



Designation: D8085 – 24

Standard Specification for Non-Aqueous Engine Coolant for Automobile and Light-Duty Service¹

This standard is issued under the fixed designation D8085; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This specification covers the requirements for non-aqueous engine coolants used in automobiles or other light-duty service cooling systems. Non-aqueous coolants that conform to the specification will function effectively to provide protection against freezing, boiling, and corrosion without any further dilution. This specification is based upon the knowledge of the performance of non-aqueous engine coolants prepared from new individual or mixtures of virgin industrial grade diols.

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

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. See X1.4 for a specific warning statement.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

- D93 Test Methods for Flash Point by Pensky-Martens Closed Cup Tester
- D1119 Test Method for Percent Ash Content of Engine Coolants

¹ This specification is under the jurisdiction of ASTM Committee D15 on Engine Coolants and Related Fluids and is the direct responsibility of Subcommittee D15.22 on Non-Aqueous Coolants.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- D1120 Test Method for Boiling Point of Engine Coolants
- D1121 Test Method for Reserve Alkalinity of Engine Coolants and Antirusts
- D1122 Test Method for Relative Density of Engine Coolant Concentrates and Engine Coolants By The Hydrometer
- D1123 Test Methods for Water in Engine Coolant Concentrate by the Karl Fischer Reagent Method
- D1287 Test Method for pH of Engine Coolants and Antirusts
- D1882 Test Method for Effect of Cooling System Chemical Solutions on Organic Finishes for Automotive Vehicles
- D2983 Test Method for Low-Temperature Viscosity of Automatic Transmission Fluids, Hydraulic Fluids, and Lubricants using a Rotational Viscometer
- D3634 Test Method for Trace Chloride Ion in Engine Coolants
- D4725 Terminology for Engine Coolants and Related Fluids
- D5827 Test Method for Analysis of Engine Coolant for Chloride and Other Anions by Ion Chromatography
- D5931 Test Method for Density and Relative Density of Engine Coolant Concentrates and Aqueous Engine Coolants by Digital Density Meter
- D7840 Test Method for Foaming Tendencies of Non-Aqueous Engine Coolants in Glassware
- D7896 Test Method for Thermal Conductivity, Thermal Diffusivity, and Volumetric Heat Capacity of Engine Coolants and Related Fluids by Transient Hot Wire Liquid Thermal Conductivity Method
- D7934/D7934M Test Method for Corrosion of Cast Aluminum Alloys in Non-Aqueous Engine Coolants Under Heat-Rejecting Conditions (Withdrawn 2023)³
- D7935/D7935M Test Method for Corrosion Test for Non-Aqueous Engine Coolants in Glassware
- D8034/D8034M Test Method for Simulated Service Corrosion Testing of Non-Aqueous Engine Coolants
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

3. Terminology

3.1 *Definitions*—For definitions of general terms used in D15 standards, refer to Terminology D4725.

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

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *non-aqueous engine coolant, n*—a glycol, diol, triol, or mixtures thereof, based fluid used to transfer heat from an engine to the radiator containing less than 1.0 % water when formulated and intended for final use without dilution with water.

3.3 For definitions of other terms used in this specification, refer to Terminology [D4725](#).

4. General Requirements

4.1 Engine coolant consisting of a glycol, diol, triol, or mixtures thereof, and suitable corrosion inhibitors, dye, foam suppressor, if needed, bitterant, and less than 1.0 % water.

4.2 The engine coolant shall be in accordance with the general requirements given in [Table 1](#).

4.3 When installed in accordance with the vehicle manufacturer's recommendations and those on the product label, non-

aqueous engine coolants shall be suitable for use in a properly maintained cooling system ([Appendix X1](#)) in normal light-duty service for a minimum of one year without adversely affecting fluid flow and heat transfer.

5. Detailed Requirements

5.1 All non-aqueous engine coolants shall be in accordance with the physical and chemical requirements prescribed in [Table 2](#).

5.2 All non-aqueous engine coolants shall conform to the performance requirements listed in [Table 3](#).

6. Keywords

6.1 light duty engine coolant; non-aqueous engine coolant; waterless engine coolant

TABLE 1 General Requirements

Property	Specified Values	ASTM Test Method
Color	Distinctive	...
Effect on nonmetals	No adverse effect	Under consideration