

METRIC

**MIL-DTL-25524F(USAF)
w/ Amendment 1**

25 July 2016

SUPERSEDING

MIL-DTL-25524F(USAF)

04 September 2015

DETAIL SPECIFICATION

TURBINE FUEL, AVIATION, THERMALLY STABLE (JPTS)

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



Comments, suggestions, or questions on this document should be addressed to AFPET/PTPS, 2430 C Street, Building 70, Area B, Wright-Patterson AFB, OH 45433-7631 or e-mailed to AFPA.PTPS@us.af.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

FSC 9130

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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1. SCOPE

1.1 Scope. This specification covers one grade of turbine fuel designated as Aviation Thermally Stable Turbine Fuel (JPTS) (see [6.1](#)).

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 this list, document users are cautioned that they must meet all specified requirements of documents cited in sections [3](#) and [4](#) of this specification, whether or not they are listed.

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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

- MIL-PRF-25017 - Inhibitor, Corrosion/Lubricity Improver, Fuel Soluble (NATO S-1747)
- MIL-DTL-85470 - Inhibitor, Icing, Fuel System, High Flash, NATO Code Number S-1745

DEPARTMENT OF DEFENSE STANDARDS

- MIL-STD-290 - Packaging and Marking of Petroleum and Related Products

QUALIFIED PRODUCTS LIST

- QPL-25017 - Inhibitor, Corrosion/Lubricity Improver, Fuel Soluble (NATO S-1747)

(Copies of these documents are available online at <http://quicksearch.dla.mil>.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM INTERNATIONAL

- ASTM D56 - Standard Test Method for Flash Point by Tag Closed Cup Tester
- ASTM D86 - Standard Test Method for Distillation of Petroleum Products and Liquid Fuels at Atmospheric Pressure
- ASTM D93 - Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester
- ASTM D130 - Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test
- ASTM D156 - Standard Test Method for Saybolt Color of Petroleum Products (Saybolt Chromometer Method)
- ASTM D381 - Standard Test Method for Gum Content in Fuels by Jet Evaporation

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ASTM D445	- Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity)
ASTM D1266	- Standard Test Method for Sulfur in Petroleum Products (Lamp Method)
ASTM D1298	- Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
ASTM D1319	- Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption
ASTM D1322	- Standard Test Method for Smoke Point of Kerosine and Aviation Turbine Fuel
ASTM D2276	- Standard Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling
ASTM D2386	- Standard Test Method for Freezing Point of Aviation Fuels
ASTM D2622	- Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-ray Fluorescence Spectrometry
ASTM D2887	- Standard Test Method for Boiling Range Distribution of Petroleum Fractions by Gas Chromatography
ASTM D3120	- Standard Test Method for Trace Quantities of Sulfur in Light Liquid Petroleum Hydrocarbons by Oxidative Microcoulometry
ASTM D3227	- Standard Test Method for (Thiol Mercaptan) Sulfur in Gasoline, Kerosine, Aviation Turbine, and Distillate Fuels (Potentiometric Method)
ASTM D3241	- Standard Test Method for Thermal Oxidation Stability of Aviation Turbine Fuels
ASTM D3242	- Standard Test Method for Acidity in Aviation Turbine Fuel
ASTM D3338	- Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels
ASTM D3343	- Standard Test Method for Estimation of Hydrogen Content of Aviation Fuels
ASTM D3701	- Standard Test Method for Hydrogen Content of Aviation Turbine Fuels by Low Resolution Nuclear Magnetic Resonance Spectrometry
ASTM D3828	- Standard Test Methods for Flash Point by Small Scale Closed Cup Tester
ASTM D3948	- Standard Test Method for Determining Water Separation Characteristics of Aviation Turbine Fuels by Portable Separometer
ASTM D4052	- Standard Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
ASTM D4057	- Standard Practice for Manual Sampling of Petroleum and Petroleum Products
ASTM D4177	- Standard Practice for Automatic Sampling of Petroleum and Petroleum Products

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ASTM D4294	- Standard Test Method for Sulfur in Petroleum and Petroleum Products by Energy Dispersive X-Ray Fluorescence Spectrometry
ASTM D4306	- Standard Practice for Aviation Fuel Sample Containers for Tests Affected by Trace Contamination
ASTM D4529	- Standard Test Method for Estimation of Net Heat of Combustion of Aviation Fuels
ASTM D4809	- Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)
ASTM D4952	- Standard Test Method for Qualitative Analysis for Active Sulfur Species in Fuels and Solvents (Doctor Test)
ASTM D5006	- Standard Test Method for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels
ASTM D5452	- Standard Test Method for Particulate Contamination in Aviation Fuels by Laboratory Filtration
ASTM D5453	- Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence
ASTM D5972	- Standard Test Method for Freezing Point of Aviation Fuels (Automatic Phase Transition Method)
ASTM D6045	- Standard Test Method for Color of Petroleum Products by the Automatic Tristimulus Method
ASTM D7153	- Standard Test Method for Freezing Point of Aviation Fuels (Automatic Laser Method)
ASTM D7154	- Standard Test Method for Freezing Point of Aviation Fuels (Automatic Fiber Optical Method)
ASTM D7171	- Standard Test Method for Hydrogen Content of Middle Distillate Petroleum Products by Low-Resolution Pulsed Nuclear Magnetic Resonance Spectroscopy
ASTM D7224	- Standard Test Method for Determining Water Separation Characteristics of Kerosine-Type Aviation Turbine Fuels Containing Additives by Portable Separometer
ASTM D7619	- Standard Test Method for Sizing and Counting Particles in Light and Middle Distillate Fuels, by Automatic Particle Counter
ASTM D7777	- Standard Test Method for Density, Relative Density, or API Gravity of Liquid Petroleum by Portable Digital Density Meter
ASTM E29	- Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

(Copies of these documents are available from <http://www.astm.org>.)

ENERGY INSTITUTE

IP 540	- Determination of the existent gum content of aviation turbine fuel – Jet evaporation method
IP 564	- Determination of the level of cleanliness of aviation turbine fuel - Laboratory automatic particle counter method

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|--------|---|
| IP 565 | - Determination of the level of cleanliness of aviation turbine fuel - Portable automatic particle counter method |
| IP 577 | - Determination of the level of cleanliness of aviation turbine fuel - Automatic particle counter method using light extinction |

(Copies of these documents are available from <http://www.energyinstpubs.org.uk>.)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

- | | |
|-----------|--|
| ISO 4406 | - Hydraulic fluid power - Fluids - Method for coding the level of contamination by solid particles |
| ISO 11171 | - Hydraulic fluid power - Calibration of automatic particle counters for liquids |

(Copies of these documents are available from <http://www.iso.org>.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, 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 First article. When specified (see [6.2](#)), a sample shall be subjected to first article inspection in accordance with [4.2](#).

3.2 Materials. Except as otherwise specified herein, the fuel shall consist completely of hydrocarbon compounds. Virgin, recycled, or reclaimed petroleum products may be used.

3.3 Chemical and Physical Requirements. The chemical and physical requirements of the finished fuel (hydrocarbon blend plus all additives listed herein) shall conform to the requirements listed in section [3](#) and [Table I](#). Requirements contained herein are not subject to correction for test tolerances.

3.3.1 Storage stability. The finished fuel shall remain stable and conform to the requirements in [Table I](#) for at least 1 year when tested in accordance with [4.5.3](#).

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w/ Amendment 1**TABLE I. Chemical and physical requirements and test methods.**

REQUIREMENTS	Minimum	Maximum	Test Method or Test Paragraph
COMPOSITION			
Color, Saybolt	+24		D156 ¹ or D6045
Total acid number, mg KOH/g		0.015	D3242
Aromatics, volume percent	5.0	20.0	D1319
Sulfur, Mercaptan, mass percent or Doctor Test ²		0.001 negative	D3227 ¹ D4952
Sulfur, total, mass percent		0.30	D1266, D2622, D3120 ³ , D4294 ¹ , or D5453
VOLATILITY			
Distillation temperature, °C (D2887 limits in parenthesis) Initial boiling point 10 percent recovered 50 percent recovered 90 percent recovered End point Residue, volume percent (D86) Loss, volume percent (D86)	157 (105)	 193 (174) 204 (207) 238 (250) 260 (288) 1.5 1.5	D86 ¹ or D2887
Flash point, °C (°F)	43 (110)		D56, D93 ¹ , or D3828 ⁴
Density, kg/L (API) at 15°C	0.767 (53.0)	0.797 (46.0)	D1298, D4052 ¹ , or D7777
FLUIDITY			
Freezing point, °C (°F)		-53 (-64)	D2386 ¹ , D5972, D7153, or D7154
Viscosity, mm ² /s, @ - 40°C		12.0	D445
COMBUSTION			
Net heat of combustion, MJ/kg (BTU/lb)	42.8 (18,400)		D3338, D4529 or D4809 ¹
Hydrogen content, mass percent or Smoke point, mm	14.00 25.0		D3343, D3701, or D7171 ¹ D1322
CORROSION			
Copper strip corrosion, 2 hr at 100°C		1b	D130
THERMAL STABILITY			
Thermal stability (2.5 hr at 335 °C) Change in pressure drop, mm Hg Tube rating: One of the following requirements shall be met (1) Annex 3 ETR or Annex A2 ITR, average deposit thickness over area of 2.5 mm ² , nm or (2) TDR Rating		25 85 12	D3241 ⁵

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CONTAMINANTS			
Existent gum, mg/100 mL 6		5	D381 1 or IP 540
Particulate matter, mg/L 7			D2276 or D5452 1
Origin		0.3	
Destination		0.5	
Particulate counting, cumulative channel counts 8			IP 564, IP 565, IP 577, or D7619 1
Micro-separometer rating, min 9			D3948 or D7224 1
ADDITIVES			
Antioxidant	Report concentration and type		3.4.1
Metal deactivator	Report concentration		3.4.2
Fuel system icing inhibitor, vol percent	0.10	0.15	D5006 & 3.4.3
JFA-5, mg/L	8.6	11.4	3.4.4
Corrosion inhibitor/lubricity improver	Report additive used		3.4.5
Notes:			
1. Referee Test Method.			
2. If the Doctor Test results in a failure ('positive' result), then mercaptan sulfur content shall be determined by the referee test method ASTM D3227.			
3. The sulfur content detection range for ASTM D3120 is 3.0 to 1000 mg/kg.			
4. ASTM D56 may give results up to 1 °C (2 °F) below the ASTM D93 results. ASTM D3828 may give results up to 1.7 °C (3 °F) below the ASTM D93 results.			
5. See 4.5.2.1 for the Thermal Stability testing and rating procedures. Tube deposit failures by ITR (ASTM D3241 Annex A2 Interferometric Tube Rater) or ETR (ASTM D3241 Annex A3 Ellipsometric Tube Rater) shall be reported as ">85 nm." If the ITR reports "N/A" for the tube's volume measurement, the result constitutes a failure and the result shall be reported as ">85 nm." If test results by either ETR or ITR are reported, then results by the Tube Deposit Rater (TDR) are not required. In case of a dispute of results between TDR and either ITR or ETR, the ITR or ETR results will take precedence. This is not to be interpreted that ITR and ETR are equivalent to each other.			
6. The preferred vaporizing medium for aviation turbine fuel is steam; however, the existent gum test IP 540 may be performed using air as the vaporizing medium. If air is used instead of steam, it shall be reported.			
7. A minimum sample size of 3.785 liters (1 gallon) shall be filtered.			
8. Although this test is not yet a requirement, to assist in the data collection process, request that test results should be reported to afpa.ptmt@us.af.mil or AFPET/PTMT, 2430 C Street Building 70 Area B, Wright Patterson AFB, OH 45433 when they are available.			
Particle counting, individual channel counts & ISO Code	Channel Counts	ISO Code 8a	Test Methods: IP 564, IP 565, IP 577, or D7619 1
≥ 4 µm (c) 8b	8c	8c	
≥ 6 µm (c) 8b	8c	8c	
≥ 14 µm (c) 8b	8c	8c	
≥ 21 µm (c) 8b	8c	8c	
≥ 25 µm (c) 8b	8c	8c	
≥ 30 µm (c) 8b	8c	8c	

8a. Per Table 1 "Allocation of scale numbers" of ISO 4406.

8b. (c) indicates that the equipment has been calibrated in accordance with ISO 11171.

8c. Report.

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9. The minimum micro-separometer (MSEP) rating at the point of manufacture shall be as follows:

Product	MSEP Rating, min
JPTS without additives	90
JPTS with additives	70

3.4 Additives. The type and amount of each additive used shall be reported (see [6.2.d](#)).

3.4.1 Antioxidants. Immediately after processing and before the fuel is exposed to the atmosphere, an approved antioxidant, or a combination of approved anti-oxidant formulations, shall be added to prevent the formation of gums and peroxides after manufacture. The concentration of antioxidant to be added shall be as follows:

a. Not less than 17 mg or more than 24 mg of active ingredient per liter of fuel (6.0 pounds to 8.4 pounds of active ingredient per 1,000 barrels of fuel) to all JPTS fuel that contains hydrogen treated blending stocks.

b. At the option of the supplier, not more than 24 mg of active ingredient per liter of fuel (8.4 pounds of active ingredient per 1,000 barrels of fuel) may be added to the JPTS fuel that does not contain hydrogen treated blending stocks.

3.4.1.1 Approved antioxidants. The following antioxidant formulations are approved:

- a. 2,6-ditertiary butyl-4-methylphenol
- b. 2,4-dimethyl-6-tertiary butylphenol
- c. 2,6-ditertiary butylphenol
- d. 75 percent minimum 2,6-tertiary butylphenol
25 percent maximum tertiary and tritertiary butylphenols
- e. 72 percent minimum 2,4-dimethyl-6-tertiary butylphenol
28 percent maximum monomethyl and dimethyl tertiary butylphenol
- f. 55 percent min 2,4-dimethyl-6-tert-butylphenol and
15 percent min 2,6-di-tert-butyl-4-methylphenol and
30 percent max mixed methyl and dimethyl tert-butylphenols

3.4.2 Metal deactivator. A metal deactivator, N,N'-disalicylidene-1,2-propandiamine or N,N'-disalicylidene-1,2-cyclohexanediamine, may be blended into the fuel in an amount not to exceed 5.7 mg of active ingredient per liter of fuel (2 pounds of active ingredient per 1,000 barrels of fuel). Metal deactivator additive shall not be used in JPTS unless the supplier has obtained written consent from the Procuring Activity and user.

3.4.3 Fuel system icing inhibitor. The use of a fuel system icing inhibitor shall be mandatory. The icing inhibitor shall be in accordance with MIL-DTL-85470. The point of injection of the additive and the type of the additive shall be determined by agreement between the purchase authority and the supplier.

3.4.4 Special additive. The fuel shall contain from 8.6 mg/L to 11.4 mg/L of fuel (3 pounds to 4 pounds/1,000 barrels of fuel) of Innospec LLC JFA-5® additive.

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3.4.5 Corrosion inhibitor/lubricity improver additive. A corrosion inhibitor/lubricity improver additive conforming to MIL-PRF-25017 and qualified for JPTS (see [3.4.5.1](#)) shall be blended into the fuel by the supplier. The amount added shall be equal to or greater than the minimum effective concentration and shall not exceed the maximum allowable concentration listed in QPL-25017. The supplier or transporting agency, or both, shall maintain, and upon request, make available to the Government evidence that the corrosion inhibitor/lubricity improver additive used is one of the additives listed in [3.4.5.1](#).

3.4.5.1 Approved corrosion inhibitor/lubricity improver additives. The following approved corrosion inhibitor/lubricity improver additives in QPL-25017 qualified for JPTS are:

- a. AVGUARD CI/LI®
- b. NALCO 5403®
- c. TOLAD 351®
- d. UNICOR J

3.4.6 Premixing of additives. Additives shall not be premixed with other additives before injection into the fuel so as to prevent possible reactions among the concentrated forms of different additives.

3.5 Workmanship. At the time of Government acceptance, the finished fuel shall be clear, bright, and visually free from undissolved water, sediment, or suspended matter. In case of dispute, the fuel shall be clear and bright at 21 °C (70 °F) and meet the Table I particulate matter requirement.

3.6 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

4. VERIFICATION

4.1 Classification of inspection. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see [4.2](#)).
- b. Conformance inspection (see [4.3](#)).

4.2 First article inspection. Test requirements of [3.3.1](#) shall be complied with prior to bid on any product required under this specification. This test shall be conducted in accordance with [4.5.3](#).

4.2.1 Sample submission. Before a sample is submitted for first article inspection, test data that show the results of tests required by [3.3](#) and [3.3.1](#) performed on products produced or blended in an identical manner to the batch sample shall be sent to the Air Force Petroleum Office (mailing address AFPET/PTPS, 2430 C Street, Building 70, Area B, Wright-Patterson AFB OH 45431-7631; email address AFPA.PTPS@us.af.mil). After evaluation of submitter's test results, the Air Force Petroleum Office will respond with a "letter of authorization" providing detailed instructions for the submission of product sample. Once the sample is submitted, the Government will perform tests as necessary to confirm or validate the contractor's test results. Failure of the storage stability test will render the contractor ineligible for further contract award, pending assurance by the supplier to the satisfaction of the Air Force Petroleum Office that any future product will meet the storage stability requirement. The storage stability test must then be repeated on the improved product to prove that the product is totally acceptable.

4.2.2 Sample. One 208-liter (55-gallon), 18-gauge DOT 17E uncoated steel drum of fuel from the first batch that represents the product offered to the Government under any contract.

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4.3 Conformance inspection. Test for the acceptance of individual lots shall consist of tests for all requirements specified in section [3](#), except storage stability. Quality conformance inspection shall include the test requirement herein. Contractor shall send a 7.5 liter (2 gallon) sample of each batch of fuel produced under any contract to a designated acquisition activity laboratory for acceptance testing.

4.3.1 Inspection lot. For acceptance purposes, individual lots shall be examined as specified herein and subjected to tests for all requirements cited in section [3](#), except for storage stability.

4.3.2 Sampling plans.

4.3.2.1 Sampling for verification of product quality. Each bulk or packaged lot (see [6.5](#)) of material shall be sampled for verification of product quality in accordance with ASTM D4057 or ASTM D4177, or both, except where individual test procedures contain specific sampling instructions.

4.3.2.1.1 Sample containers. A number of jet fuel properties are very sensitive to trace contamination that can originate from sample containers. Refer to ASTM D4306 for recommended sample containers.

4.3.2.2 Sampling for examination of filled containers for delivery. A random sample of filled containers shall be selected from each lot. The samples shall be examined in accordance with [4.5.1.3](#).

4.3.3 Inspection. Refer to the contract or purchase order for specific inspection requirements.

4.3.4 Batch sample. AFPET/PTMT reserves the right to have an 18.9-liter (5-gallon) sample of each batch of fuel produced under any contract forwarded to Aerospace Fuels Laboratory (AFPET/PTPLA), 2430 C Street, Building 70, Area B, Wright-Patterson AFB, OH 45433-7631. This sample will be stored at Wright-Patterson AFB and will represent a retained sample from each batch of fuel produced. All specification tests may be performed any time within 12 months from date of manufacture. Failure of any test will render the contractor ineligible for further contract award, pending verification of the quality of the product to the satisfaction of AFPET/PTMT. The contracting officer and contractor will be promptly advised of any failures.

4.4 Inspection conditions. Requirements contained in [Table I](#) are absolute, as defined in ASTM E29, and shall not be subject to correction for test tolerances. If multiple determinations are made, results falling within any specified repeatability and reproducibility tolerances may be averaged. For rounding off of significant figures, ASTM E29, Absolute Method, shall apply to all tests required by this specification.

4.5 Methods of inspection.

4.5.1 Examination of product.

4.5.1.1 Visual inspection. Samples selected in accordance with [4.3.1](#) shall be visually examined for compliance with [3.5](#).

4.5.1.2 Examination of empty containers. Before filled, each empty unit container shall be visually inspected for cleanliness and suitability in accordance with ASTM D4057.

4.5.1.3 Examination of filled containers. Samples taken as specified in [4.3.2](#) shall be examined for conformance to MIL-STD-290 with regard to fill, closure, sealing, leakage, packaging, packing, and markings. Any container with one or more defects under the required fill shall be rejected.

4.5.2 Chemical and physical tests. To determine conformance to chemical and physical requirements (see [3.3](#)) tests shall be conducted in accordance with the applicable test methods, listed in [Table I](#), except for those specified herein.

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4.5.2.1 Thermal stability. The thermal stability test shall be conducted using ASTM D3241. Tube deposit ratings shall be measured by an Ellipsometric Tube Rater (ASTM D3241 Annex A3 ETR), when available, or an Interferometric Tube Rater (D3241 Annex A2 ITR), when available (see [4.5.2.1.2a](#)). In lieu of an ETR or an ITR, the heater tube shall be rated using the Alcor Mark 8A or Alcor Mark 9 Tube Deposit Rater (TDR) (see [4.5.2.1.2b](#)). Due to the dwindling supply of parts to properly maintain the remaining Alcor TDRs, this method of rating tubes will be removed from this specification in the future.

4.5.2.1.1 Test conditions.

- a. Heater tube temperature at maximum point: 335 °C.
- b. Fuel system pressure: 3.43 MPa (500 psig).
- c. Fuel flow rate: 3.0 mL/minute.
- d. Test duration: 150 minutes.

4.5.2.1.2 Test results. The fuel sample is acceptable if the maximum differential pressure across the test filter does not exceed 25 mm of Hg and one of the following criteria are met:

- a. The maximum average deposit thickness over an area of 2.5 mm² does not exceed 85 nm when measured by an ETR or an ITR.
- b. The maximum differential between the post-test and pre-test Alcor Mark 8A or Mark 9 TDR rating does not exceed 12 TDR units. Both before and after the Thermal Stability test, the heater tube shall be rated at 1 millimeter (mm) increments over the length of the heater tube that can be rated using the Alcor Mark 8A or Mark 9 TDR. The maximum increase in the TDR ratings (i.e., the maximum difference seen between the post-test and the pre-test TDR rating) shall be reported. If the maximum increase in TDR rating does not exceed 12 TDR units, the results are satisfactory.

4.5.2.1.3 Reported data. The following data shall be reported.

- a. ETR, ITR, or TDR rating.
- b. Differential pressure across the test filter.

4.5.3 Storage stability. The storage stability test on the finished fuel shall be conducted by placing 200 liters ± 3.8 liters (53 gallons ± 1 gallons) in a 208-liter (55-gallon), 18-gauge DOT 17E uncoated steel drum. The filled drum shall be stored at 54.5 °C (130 °F) for 1 year (12 months). At 3-month intervals, samples shall be withdrawn and subjected to the thermal stability test (see [4.5.2.1](#)). At the conclusion of the 12-month storage stability test, the fuel will be subjected to all test requirements of [Table I](#). If the fuel fails any of the 3-month thermal stability tests, the fuel shall be resampled and retested to ensure the initial sample was valid. Failure of the thermal stability test at any of the 3-month intervals or failure of any of the [Table I](#) test requirements at the conclusion of the 12-month storage stability test constitutes a failure of the storage stability test.

4.6 Test report. Test data required by [4.5.2](#) shall be reported in the same order as listed in [Table I](#), unless directed otherwise by the Procuring Activity.

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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 of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. 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 fuel covered by this specification is intended for use in aircraft turbine engines. JPTS fuel requires military-unique additives that are necessary in military weapon systems. This requirement is unique to military aircraft, engine designs, and missions.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Packaging requirements (see [5.1](#)).
- c. Quantity required and size containers required.
- d. Location, injection method, and type of additives, as required.
- e. One copy of the certificate of analysis that lists those items in [Table I](#) should be forwarded to the acquisition activity and the following organization for each batch of fuel acquired under this specification:

Air Force Petroleum Office, AFPET/PTMT
2430 C Street, Building 70, Area B
Wright-Patterson AFB, OH 45433-7631

- f. The acquisition activity should state if the contractor is required to submit a sample (see [4.2.1](#)).

6.3 Conversion of metric units. Units of measure have been converted to the International System of Units (Metric) in accordance with ASTM SI10. If test results are obtained in units other than Metric or there is a requirement to report dual units, ASTM SI10 should be used to convert the units.

6.4 Safety Data Sheets. Contracting officers will identify those activities that require copies of completed Safety Data Sheets (SDS) prepared in accordance with 29 CFR 1910.1200.

6.5 Definitions.

6.5.1 Bulk lot. A bulk lot consists of an indefinite quantity of a homogeneous mixture of material offered for acceptance in a single isolated container, or manufactured in a single plant run, through the same processing equipment, with no change in ingredient material.

6.5.2 Packaged lot. A packaged lot consists of an indefinite number of 208-liter (55-gallon) drums or smaller unit packages of identical size and type, offered for acceptance, and filled from the isolated tank that contains a homogeneous mixture of material; or filled with a homogeneous mixture of

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material manufactured in a single plant run, through the same processing equipment, with no change in ingredient material.

6.6 Subject term (key word) listing.

Additive
Antioxidant
Corrosion inhibitor
Deactivator
Flash point
Fuel system icing inhibitor
Jet fuel
Lubricity improver

6.7 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. 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.

CONCLUDING MATERIAL

Custodians:
Air Force – 68
DLA – PS

Preparing activity:
Air Force – 68
(Project 9130-2016-003)

Review activities:
Air Force – 11, 20

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.