

MIL-F-81912(AS)  
AMENDMENT 3  
28 June 1977  
Superseding  
AMENDMENT 2  
19 June 1973

## MILITARY SPECIFICATION

### FUEL, EXPENDABLE TURBINE ENGINE

This Amendment forms a part of Military Specification MIL-F-81912(AS) of 14 February 1973 and has been approved by the Naval Air Systems Command, Department of the Navy.

Pages 2 and 3,

Table I: Delete and substitute the attached Table I which forms Page 2 of this Amendment.

Page 3,

Para.3.3: Delete paragraph 3.3 and substitute:

\* 3.3 Antioxidants - In order to prevent the formation of gums and peroxides, approved antioxidants shall be blended separately, or in combination, into the fuel in total concentration of not less than 6.0 lbs nor more than 8.4 lbs. of active ingredient per 1,000 barrels of fuel (17.2 to 24.0 mg/l). This addition shall occur immediately after the processing of the fuel at the refinery before it is placed in storage. The following active inhibitors are approved for use as antioxidants:

- (a) 2,6-ditertiary butyl-4-methylphenol
- (b) 2,4-dimethyl-6-tertiary butylphenol
- (c) 72 percent min. 2,4-dimethyl-6-tertiary butylphenol  
28 percent max. monomethyl and dimethyl tertiary butylphenols
- (d) 55 percent min. 2,4-dimethyl-6-tertiary butylphenol  
15 percent min. 2,6-ditertiary butyl-4-methylphenol  
30 percent max. mixed monomethyl and dimethyl tertiary butylphenols
- (e) 2,6-ditertiary butylphenol
- (f) 75 percent min. 2,6-ditertiary butylphenol  
25 percent max. mixed tertiary and tritertiary butylphenols
- (g) 60 percent min. 2,4-ditertiary butylphenol  
40 percent max. mixed tertiary butylphenols

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TABLE I. Chemical and Physical Requirements and Test Methods.

Requirements	Fuel	Test Method ASTM Standards
Distillation:		
Initial boiling point, min	360°F	D86 <u>1/</u>
Fuel recovered, 10 percent at	365-375°F	
Fuel recovered, 20 percent at		
Fuel recovered, 50 percent at	370-380°F	
Fuel recovered, 90 percent at	375-385°F	
End Point, max	425°F	
Residue, vol percent max	1½	
Distillation loss, vol percent max	1½	
Gravity °API - min (sp gr max)	44 (0.806)	D287
Gravity °API - max (sp gr min)	48 (0.788)	D287
Existent gum, mg/100 ml max	2.0	D381
Total potential residue, 16 hour aging, mg/100 ml max	4.0	D873
Sulfur, total, percent weight max	0.05	D1266
Mercaptan sulfur, percent weight max <u>3/</u>	0.001	D1219 or D1323
* Freezing point, max	-60°F (-51.1°C)	D2386
Heating Value:		
Net heat of combustion, BTU/lb, min	18,500	D240
or aniline-gravity product, min <u>4/</u>	6,000	D611 and D287
* Viscosity, Centistokes -50°F (-45.6°C) max	11.5	D445
* Aromatics, vol percent, max/min	15.0/4.0	D1319
Olefins, vol percent max	1.0	D1319
Smoke point, mm min	19	D1322 <u>5/</u>
or luminometer no., min	50	D1740
Explosiveness, percent max	50	<u>6/</u>
Flash point, min	140°F (60.0°C)	D93
Copper strip corrosion, (2hr at 212°F (100°C)), max	No. 1	D130
Water separation index, modified min	85	D2550
Particulate matter, mg/liter, max	1.0	D2276

1/ A condenser temperature of 32° to 40°F (0° to 4°C) shall be used.

2/ To be reported - not limited.

3/ The mercaptan sulfur determination may be waived at the option of the inspector if the fuel is "doctor sweet" when tested in accordance with the doctor test of ASTM D484.

4/ Aniline-gravity product is defined as the product of the gravity in °API and the aniline point in °F.

5/ That portion of D1322 pertaining to testing bottom fractions is not applicable.

6/ Test shall be performed in accordance with method 1151 of Fed. Test Method Std. 791.

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\* The margins of this Amendment are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) to the previous Amendment were made. This was done as a convenience only and the government assumes no liability what-so-ever 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 Amendment.

Preparing Activity: Navy AS  
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