



Standard Specification for Industrial Grade Ethylene Glycol¹

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

^{ε1} NOTE—Editorial change was made in Subsection 1.2 in May 2016.

1. Scope*

1.1 This specification covers industrial grade ethylene glycol.

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

1.3 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 E29.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 The following safety hazards caveat pertains only to the test methods 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.*

2. Referenced Documents

2.1 *ASTM Standards*:²

D482 Test Method for Ash from Petroleum Products

D1078 Test Method for Distillation Range of Volatile Organic Liquids

D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

¹ This specification is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.16 on Industrial and Specialty Product Standards.

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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.

D1722 Test Method for Water Miscibility of Water-Soluble Solvents
D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
E202 Test Methods for Analysis of Ethylene Glycols and Propylene Glycols
E300 Practice for Sampling Industrial Chemicals
E1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration
E2409 Test Method for Glycol Impurities in Mono-, Di-, Tri- and Tetraethylene Glycol and in Mono- and Dipropylene Glycol (Gas Chromatographic Method)
E2679 Test Method for Acidity in Mono-, Di-, Tri- and Tetraethylene Glycol by Non-Aqueous Potentiometric Titration
E2680 Test Method for Appearance of Clear, Transparent Liquids (Visual Inspection Procedure)

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 E300 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 E202. In case of a 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.

*A Summary of Changes section appears at the end of this standard

TABLE 1 Chemical and Physical Specification Requirements

Specification Requirements	min	max	ASTM Test Method
Acidity as Acetic Acid, % mass (m/m)	–	0.005	E2679
Appearance, Clear & Free from Suspended Matter	pass	–	E2680
Color, platinum cobalt	–	10	D1209
Glycols	99.0	–	E2409
Ethylene glycol, % mass (m/m)	–	0.6	
Diethylene glycol, % mass (m/m)	–	0.1	
Other glycols, % mass (m/m)	–	–	
Water, % mass (m/m)	–	0.3	E1064
Typical Properties	min	max	ASTM Test Method
Ash, % mass (m/m)	–	0.005	D482
Distillation Range	193	–	D1078
Initial Boiling Point, C	–	204	
Dry Point, C	–	–	
Relative Density at	1.1151	1.1156	D4052
20/20 C	or	or	
or	1.1129	1.1134	
25/25 C	–	–	
Water Miscibility	miscible	–	D1722

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 (E1119-07) that may impact the use of this standard.

- (1) Replaced two Standard Test Methods within the specification with test methods that have been recently adopted by E15 and reflect newer technologies used in the industry.
- (2) Section 2, Referenced Documents, was updated.
- (3) Table 1, Chemical and Physical Specification Requirements, was updated.

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