



Designation: E1119 – 23

Standard Specification for Industrial Grade Ethylene Glycol¹

This standard is issued under the fixed designation E1119; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification covers industrial grade ethylene glycol.

1.2 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.

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

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*² <https://www.astm.org/catalog/standards/sist/21f6f52d-44a5-4119-23>

D482 Test Method for Ash from Petroleum Products

D850 Test Method for Distillation of Industrial Aromatic Hydrocarbons and Related Materials

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

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

D8005 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

D8311 Test Method for Impurities in Monoethylene Glycol by Gas Chromatography with Normalization

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

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. Keywords

5.1 ethylene glycol; industrial grade

¹ This specification is under the jurisdiction of ASTM Committee D16 on Aromatic, Industrial, Specialty and Related Chemicals and is the direct responsibility of Subcommittee D16.14 on Alcohols & Glycols.

Current edition approved April 1, 2023. Published April 2023. Originally approved in 1986. Last previous edition approved in 2022 as E1119 – 22^{ε1}. DOI: 10.1520/E1119-23.

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.

*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 ^A
Glycols [†]			D8311 or E2409
Ethylene glycol, % mass (m/m)	99.0	–	
Diethylene glycol, % mass (m/m)	–	0.6	
Other glycols, % mass (m/m)	–	0.1	
Acidity as Acetic Acid, % mass (m/m)	–	0.005	E2679
Water, % mass (m/m)	–	0.3	E1064
Color, platinum cobalt	–	10	D5386 or D8005
Free from Suspended Matter			E2680
Typical Properties	min	max	ASTM Test Method
Ash, % mass (m/m)	–	0.005	D482
Distillation Range			D850
Initial Boiling Point, C	193	–	
Dry Point, C	–	204	
Relative Density at			D4052
20/20 C	1.1151	1.1156	
or		or	
25/25 C	1.1129	1.1134	
Water Miscibility	miscible	–	D1722

^A If more than one method is listed, the producer and user should agree on the referee method.

SUMMARY OF CHANGES

Committee D16 has identified the location of selected changes to this standard since the last issue (E1119 – 22^{e1}) that may impact the use of this standard. (Approved April 1, 2023.)

- (1) Deleted previously included Sections 1.2 and 1.5. (3) Added Footnote A to **Table 1**.
 (2) Added Test Method **D8311** to specification for determining purity.

Committee D16 has identified the location of selected changes to this standard since the last issue (E1119 – 09 (2015)^{e1}) that may impact the use of this standard. (Approved July 1, 2022.)

- (1) Updated order of specifications to purity, impurities, chemical properties, and physical properties. (3) Replaced distillation range test with D16 distillation range test.
 (2) Replaced Pt-Co color test with D16 Pt-Co color tests. (4) Deleted alternative test methods.

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