



Designation: D1119 – 22

Standard Test Method for Percent Ash Content of Engine Coolants¹

This standard is issued under the fixed designation D1119; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of ash content after ignition of commercial engine coolants and antirusts, as packaged or after use.

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.* Specific warning statements are given in [7.1](#) and [7.3](#).

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

[D1176](#) Practice for Sampling and Preparing Aqueous Solutions of Engine Coolants or Antirusts for Testing Purposes
[D3306](#) Specification for Glycol Base Engine Coolant for Automobile and Light-Duty Service

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *ash, n*—the components of an engine coolant not removed by ignition at 750 °C.

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 [D15.04](#) on Chemical Properties.

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² 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.

4. Summary of Test Method

4.1 To determine the ash content, the coolant is weighed, evaporated or charred, and finally ignited at a strong heat.

5. Significance and Use

5.1 This test method is designed to aid in identifying types of coolants. While the ash is primarily due to the inorganic inhibitors used, it is not a measure of the total inhibitor concentration because of the loss of organic inhibitors.

5.2 An ash content greater than that stated in Specification [D3306](#) may indicate a salt-based product.

6. Apparatus

6.1 *Crucible*, high-silica glass, porcelain, or platinum of 50 mL capacity, equipped with cover.

6.2 *Muffle furnace*.

7. Procedure

7.1 Place the crucible in a muffle furnace set to a temperature between 750 °C and 900 °C for 15 min and allow to cool to room temperature in a desiccator; then weigh to the nearest 0.1 mg. (**Warning**—When handling a hot crucible, use proper caution and safety equipment such as safety glasses, gloves, tongs, etc.)

7.2 Weigh 20 g ± 0.1 g of well-mixed coolant (**Note 1**), including all phases, into the crucible. Sample in accordance with Practice [D1176](#). Record the weight of the sample to the nearest 0.1 mg.

NOTE 1—The weight of sample taken is suitable for most commercial products. If there is reason to believe that the ash content may be high, the sample size may be decreased to 5 g or 10 g ± 0.1 g.

7.3 Place the covered crucible in a cool small sand bath in a vented hood. Raise the temperature by any convenient means until the liquid is evaporated. If the sample ignites, remove the heat source until the burning ceases; then reapply the heat. (**Warning**—Many types of coolant have tendencies to spatter upon heating, with consequent loss of sample and erroneous results. All precautions consistent with good laboratory practice should be followed.) (**Warning**—Avoid inhalation of the fumes.)