

MIL-F-27351(USAF)

24 February 1960

## MILITARY SPECIFICATION

### FLUID, CALIBRATING, HIGH FLASH POINT, AIRCRAFT FUEL SYSTEM COMPONENTS

#### 1. SCOPE

1.1 SCOPE.- This specification covers the requirements for a high flash point test fluid for use in the calibration of fuel system components for aircraft reciprocating engines, aircraft gas turbines, and ram-jet engines.

#### 2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids, form a part of this specification:

##### STANDARDS

##### Federal

Federal Test Method  
Standard No. 791

Lubricants, Liquid Fuels,  
and Related Products;  
Methods of Testing

##### Military

MIL-STD-290

Packaging, Packing and  
Marking of Petroleum  
Products

(Copies of documents required by contractors 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. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

##### American Society for Testing Materials Publications

ASTM Standards on Petroleum Products and Lubricants  
ASTM Manual on Measurement and Sampling of Petroleum  
and Petroleum Products

(Copies of ASTM publications may be obtained from the American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pennsylvania.)

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### 3. REQUIREMENTS

3.1 MATERIALS.- The high flash point calibrating fluid shall consist completely of hydrocarbon compounds, except as otherwise specified herein.

3.2 CHEMICAL AND PHYSICAL REQUIREMENTS.- The chemical and physical requirements of the fluid shall conform to those listed in Table I when tested in accordance with the applicable tests specified therein. Requirements contained herein are absolute and are not subject to correction for tolerance of test methods. However, if multiple determinations are made, average results shall be used.

3.3 WORKMANSHIP.- The calibrating fluid shall be free from undissolved water, sediment, and suspended matter. No substances of known dangerous toxicity under usual conditions of handling and use shall be added.

### 4. QUALITY ASSURANCE PROVISIONS

4.1 Unless otherwise specified herein the supplier is responsible for the performance of all inspection requirements prior to submission for Government inspection and acceptance. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. Inspection records of the examinations and tests shall be kept complete and available to the Government as specified in the contract or order.

4.2 CLASSIFICATION OF TESTS.- The inspection and testing of high flash point calibrating fluid shall be classified as follows:

#### Acceptance tests.

4.3 INSPECTION.- Unless otherwise specified by the procuring activity, inspection shall be in accordance with Federal Test Method Standard No. 791, method 9601.

4.4 SAMPLING.- Sampling shall be in accordance with ASTM Method D270, titled "Sampling of Petroleum and Petroleum Products".

4.4.1 When required, a 1-gallon sample, taken in accordance with ASTM Method D270, shall be forwarded to the laboratory designated by the procuring activity for testing as specified herein.

4.5 EXAMINATION OF PRODUCT.- Each container of calibrating fluid may be examined to determine conformance with this specification.

TABLE I - CHEMICAL AND PHYSICAL REQUIREMENTS

Requirements	Fluid		Test Method	
	Min.	Max.	Fed. Test Meth. Std. No. 791	ASTM Stds.
Distillation: Initial boiling point of Fluid evaporated, 10 percent at of Fluid evaporated, 50 percent at of Fluid evaporated, 90 percent at of End point of Residue, vol. percent Distillation loss, vol. percent	420 1/ 430 1/ 450	450 475 1-1/2 1-1/2	1001	D 86
Specific gravity	0.770	0.780		D 1298
Aniline point, of	190			D 1012
Flash point, of	175		1101	D 56
Viscosity, centistokes at 100°F	2.37	2.57	305	D 445
Copper strip corrosion, ASTM classification		No. 1	5325	D 130
Freezing point, of		-65	1411	
Acidity				
Distillation residue		Neutral		D 235
Color, Saybolt	+25		101	D 156

1/ To be reported - not limited.

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4.6 TEST METHODS. Tests as specified in 3.2 to determine conformance to chemical and physical requirements shall be conducted in accordance with Federal Test Method Standard No. 791 or ASTM standards, using applicable methods as listed in Table I.

4.7 REJECTION AND RETEST.- Material not conforming to the requirements of this specification shall be rejected. Rejected material shall not be resubmitted without furnishing full particulars concerning previous rejection and measures taken to overcome defects.

## 5. PREPARATION FOR DELIVERY

5.1 PACKAGING AND PACKING.- Packaging and packing shall be in accordance with MIL-STD-290.

5.2 MARKING OF SHIPMENTS.- Shipping containers shall be marked in accordance with MIL-STD-290, and in addition shall be marked with any special markings specified in the contract or order.

## 6. NOTES

6.1 INTENDED USE.- The high flash point calibrating fluid covered by this specification is intended for use in the calibration of aircraft and engine fuel system components.

6.2 ORDERING DATA.- Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Quantity required and size containers desired.
- c. Any special marking required.

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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SPECIFICATION ANALYSIS SHEET			Form Approved Budget Bureau No. 119-H004	
<p style="text-align: center; margin: 0;"><u>INSTRUCTIONS</u></p> <p style="margin: 0;">This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).</p>				
SPECIFICATION				
ORGANIZATION (of submitter)			CITY AND STATE	
CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT \$		
MATERIAL PROCURED UNDER A				
<input type="checkbox"/> DIRECT GOVERNMENT CONTRACT <input type="checkbox"/> SUBCONTRACT				
1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?				
A. GIVE PARAGRAPH NUMBER AND WORDING.				
B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.				
2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID				
3. IS THE SPECIFICATION RESTRICTIVE?				
<input type="checkbox"/> YES <input type="checkbox"/> NO IF "YES", IN WHAT WAY?				
4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)				
SUBMITTED BY (Printed or typed name and activity)			DATE	

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