, but contaminated fluid from partially full containers and then recycled.

6.6.4 Container disposal. Tops from one-time-use containers will be discarded with ordinary refuse. Containers will be made as empty as possible using gravity draining, after which they are to be crushed and buried in a permitted sanitary landfill or incinerated with general refuse. No special decontamination procedures are required for empty containers or their lids.

6.7 Definitions

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

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

6.8 Subject term (keyword listing).

Aircraft hydraulic fluid
Fire resistant hydraulic fluid, high temperature
Hydraulic system
Synthetic hydrocarbon base
Synthetic hydraulic fluid

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes. The changes are due to Acquisition Reform initiatives requiring Government specifications to be performance-based.

Custodians:
Army – AT
Air force – 11
Navy – AS

Review Activities:
Army - MI, AR, EA
Navy – SH, OS
Air Force - 68
DLA - GS

Preparing Activity
Air Force - 11

(Project 9150-0829)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.
   NOTE: This form may not be used to request copies f documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waiver any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	**1. DOCUMENT NUMBER**	**2. DOCUMENT DATE (YYMMDD)**
	MIL-PRF-27601C	**98/02/17**

3. DOCUMENT TITLE
HYDRAULIC FLUID, FIRE RESISTANT, HYDROGENATED POLYALPHAOLEFIN BASE, HIGH TEMPERATURE, FLIGHT VEHICLE, METRIC

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (include Zip Code)	d. TELEPHONE (Include Area Code (1) Commercial (2) AUTOVON *(If applicable)*	e. DATE SUBMITTED *(YYMMDD)*

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code	
ASC/ENSI AF CODE 11	(1) Commercial (937) 255-0175	(2) AUTOVON 785-0175
c. ADDRESS *(Include Zip Code)* 2530 LOOP ROAD WEST WRIGHT-PATTERSON AFB OH 45433-7101	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	