



Designation: E2470 – 22

Standard Specification for Polyester Grade Ethylene Glycol¹

This standard is issued under the fixed designation E2470; 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.

1. Scope*

1.1 This specification covers polyester 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 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *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

D482 Test Method for Ash from Petroleum Products

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

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.

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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

D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

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

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

E300 Practice for Sampling Industrial Chemicals

E394 Test Method for Iron in Trace Quantities Using the 1,10-Phenanthroline Method

E1064 Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration

E1615 Test Method for Determination of Trace Quantities of Iron by Visible Spectrophotometry

E2193 Test Method for Ultraviolet Transmittance of Monoethylene Glycol (using Ultraviolet Spectrophotometry)

E2313 Test Method for Aldehydes in Mono-, Di-, and Triethylene Glycol (using Spectrophotometry)

E2409 Test Method for Glycol Impurities in Mono-, Di-, Tri- and Tetraethylene Glycol and in Mono- and Dipropylene Glycol (Gas Chromatographic Method)

E2469 Test Method for Chloride in Mono-, Di- and Triethylene Glycol by Ion Chromatography

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 Polyester 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; polyester grade

*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
Glycols	99.9	–	E2409
Ethylene glycol, % mass (m/m)	–	0.05	
Diethylene glycol, % mass (m/m)			
Acidity as Acetic Acid, % mass (m/m)	–	0.002	E2679
Aldehydes as Acetaldehyde, ug/g	–	not reported	E2313
Chloride as Cl, ug/g	–	0.2	E2469
Appearance, Clear & Free from Suspended Matter	pass	–	E2680
Color, platinum cobalt	–	5	D5386, D8005
Iron, ug/g	–	0.1	E394, E1615
Ultraviolet Transmittance	70	–	E2193
at 220 nm, %T	90	–	
at 250 nm, %T	94	–	
at 275 nm, %T	98	–	
at 350 nm, %T			
Water, % mass (m/m)	–	0.05	E1064
Typical Properties	min	max	ASTM Test Method
Ash, % mass (m/m)	–	0.004	D482
Distillation Range	196	–	D850
Initial Boiling Point, C	–	200	
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

SUMMARY OF CHANGES

Subcommittee D16.14 has identified the location of selected changes to this standard since the last issue (E2470 – 09 (2015)^{e1}) that may impact the use of this standard.

- (1) Updated order of specifications to purity, impurities, chemical properties, and physical properties.
- (2) Replaced Pt-Co color test with D16 Pt-Co color tests.
- (3) Replaced distillation range test with D16 distillation range test.
- (4) Deleted alternative test methods.
- (5) Added Test Method **E394** for iron.

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