



Standard Test Method for Corrosion Test for Non-Aqueous Engine Coolants in Glassware¹

This standard is issued under the fixed designation D7935/D7935M; 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 non-aqueous engine coolants on metal specimens under controlled laboratory conditions (see [Appendix X1](#)).

NOTE 1—For more information on aqueous and non-aqueous engine coolants, see (Refs [1-9](#)).²

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard. Some values have only SI units because the inch-pound equivalents are not used in practice.

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.* Some 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

[D1384](#) Test Method for Corrosion Test for Engine Coolants in Glassware

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

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 [D15.22](#) on Non-Aqueous Coolants.

Current edition approved June 1, 2014. Published August 2014. DOI: 10.1520/D7935_D7935M-14

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.

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

[E230/E230M](#) Specification and Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples

2.2 ASTM Adjunct:⁴

All-glass apparatus for corrosion test (2 drawings)

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 96°C [205°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 [11.3](#)).

4. Significance and Use

4.1 This test method will generally distinguish between non-aqueous 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 non-aqueous 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 temperature measuring instrument 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 Available from ASTM International Headquarters. Order Adjunct No. [ADJD1384](#). Original adjunct produced in 1980.