



Standard Specification for Industrial Grade Ethylene Glycol¹

This standard is issued under the fixed designation E 1119; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers industrial grade ethylene glycol.

1.2 The following safety hazards caveat pertains only to the test method portion, Section 5, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 Review the current Materials Safety Data Sheets (MSDS) for detailed information concerning toxicity, first aid procedures, handling and safety precautions.

1.4 The following applies to all specified limits in this standard; for purposes of determining conformance with this standard, an observed value or a calculated value shall be rounded off “to the nearest unit” in the last right-hand digit used in expressing the specification limit, in accordance with the rounding-off method of Practice E 29.

1.5 The values stated in SI units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:*²

D 482 Test Method for Ash from Petroleum Products³

D 1078 Test Method for Distillation Range of Volatile Organic Liquids⁴

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)⁴

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products⁴

D 1722 Test Method for Water Miscibility of Water-Soluble Solvents³

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter³

D 4176 Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)³

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E 202 Test Methods for Analysis of Ethylene Glycols and Propylene Glycols⁴

E 300 Practice for Sampling Industrial Chemicals

E 1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration⁵

E 2409 Test Method for Glycol Impurities in Mono-, Di-, Tri- and Tetraethylene Glycol (Gas Chromatographic Method)⁵

3. Requirements

3.1 Industrial grade ethylene glycol shall conform to the specification chemical and physical requirements (see Table 1).

4. Sampling

4.1 Sample ethylene glycol in accordance with the appropriate sections of Practice E 300 for liquid samples.

5. Test Methods

5.1 Test each composite sample for chemical and physical requirements using the test methods specified in 3.1. Many of these methods, along with alternative test methods and technologies, can be found in Test Methods E 202. In case of a

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The precision estimates for the analysis of glycols using these test methods has not been determined.

⁴ The precision estimates for the analysis of glycols using these test methods are based on an interlaboratory study performed in 1962/63. Specific information for each method can be found in Test Methods E 202.

⁵ The precision estimates for the analysis of glycols using these test methods are to be determined or updated in an interlaboratory study planned for 2006/07.

TABLE 1 Chemical and Physical Specification Requirements

Specification Requirements	min	max	ASTM Test Method
Acidity as Acetic Acid, % mass (m/m)	—	0.005	D 1613
Appearance, Clear & Free from Suspended Matter	pass	—	D 4176
Color, platinum cobalt	—	10	D 1209
Glycols			E 2409
Ethylene glycol, % mass (m/m)	99.9	—	
Diethylene glycol, % mass (m/m)	—	0.6	
Other glycols, % mass (m/m)	—	0.1	
Water, % mass (m/m)	—	0.3	E 1064
Typical Properties	min	max	ASTM Test Method
Ash, % mass (m/m)	—	0.005	D 482
Distillation Range			D 1078
Initial Boiling Point, C	193	—	
Dry Point, C	—	204	
Relative Density at			
20/20 C	1.1151	1.1156	D 4052
or	or	or	
25/25 C	1.1129	1.1134	
Water Miscibility	miscible	—	D 1722

dispute, test methods identified in **3.1** of this specification shall be the preferred test method.

6. Packaging, Package Markings, and Transportation

6.1 The packaging, labeling, and transportation of commercial quantities shall conform to applicable federal, state, and

local regulation. Conformance is the responsibility of the manufacturer and the shipper.

7. Keywords

7.1 ethylene glycol; industrial grade

SUMMARY OF CHANGES

Committee E15 has identified the location of selected changes to this standard since the last issue (E 1119-97(2002)) that may impact the use of this standard. (Approved Jan. 1, 2007.)

(1) **D 4176** was added to Section **2** and the all Referenced Document titles were updated as well as footnotes 2, 3, 4 and 5.

(2) **Table 1** was updated.

(3) The last sentence in **5.1** was added.

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