



Designation: E 1177 – 03

Standard Specification for Engine Coolant Grade Ethylene Glycol¹

This standard is issued under the fixed designation E 1177; 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 engine coolant grade ethylene glycol.

1.2 *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 The values stated in SI units are to be regarded as the standard.

2. Referenced Documents

2.1 ASTM Standards:

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)²

D 3634 Test Method for Trace Chloride Ion in Engine Coolants³

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter⁴

D 5827 Test Method for Determination of Chloride in Engine Coolant by Ion Chromatography³

D 5931 Test Method for Density and Relative Density of Engine Coolant Concentrates and Aqueous Engine Coolants by Digital Density Meter³

E 202 Test Methods for Analysis of Ethylene Glycols and Propylene Glycols³

E 300 Practice for Sampling Industrial Chemicals³

E 394 Test Method for Iron in Trace Quantities Using the 1,10-Phenanthroline Method³

3. Requirements

3.1 Engine coolant grade ethylene glycol shall conform to the chemical and physical property requirements in Table 1.

TABLE 1 Chemical and Physical Requirements

Requirement	Value	ASTM Test Method
Ethylene glycol, mass %	94.5 min	E 202
Diethylene glycol, mass %	5.0 max	E 202
Other glycols, mass %	0.2 max	E 202
Total glycols, mass %	99.5 min	E 202
Relative density, 20/20°C	1.113 to 1.116	D 4052, D 5931
Water, mass %	0.5 max	E 202
Acidity as acetic acid, mass %	0.01 max	E 202
Chloride ion, ppm	5 max	D 3634, D 5827
Iron, ppm	1.0 max	E 394
Appearance	Clear, no suspended matter	E 202
Color, Pt/Co scale	25 max	E 202, D 1209

4. Sampling

4.1 Sample ethylene glycol in accordance with the appropriate sections of Practice E 300 for liquid samples.

5. Packaging, Package Markings, and Transportation

5.1 The packaging, labeling, and transportation of commercial quantities shall conform to applicable federal, state, and local regulations. Conformance is the responsibility of the manufacturer and the shipper.

6. Keywords

6.1 ethylene; glycol; polyester

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² Annual Book of ASTM Standards, Vol 06.03.

³ Annual Book of ASTM Standards, Vol 15.05.

⁴ Annual Book of ASTM Standards, Vol 05.03.