



Standard Specification for Polyester Grade Ethylene Glycol¹

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1. Scope*

1.1 This specification covers polyester grade ethylene glycol.

1.2 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.*

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 E29.

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

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)

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 (Ultraviolet Spectrophotometric Method)

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

E2409 Test Method for Glycol Impurities in Mono-, Di-, Tri- and Tetraethylene 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. 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

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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.

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			E2409
Ethylene glycol, % mass (m/m)	99.9	—	
Diethylene glycol, % mass (m/m)	—	0.05	
Iron, ug/g	—	0.1	E1615
Ultraviolet Transmittance			E2193
at 220 nm, %T	70	—	
at 250 nm, %T	90	—	
at 275 nm, %T	94	—	
at 350 nm, %T	98	—	
Water, % mass (m/m)	—	0.05	E1064
Typical Properties	min	max	ASTM Test Method
Ash, % mass (m/m)	—	0.004	D482
Distillation Range			D1078
Initial Boiling Point, C	196	—	
Dry Point, C	—	200	
Relative Density at			
20/20 C	1.1151	1.1156	D4052
or	or	or	
25/25 C	1.1129	1.1134	
Water Miscibility	miscible	—	D1722

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.

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; polyester grade

SUMMARY OF CHANGES

Subcommittee E15.02 has identified the location of selected changes to this standard since the last issue (E2470-07) that may impact the use of this standard.

(1) Replaced two 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 revised.
- (3) Table 1 was revised.
- (4) Added Summary of Changes section.

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