



Standard Practice for Testing Engine Coolants in Car and Light Truck Service¹

This standard is issued under the fixed designation D 2847; 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 practice covers the procedure for evaluating corrosion protection and performance of an engine coolant in passenger car and light truck service.

NOTE 1—Coolant evaluation in vehicle service may require considerable time and expense; therefore, the product should be pretested in the laboratory for general acceptability. Tests may vary from small, closely controlled tests, to large tests where close control is not always practical.

1.2 The units quoted in this practice are to be regarded as standard. The values given in parentheses are approximate equivalents 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.* Specific precautionary statements are given in Section 7 and Note A1.1.

2. Referenced Documents

2.1 ASTM Standards:

- D 1121 Test Method for Reserve Alkalinity of Engine Coolants and Antirusts²
- D 1287 Test Method for pH of Engine Coolants and Antirusts²
- D 1384 Test Method for Corrosion Test for Engine Coolants in Glassware²
- D 1881 Test Method for Foaming Tendencies of Engine Coolants in Glassware²

3. Terminology

3.1 Definitions:

3.1.1 *engine coolant*—a heat exchange fluid with good low-temperature properties used to transfer heat from an engine to the radiator, usually containing specific amounts of glycols, water, corrosion inhibitors, and a foam suppressor.

¹ This practice is under the jurisdiction of ASTM Committee D-15 on Engine Coolants and is the direct responsibility of Subcommittee D15.10 on Dynamometer and Road Tests.

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² *Annual Book of ASTM Standards*, Vol 15.05.

4. Summary of Practice

4.1 Standard metal corrosion specimens, mounted in special holders, are installed in the coolant flow of the test vehicles. The coolant is tested at the recommended concentration in a specified test water. A minimum of five test vehicles per coolant is required. The test duration in terms of time or mileage should be consistent with the recommended service life of the coolant. The vehicle, corrosion specimens, and coolant are inspected according to a prescribed schedule to provide the basis for coolant evaluation.

4.2 A detailed cleaning and conditioning procedure is essential to obtain statistically significant and reproducible results. New, or nearly new, vehicles are preferred for field tests.

5. Significance and Use

5.1 The data obtained from the use of this practice will provide a basis for the evaluation of coolant performance in passenger car and light truck service. The data obtained may also be used to provide added significance to the data obtained from simulated service and engine dynamometer tests.

6. Apparatus

6.1 *Test Vehicles*— In selecting vehicles to be used to conduct field tests of coolants intended for automobiles and light trucks, consideration should be given to the current range of cooling system designs and materials. It is advisable to include both brazed aluminum and soldered copper/brass radiators as well as engines made of cast iron and those with aluminum heads or blocks, or both. A matrix including every possible variable combination of such features is not required, especially if vehicles representing the extremes are included in the field tests. This includes aluminum engine with aluminum radiator and heater core, cast iron engine with copper/brass radiator and heater core, and a cast iron engine with an aluminum radiator and a copper/brass heater core. Pressurized surge tanks as well as unpressurized coolant overflow reservoirs should be tested. Select vehicles that will be subjected to a wide range of operating schedules. These ranges should include high-usage vehicles which accumulate miles rapidly, vehicles operationally biased toward higher temperatures, and low-mileage vehicles (<1000 miles/month) that can develop accelerated localized corrosion due to non-flowing coolant. No