

NOT MEASUREMENT SENSITIVE

O-M-232L  
4 January 2006  
SUPERSEDING  
O-M-232K  
14 October 1998

## 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 shall be 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. 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: [STDZNMGT@dla.mil](mailto:STDZNMGT@dla.mil) or Defense Supply Center Richmond, ATTN: DSCR-VEB, 8000 Jefferson Davis Highway, Richmond, VA 23297-5616.

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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 Standard on Hazard Communication.

(The Code of Federal Regulations (CFR) and the Federal Register are for sale on a subscription basis from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. When indicated, reprints of certain regulations may be obtained from the federal agency responsible for issuing them. Electronic copies may be obtained from <http://www.access.gpo.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 D 1193	- Standard Specification for Reagent Water.
ASTM D 1296	- Standard Test Method for Odor of Volatile Solvents and Diluents.
ASTM D 1353	- Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products.
ASTM E 346	- Standard Test Methods for Analysis of Methanol.

(Private sector and civil agencies may purchase copies of these voluntary standards from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. Electronic copies 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.

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

Characteristic	Requirements		Test paragraph/method
	Grade A	Grade AA	
Acetone, percent by weight, maximum	0.003	0.002	4.3.1.1
Acidity (as acetic acid), percent by weight, maximum	0.003	0.003	ASTM E 346
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 E 346
Color, Pt-Co, maximum	No. 5	No. 5	ASTM E 346
Distillation range at 760 mm, maximum	1.0°C (and shall include $64.6 \pm 0.1$ °C)	1.0°C (and shall include $64.6 \pm 0.1$ °C)	ASTM E 346
Ethanol, percent by weight, maximum	--	0.001	ASTM E 346 <sup>1</sup>
Nonvolatile matter, mg per 100 mL, maximum	10	10	ASTM D 1353
Odor	Characteristic, non-residual	Characteristic, non-residual	ASTM D 1296
Permanganate time	No discharge of color in 30 minutes	No discharge of color in 30 minutes	ASTM E 346
Specific gravity at 20/20°C, maximum	0.7928	0.7928	ASTM E 346
Water, percent by weight, maximum	0.15	0.10	ASTM E 346

<sup>1</sup>For grade AA only, convert the parts per million ethanol 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 D 1193 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 E 346. 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 an 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:

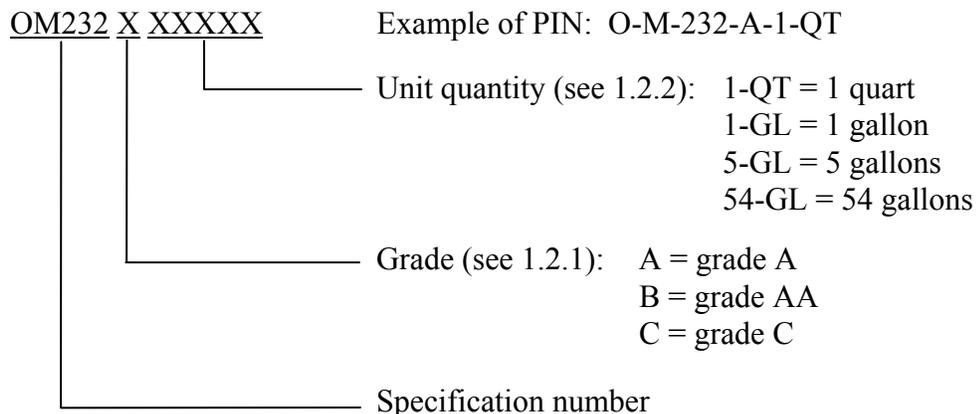
- a. Title, number, and date of this specification.
- b. Grade of methanol required (see 1.2.1).
- c. Unit quantity required (see 1.2.2).
- d. Responsibility for inspection, if different (see 4.1).
- e. Inspection facilities, if different (see 4.1).
- f. Packaging (see 5).

6.3 Materials safety data sheet (MSDS). Contracting officers will identify those activities requiring copies of completed MSDS 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 listed in FED-STD-313 and 29 CFR 1910.1200 requires that the

MSDS 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 MSDS.

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.



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:

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

6.8 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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MILITARY INTERESTS:

Custodians:

Army - EA  
Navy - OS  
Air Force - 68

Review Activities:

Army - AR, GL, MD1, MI  
Navy - AS

CIVIL AGENCY  
COORDINATING ACTIVITY:

GSA - FSS

Preparing Activity:

DLA - GS3

(Project 6810-1730)

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 <http://assist.daps.dla.mil>.