



Standard Specification for Propylene Glycol Base Engine Coolant for Automobile and Light-Duty Service¹

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1. Scope

1.1 This specification covers requirements for propylene glycol-base engine coolant concentrate. When used at 40 to 70 % concentration in water, it will function effectively during both winter and summer. This material is intended to provide protection from freezing, boiling, and corrosion in automobile or other light-duty service cooling systems.

NOTE 1—This specification is based on the knowledge of the performance of engine coolants prepared from new or virgin ingredients. See Appendix X3 for more information.

1.2 This specification is in the units quoted. The values in parentheses are approximate equivalents given for information only.

1.3 *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.* A specific precautionary statement is given in X2.4.

NOTE 2—This specification applies to automobiles and light-duty service. A separate specification for a propylene glycol base coolant for heavy-duty engine service is under development.

2. Referenced Documents

2.1 ASTM Standards:

- D 512 Test Methods for Chloride Ion in Water²
- D 516 Test Method for Sulfate Ion in Water²
- D 1119 Test Method for Ash Content of Engine Coolants and Antirusts³
- D 1120 Test Method for Boiling Point of Engine Coolants³
- D 1121 Test Method for Reserve Alkalinity of Engine Coolants and Antirusts³
- D 1122 Test Method for Density or Relative Density of Engine Coolant Concentrates and Engine Coolants by the Hydrometer³
- D 1123 Test Method for Water in Engine Coolant Concentrate by the Karl Fischer Reagent Method³

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² Annual Book of ASTM Standards, Vol 11.01.

³ Annual Book of ASTM Standards, Vol 15.05.

- D 1126 Test Methods for Hardness in Water²
- D 1177 Test Method for Freezing Point of Aqueous Engine Coolants³
- D 1287 Test Method for pH of Engine Coolants and Antirusts³
- D 1293 Test Methods for pH of Water²
- D 1384 Test Method for Corrosion Test for Engine Coolants in Glassware³
- D 1881 Test Method for Foaming Tendencies of Engine Coolants in Glassware³
- D 1882 Test Method for Effect of Cooling System Chemical Solutions on Organic Finishes for Automotive Vehicles³
- D 1888 Test Methods for Particulate and Dissolved Matter, Solids, or Residue in Water⁴
- D 2570 Test Method for Simulated Service Corrosion Testing of Engine Coolants³
- D 2809 Test Method for Cavitation Erosion-Corrosion Characteristics of Aluminum Pumps with Engine Coolants³
- D 3321 Test Method for Use of the Refractometer for Field Test Determination of the Freezing Point of Aqueous Engine Coolants³
- D 3634 Test Method for Trace Chloride Ion in Engine Coolants³
- D 4327 Test Method for Anions in Water by Chemically Suppressed Ion Chromatography²
- D 4340 Test Method for Corrosion of Cast Aluminum Alloys in Engine Coolants Under Heat-Rejecting Conditions³
- D 4725 Terminology for Engine Coolants³
- D 5827 Standard Test Method for Analysis of Engine Coolant for Chloride and Other Anions by Ion Chromatography³
- D 5931 Density and Relative Density of Engine Coolant Concentrates and Aqueous Engine Coolants by Digital Density Meter³

3. General Requirements

3.1 Propylene glycol base engine coolant concentrate shall consist essentially of propylene glycol, and it shall contain suitable corrosion inhibitors, a foam suppressor, and sufficient water to dissolve the additives. Glycols other than propylene

⁴ Discontinued—See the 1990 Annual Book of ASTM Standards, Vol 11.01.

glycol may be present, but their combined total must be less than 1 %. All propylene glycol engine coolants shall conform to the general requirements given in Table 1.

3.2 When preparing solutions for actual service, use a municipal (treated) water, or a low-mineral content well water. If such water is not available, use deionized (demineralized) or distilled water. This practice will minimize the formation of hard water scale and prevent the introduction of mineral components, such as chlorides and sulfates, that can increase the corrosion rate of aluminum and iron. (See Appendix X2 for additional information.)

3.3 When installed in accordance with the vehicle manufacturers' recommendations and those on the product label, the product shall be suitable for use in a properly maintained cooling system (see Appendix X2, in normal passenger car service, for a minimum of 1 year without adversely affecting

fluid flow and heat transfer).

4. Detailed Requirements

4.1 Propylene glycol base engine coolant concentrate shall conform to the physical and chemical requirements prescribed in Table 2.

4.2 Propylene glycol base engine coolant concentrate shall conform to the performance requirements prescribed in Table 3.

4.3 The performance requirements given in Table 3 are to be met using the designated ASTM test methods, modified by fixing the volume percent propylene glycol concentrations as listed in the table. This modification is required in order to ensure that evaluations are at identical concentrations, regardless of the type of glycol used.

NOTE 3—Some current ASTM test methods require a glycol volume fraction based on freeze point of the coolant mix. These test methods were originally developed for ethylene glycol base products, which have different freeze points/percent glycol relationships than products formulated from other glycols.

5. Keywords

5.1 engine coolant; light-duty engine coolant; propylene glycol base engine coolant

TABLE 1 General Requirements

Property	Specified Values	ASTM Test Method
Color	distinctive ^A	...
Effect on nonmetals	no adverse effect	...

^A Purple is frequently used.