AEROSPACE MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York, N.Y. 10017

AMS 3004B

Superseding AMS 3004A

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ALCOHOL, METHYL

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. APPLICATION: Primarily as an additive to prevent freezing of water used in aircraft power plant injection systems.

3. COMPOSITION:

3.1 The alcohol shall have the following composition:

	min	max
Methyl Alcohol, %	99.0	--
Aldehydes and Ketones (as acetaldehyde), (3.2), %	--	0.05
Sulfur and Sulfur Compounds (as S), %	--	0.03
Acetone, %	--	0.015
Acidity (as acetic acid), %	--	0.01
Nonvolatile Residue, mg per 100 ml	--	5.0
Esters (as methyl acetate), %	--	1.0

3.2 To determine the percentage, the following reagent, apparatus, and procedure are recommended.

3.2.1 Reagent: 0.5N hydroxylamine hydrochloride ($NH_2OH.HCl$) containing no free hydrochloric acid. Dissolve 35 g of cp $NH_2OH.HCl$ in water, add sufficient 0.5N sodium hydroxide to neutralize any free hydrochloric acid, and dilute to one liter. (The amount of sodium hydroxide needed may be calculated from the amount needed to render a sample of the hydroxylamine hydrochloride neutral to bromphenol blue.) The pH of the finished solution should be 3.050 ± 0.005.

3.2.2 Apparatus: An electrical pH meter with standard glass electrode and standard calomel electrode. The meter should be standardized against a standard buffer having a pH in or near the working range of the analysis (pH 2, 3, or 4).

3.2.3 Procedure: Add 1 ml of 0.5N $NH_2OH.HCl$ to 10 ml of distilled water in a 50 ml beaker. Adjust the pH meter to the temperature of the resulting solution and determine the pH. This should be within the range 3.65 - 3.80. Add 10 ml of the alcohol to be tested and mix thoroughly. The temperature of the solution will rise to approximately 35 C (95 F) and, with continued stirring, drop to approximately 29 C (84 F) in the 5 min. period which should be allowed for reaction. At the end of this time, adjust the pH meter to the temperature of the solution and determine the pH. The percentage of aldehydes plus ketones is determined from a curve of change in pH vs concentration. The curve may be plotted from the following:

Aldehydes + Ketones (as acetaldehyde) %	Decrease in pH
0.0000	0.00
0.0125	0.63
0.0250	0.89
0.0375	1.04
0.0500	1.14