



Standard Test Methods for Analysis of Ethylene Glycols and Propylene Glycols¹

This standard is issued under the fixed designation E202; 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 These test methods cover the chemical and physical analysis of the commonly available grades of ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, and dipropylene glycol. The key sections appear in the following order:

	Sections
Purity of Reagents	4
Specific Gravity	6 – 8
Distillation Range	9 – 11
Acidity	12 – 14
Water	15 – 17
Iron	18 – 20
Color	21 – 23
Gas Chromatographic Analysis	24 – 26
Alternative Test Methods	Appendix X1

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

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard with the exception of foot-pound for apparatus descriptions.

1.4 *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

D891 Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals

¹ These test methods are under the jurisdiction of ASTM Committee E15 on Industrial and Specialty Chemicals and are the direct responsibility of Subcommittee E15.01 on General 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.

D1078 Test Method for Distillation Range of Volatile Organic Liquids

D1193 Specification for Reagent Water

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

D1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products

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

E180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial and Specialty Chemicals (Withdrawn 2009)³

E203 Test Method for Water Using Volumetric Karl Fischer Titration

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

E611 Test Methods for Low Concentrations of Diethylene Glycol in Ethylene Glycol by Gas Chromatography

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

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

2.2 ASTM Adjuncts:

Adjunct ADJD6300 Determination of Precision and Bias for Use in Test Methods for Petroleum Products and Lubricants⁴

3. Significance and Use

3.1 These test methods measure certain chemical and physical properties of ethylene glycols and propylene glycols and

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from ASTM International Headquarters.

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