



Standard Test Method for Corrosion Test for Engine Coolants in Glassware¹

This standard is issued under the fixed designation D1384; 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 covers a simple beaker-type procedure for evaluating the effects of engine coolants on metal specimens under controlled laboratory conditions (see [Appendix X1](#)).

NOTE 1—For more information on engine coolants, see (Refs [1-8](#)).²

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are 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 hazards statements are given in [10.1.7.2](#), [10.1.7.3](#), and [10.1.7.4](#).

2. Referenced Documents

2.1 *ASTM Standards:*³

[B32 Specification for Solder Metal](#)

[B36/B36M Specification for Brass Plate, Sheet, Strip, And Rolled Bar](#)

[D1176 Practice for Sampling and Preparing Aqueous Solutions of Engine Coolants or Antirusts for Testing Purposes](#)

[E1 Specification for ASTM Liquid-in-Glass Thermometers](#)

[E178 Practice for Dealing With Outlying Observations](#)

[E230 Specification and Temperature-Electromotive Force \(EMF\) Tables for Standardized Thermocouples](#)

¹ This test method is under the jurisdiction of ASTM Committee D15 on Engine Coolants and Related Fluids and is the direct responsibility of Subcommittee D15.06 on Glassware Performance Tests.

Current edition approved April 1, 2012. Published June 2012. Originally approved in 1955. Last previous edition approved in 2005 as D1384 – 04 (2005). DOI: 10.1520/D1384-05R12.

² The boldface numbers in parentheses refer to the list of references at the end of this standard.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[G31 Guide for Laboratory Immersion Corrosion Testing of Metals](#)

2.2 *ASTM Adjuncts:*

All-glass apparatus for corrosion test (2 drawings)⁴

3. Summary of Test Method

3.1 In this test method, specimens of metals typical of those present in engine cooling systems are totally immersed in aerated engine coolant solutions for 336 h at 88°C (190°F). The corrosion-inhibitive properties of the test solution are evaluated on the basis of the weight changes incurred by the specimens. Each test is run in triplicate, and the average weight change is determined for each metal. A single test may occasionally be completely out of line (see [11.2](#)).

4. Significance and Use

4.1 This test method will generally distinguish between coolants that are definitely deleterious from the corrosion standpoint and those that are suitable for further evaluation. However, the results of this test method cannot stand alone as evidence of satisfactory corrosion inhibition. The actual service value of an engine coolant formulation can be determined only by more comprehensive bench, dynamometer, and field tests.

5. Apparatus

5.1 *Container*—A 1000-mL, tall-form, spoutless beaker, made of heat-resistant glass, for containing the engine coolant solution and test specimens. The beaker shall be tightly closed with a No. 15 rubber stopper, having drill holes to accommodate a water condenser, an aerator tube, and a thermometer as shown in [Fig. 1](#). Optionally, an all-glass apparatus may be used.⁴

5.2 *Condenser*—A water condenser of the reflux, glass-tube type, having a 400-mm (16-in.) condenser jacket.

⁴ Details available from: ASTM International Headquarters. Order Adjunct No. [ADJD1384](#). Original adjunct produced in (1980).