



Designation: **E2470 – 09 (Reapproved 2015) E2470 – 09 (Reapproved 2015)<sup>ε1</sup>**

## Standard Specification for Polyester Grade Ethylene Glycol<sup>1</sup>

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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

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<sup>ε1</sup> NOTE—Editorial change was made in Subsection 1.2 in May 2016.

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### 1. Scope\*

- 1.1 This specification covers polyester grade ethylene glycol.
- 1.2 Review the current ~~Materials~~ Safety Data Sheets (~~MSDS~~)(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, described in 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:<sup>2</sup>

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)  
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  
E1615 Test Method for Iron in Trace Quantities Using the FerroZine Method  
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 Tri-ethylene 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).

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<sup>1</sup> This specification is under the jurisdiction of ASTM Committee E15 on Industrial and Specialty Chemicals and is the direct responsibility of Subcommittee E15.02 on Product Standards.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto: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
Acidity as Acetic Acid, % mass (m/m)	—	0.002	E2679
Aldehydes as Acetaldehyde, ug/g	—	not reported	E2313
Appearance, Clear & Free from Suspended Matter	pass	—	E2680
Chloride as Cl, ug/g	—	0.2	E2469
Color, platinum cobalt	—	5	D1209
Glycols	99.9	—	E2409
Ethylene glycol, % mass (m/m)	—	0.05	
Diethylene glycol, % mass (m/m)	—	0.05	
Iron, ug/g	—	0.1	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	—	D1078
Initial Boiling Point, C	—	200	
Dry Point, C	—	—	
Relative Density at	1.1151	1.1156	D4052
20/20 C	—	—	
or	1.1129	1.1134	
25/25 C	—	—	
Water Miscibility	miscible	—	D1722

#### 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 test 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 methods.

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