



Standard Test Method for Simulated Service Corrosion Testing of Engine Coolants¹

This standard is issued under the fixed designation D 2570; 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 test method evaluates the effect of a circulating engine coolant on metal test specimens and automotive cooling system components under controlled, essentially isothermal laboratory conditions.

1.2 This test method specifies test material, cooling system components, type of coolant, and coolant flow conditions that are considered typical of current automotive use.

1.3 The values stated in either SI or inch-pound units are to be regarded as the standard. The values given in parentheses are approximate equivalents for information only.

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.* Specific precautionary statements are given in Section 6.

2. Referenced Documents

2.1 ASTM Standards:

- D 1121 Test Method for Reserve Alkalinity of Engine Coolants and Antirusts²
- D 1176 Test Method for Sampling and Preparing Aqueous Solutions of Engine Coolants or Antirusts for Testing Purposes²
- D 1177 Test Method for Freezing Point of Aqueous Engine Coolants²
- D 1193 Specification for Reagent Water³
- D 1287 Test Method for pH of Engine Coolants and Antirusts²
- D 1384 Test Method for Corrosion Test for Engine Coolants in Glassware²
- D 2758 Test Method for Engine Coolants by Engine Dynamometer²
- D 2847 Practice for Testing Engine Coolants in Car and Light Truck Service²

D 3306 Specification for Ethylene Glycol Base Engine Coolant for Automobile and Light Duty Service²

D 4985 Specification for Low Silicate Ethylene Glycol Base Engine Coolant for Heavy Duty Engines Requiring an Initial Charge of Supplemental Coolant Additive (SCA)²

2.2 SAE Standard:⁴

SAE J20e Standard for Coolant System Hoses

3. Summary of Test Method

3.1 An engine coolant is circulated for 1064 h at 190°F (88°C) in a flow loop consisting of a metal reservoir, an automotive coolant pump, an automotive radiator, and connecting rubber hoses. Test specimens representative of engine cooling system metals are mounted inside the reservoir, which simulates an engine cylinder block. At the end of the test period, the corrosion-inhibiting properties of the coolant are determined by measuring the mass losses of the test specimens and by visual examination of the interior surfaces of the components.

4. Significance and Use

4.1 This test method, by a closer approach to engine cooling system conditions, provides better evaluation and selective screening of engine coolants than is possible from glassware testing (Test Method D 1384). The improvement is achieved by controlled circulation of the coolant, by the use of automotive cooling system components, and by a greater ratio of metal surface area to coolant volume.

4.2 Although this test method provides improved discrimination, it cannot conclusively predict satisfactory corrosion inhibition and service life. If greater assurance of satisfactory performance is desired, it should be obtained from full-scale engine tests (Test Method D 2758) and from field testing in actual service (Practice D 2847).

4.3 Significance and interpretation of the test and its limitations are discussed further in Appendix X1.

4.4 If this test method is used as a qualification test for Specification D 3306 and Specification D 4985, the recommended components listed in Section 5 shall be used. If it is not

¹ This test method is under the jurisdiction of ASTM Committee D15 on Engine Coolants and is the direct responsibility of Subcommittee D15.09 on Simulated Service Tests.

Current edition approved April 10, 1996. Published June 1996. Originally published as D 2570 – 66 T. Last previous edition D 2570 – 94.

² Annual Book of ASTM Standards, Vol 15.05.

³ Annual Book of ASTM Standards, Vol 11.01.

⁴ Available from Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096.

