

[METRIC]
A-A-59231
1 October 1998
SUPERSEDING
MIL-E-50011C
23 June 1994

COMMERCIAL ITEM DESCRIPTION

ETHANOLAMINES (MONOETHANOLAMINE AND TRIETHANOLAMINE), TECHNICAL

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. **SCOPE.** This commercial item description (CID) covers technical grades of modified commercial monoethanolamine and triethanolamine. Monoethanolamine is intended for use as a decontaminant for riot control agent CS (orthochlorobenzylidene malononitrile) and for the chemical agent CS1 dispersing equipment. Monoethanolamine is also intended for the removal of carbon dioxide from air, other gases, and liquids by absorption. Triethanolamine is intended for use when an organic base is required, as in maintaining alkalinity of water solutions to prevent corrosion in such equipment as boilers, pipes, and radiators.

2. **CLASSIFICATION.** The ethanolamines shall be of the following types as specified (see 7.3):

2.1 Type.

- Type I - Monoethanolamine (MEA)
- Type II - Triethanolamine (TEA)

3. SALIENT CHARACTERISTICS

3.1 Appearance. Ethanolamines shall be clear, viscous, and free of suspended matter in the liquid state when tested as specified in 3.3.1. When in solid form, ethanolamines shall have a white, crystalline appearance, without visual evidence of impurities or discoloration.

3.2 Chemical and physical characteristics. Ethanolamines shall conform to the chemical and physical characteristics of table I when tested as specified herein.

Beneficial comments, recommendations, additions, deletions, clarifications, etc., and any data which may improve this document should be sent by letter to: Defense Supply Center Richmond (DSCR), ATTN: DSCR-VBD, 8000 Jefferson Davis Highway, Richmond, VA 23297-5610.

AMSC N/A

FSC 6810

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

A-A-59231

TABLE I. Chemical and physical characteristics.

Characteristics	MEA	TEA	Test paragraph
Specific gravity at 20°C/20°C (percent min.)	1.017 to 1.021	1.124 to 1.129	3.3.2
Percent by volume distilled between 165°C and 175°C	90 minimum	-	ASTM D 86
Color (Platinum-Cobalt scale)	15 maximum	40 maximum	ASTM D 1209
Water content (percent by weight)	0.30 maximum	0.20 maximum	ASTM E 203
MEA content (percent by weight)	99.0 minimum	0.50 maximum	3.3.3
TEA content (percent by weight)	0.20 maximum	99.0 minimum	3.3.3
Diethanolamine (DEA) content (percent by weight)	0.50 maximum	0.50 maximum	3.3.3

3.3 Tests. See 7.5 for sampling and testing precautions. Water, in accordance with ASTM D 1193, and reagent grade chemicals shall be used throughout the tests. Where applicable, blank determinations shall be run and corrections applied where significant. Tests shall be conducted as follows:

3.3.1 Appearance. Thoroughly mix the specimen and transfer 25 milliliters (mL) into a 50 mL test tube. Stopper the test tube and allow it to stand until the bubbles have disappeared completely. Examine by transmitted light for uniformity and for freedom from particles and foreign matter.

3.3.2 Specific gravity. Measure the specific gravity of types I and II ethanolamine specimens at 20°C/20°C. Determine with a digital density meter calibrated to give the apparent specific gravity at the specified conditions or a specific gravity balance (chainomatic) adjusted to give a 1.000 value for the specific gravity of water at 20°C.

3.3.3 MEA and TEA content.

3.3.3.1 Apparatus. Use a gas chromatograph with temperature programmer, split injection system, capillary column, flame ionization detector, and recorder.

3.3.3.2 Chromatographic conditions. Recommended conditions for a Hewlett-Packard 5890A gas chromatograph are shown in table II. Other equivalent instrumentation may be used, but may require modification of conditions in order to obtain good peak shape, adequate resolution, and appropriate retention time.

TABLE II. Chromatographic conditions.

Characteristic	Condition
Column material	5.0 micron fused silica
Column dimensions	30 m (0.32 mm ID)
Column temperature	60°C to 270°C at 10°C/min.*
Injector temperature	250°C
Detector temperature	280°C
Carrier gas	Helium
Carrier gas flow rate	2.0 mL/min.

* 60°C held for 3 minutes, then programmed to 270°C at 10°C/min., and held for 10 minutes

3.3.3.3 Standard solution. Use MEA and TEA of no less than 99.0 percent by weight purity in preparing the standard solution. Prepare the standard solution by thoroughly mixing equal amounts by weight of the two amines. Pass a measured volume (1 mL) of the standard solution through the column repeatedly at a rate prescribed by the apparatus being used until the peak areas for MEA and TEA are reproducible within 2 percent. Calculate the average peak areas and note the retention times for MEA and TEA, respectively.

3.3.3.4 Procedure. Inject the same measured volume (1 mL) of the specimen into the chromatograph. Repeat the injections until the peak areas for MEA and TEA are reproducible within 2 percent. Compare the average peak areas and retention times to the standard solution and calculate the average peak areas for MEA and TEA.

3.3.3.5 Calculations. Calculate the percent by weight of MEA and TEA as follows:

$$\text{Percent by weight MEA} = \frac{33.3A}{S}$$

where: A = Average MEA peak area for specimen and
S = Average MEA peak area for standard

$$\text{Percent by weight TEA} = \frac{33.3B}{U}$$

where: B = Average TEA peak area for specimen and
U = Average TEA peak area for standard

4. REGULATORY REQUIREMENTS

4.1 Marking, packaging, and labeling. Material shall be labeled, packed, and marked in accordance with Title 49, Code of Federal Regulations (CFR) paragraphs 100 to 185.

A-A-59231

4.2 Recycled materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practical, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4.3 Material safety data sheet (MSDS). The manufacturer shall comply with requirements set forth by the Hazardous Communication Standard 29 CFR paragraph 1910.1200 (d) through (g). All MSDSs submitted shall comply with provisions of FED-STD-313.

5. QUALITY ASSURANCE PROVISIONS

5.1 Product conformance. The product provided shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market. The government reserves the right to require proof of such conformance.

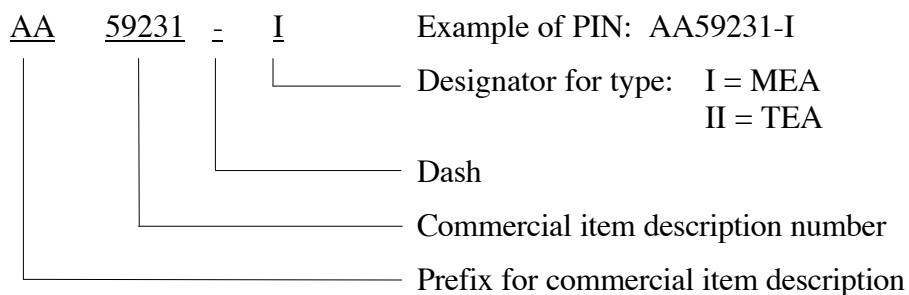
5.2 Market acceptability. The following market acceptability criteria are necessary to document the quality of the product to be provided under this CID.

- a. The item offered must have been sold to the government within the past 2 years.
- b. The company must be able to show test data or lab results of meeting the salient characteristics of the ethanalamines.

6. **PACKAGING**. Preservation, packing, and marking shall be as specified in the contract or order.

7. **NOTES**. This section contains information of a general or explanatory nature that is helpful, but is not mandatory.

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



7.2 Referenced documents.

7.2.1 The Code of Federal Regulations and Federal Acquisition Regulation may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402-0001.

7.2.2 American Society for Testing and Materials standards may be obtained from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

7.3 Ordering data. Acquisition documents must specify the following:

- a. Title, number, and date of this CID.
- b. Type of ethanolamine required (see 2).
- c. Packaging requirements (see 6).
- d. Unit of issue and quantity.

7.4 National stock number (NSN). The following NSNs correspond to this CID. They may not be indicative of all possible NSNs associated with this document.

TABLE III. Cross reference of A-A-59231 to MIL-E-50011 types.

NSN	A-A-59231 Type	MIL-E-50011 Type
6810-00-075-6876	I	I
6810-00-270-6207	I	I
6810-00-281-2192	II	III
6810-00-922-0866	I	I

7.5 Sampling and testing precautions. This CID requires inspection and use of chemical material which is potentially dangerous to personnel. All applicable safety rules, regulations, and procedures must be followed in the sampling and testing of this material.

7.6 Significant figures. For the purpose of determining conformance with this CID, an observed or calculated value should be rounded off "to the nearest unit" in the last right-hand place of figures used in expressing the limiting value, in accordance with the rounding-off method of ASTM E 29.

MILITARY INTERESTS:

Custodians

Army - CR4
Air Force - 68

Reviewers

Army - SM

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - 10FTE

Preparing Activity:
DLA - GS

(Project 6810-1484)