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O-M-232M
19 January 2016
SUPERSEDING
O-M-232L
4 January 2006

FEDERAL SPECIFICATION

METHANOL (METHYL ALCOHOL)

The General Services Administration has authorized the use of this federal specification by all federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers three grades and four unit quantities of methanol.

1.2 Classification. Methanol are of the following grades and unit quantities (see 6.2):

1.2.1 Grade.

Grade A = grade A - Synthetic, 99.85 percent by weight (solvent use)
Grade B = grade AA - Synthetic, 99.85 percent by weight (hydrogen-carbon dioxide generation use)
Grade C = grade C - Wood alcohol (denaturing grade)

1.2.2 Unit quantity.

1-QT - 1 quart
1-GL - 1 gallon
5-GL - 5 gallons
54-GL - 54 gallons

1.3 International standardization agreement code number. O-M-232, Grade A methanol is identified by NATO Code S-747.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to DLA Aviation, VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616 or e-mailed to STDZNMGT@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST database at https://assist.dla.mil.

AMSC N/A FSC 6810

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2. APPLICABLE DOCUMENTS

2.1 Government publications. The issues of the following documents, in effect on the date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Code of Federal Regulations (CFR)

27 CFR 21	- Formulas for Denatured Alcohol and Rum.
29 CFR 1910.1200	- Occupational Safety and Health Standards, Hazard Communication.

(Electronic copies of the Code of Federal Regulations (CFR) may be obtained from http://www.ecfr.gov.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on the date of invitation for bids or request for proposal shall apply.

ASTM International

ASTM D1193	- Standard Specification for Reagent Water.
ASTM D1296	- Standard Test Method for Odor of Volatile Solvents and Diluents.
ASTM D1353	- Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products.
ASTM E346	- Standard Test Methods for Analysis of Methanol.

(Electronic copies of ASTM documents may be obtained from http://www.astm.org .)

3. REQUIREMENTS

3.1 Grades A and AA. Grades A and AA methanol shall conform to the chemical and physical characteristics of table I when tested as specified therein.

3.2 Grade C. Grade C methanol shall comply with the requirements for methyl alcohol used as a denaturant in 27 CFR 21.

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TABLE I. Chemical and physical characteristics of grades A and AA methanol.

Characteristic	Requirements		Test paragraph/method
	Grade A	Grade AA	
Acetone, percent by mass, maximum	0.003	0.002	4.3.1.1
Acidity (as acetic acid), percent by mass, maximum	0.003	0.003	ASTM E346
Appearance	Free of opalescence, suspended matter, and sediment	Free of opalescence, suspended matter, and sediment	4.3.1.2
Carbonizable impurities, color, Platinum-Cobalt (Pt-Co), maximum	No. 30	No. 30	ASTM E346
Color, Pt-Co, maximum	No. 5	No. 5	ASTM E346
Distillation range at 760 mm, maximum	1.0 °C (and shall include 64.6 ± 0.1 °C)	1.0 °C (and shall include 64.6 ± 0.1 °C)	ASTM E346
Ethanol, percent by mass, maximum	--	0.001	ASTM E346[1]
Nonvolatile matter, mg per 100 mL, maximum	10	10	ASTM D1353
Odor	Characteristic, non-residual	Characteristic, non-residual	ASTM D1296
Permanganate time	No discharge of color in 30 minutes	No discharge of color in 30 minutes	ASTM E346
Specific gravity at 20/20 °C, maximum	0.7928	0.7928	ASTM E346
Water, percent by mass, maximum	0.15	0.10	ASTM E346

[1]For grade AA only, convert the concentration of ethanol in µg/g to percent by weight ethanol.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the acquisition, the contractor is responsible for the performance of all inspection requirements as specified herein. Unless otherwise specified in the acquisition order (see 6.2), the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the government. The government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Quality conformance inspection. The methanol shall meet the requirements of table I and tests of 4.3.

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4.3 Test methods.

4.3.1 Methanol tests. Reagent water conforming to ASTM D1193 type II or III and reagent grade chemicals shall be used throughout the tests.

4.3.1.1 Acetone. Determine the percent by weight acetone in the specimen in accordance with the procedures for acetone in ASTM E346. For grade AA methanol, use 1.5 milliliter (mL) of sample and 3.5 mL of water instead of 1 mL of sample and 4 mL of water. Report the acetone content as less than or greater than 0.002 percent by weight.

4.3.1.2 Appearance. Dilute 15 mL of the specimen to 45 mL with water in a Nessler tube. Visually examine the solution for opalescence, suspended matter, and sediment during 30 minutes of standing.

5. PACKAGING

5.1 Packaging. Preservation, packing, and marking shall be as specified in the acquisition order (see 6.2).

5.2 Precautionary marking. Each unit and shipping container shall be marked or labeled, as applicable, in accordance with 29 CFR 1910.1200(f) to show the required precautionary information. Each unit shall be marked to show the skull and crossbones poison symbol and the word "POISON." Each outer container shall be marked to show the top of the container by use of and arrow and the word "UP."

6. NOTES

INFORMATION FOR GUIDANCE ONLY. This section contains information of a general or explanatory nature that is helpful, but is not mandatory.

6.1 Intended use. Grade A methanol is intended for use as an industrial solvent. Grade AA methanol is intended for use in the generation of hydrogen and carbon dioxide. Grade C methanol (wood alcohol) is a product of the destructive distillation of wood and is intended for use as a denaturant.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Grade of methanol required (see 1.2.1).
c. Unit quantity required (see 1.2.2).
d. Responsibility for inspection, if different (see 4.1).
e. Inspection facilities, if different (see 4.1).
f. Packaging (see 5).

6.3 Safety data sheet (SDS). Contracting officers will identify those activities requiring copies of completed SDS prepared in accordance with FED-STD-313 and meeting the requirements of 29 CFR 1910.1200. The pertinent government mailing addresses for submission of the data are

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listed in FED-STD-313 and 29 CFR 1910.1200 requires that the SDS for each hazardous chemical used in an operation must be readily available to personnel using the material. Contracting officers will identify the activities requiring copies of the SDS.

6.4 Submission of alternate inspection provisions. Proposed alternative inspection provisions should be submitted by the contractor to the procuring contracting officer for evaluation and approval by the technical activity responsible for preparation of this specification.

6.5 Part or identification number (PIN). The following PIN procedure is for government purposes and does not constitute a requirement for the contractor.

OM232 X XXXXX Example of PIN: O-M-232-A-1-QT

- XXXXX — Unit quantity (see 1.2.2):
  - 1-QT = 1 quart
  - 1-GL = 1 gallon
  - 5-GL = 5 gallons
  - 54-GL = 54 gallons
- X — Grade (see 1.2.1):
  - A = grade A
  - B = grade AA
  - C = grade C
- OM232 — Specification number

6.6 Subject term (key word) listing.

denaturant
industrial solvent
wood alcohol

6.7 International standardization agreements. When amendment, revision, or cancellation of this specification is proposed which will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations. Identified below are the specific paragraph numbers and the international standardization agreements applicable to this specification:

ASIC AIR STD 15/9 - Interchangeability Chart of Standardized Aviation Fuels, Lubricants and Allied Products.
NATO STANAG 1135 - Interchangeability of Fuels, Lubricants and Associated Products Used by the Armed Forces of the North Atlantic Treaty Nations.

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6.8 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. 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 and relationship to the last previous issue.

MILITARY INTERESTS:

Custodians:
Army - EA
Navy - OS
Air Force - 68

Review Activities:
Army - AR, GL, MD1, MI
Navy - AS

CIVIL AGENCY
COORDINATING ACTIVITY:

GSA - FAS

Preparing Activity:
DLA - GS3

(Project 6810-2016-005)

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 database at https://assist.dla.mil.