



Standard Test Method for SEPARATION OF TETRAETHYLLEAD AND TETRAMETHYLLEAD IN GASOLINE¹

This standard is issued under the fixed designation D 1949; 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.

NOTE—New Section 1.2 was editorially added in October 1984.

1. Scope

1.1 This test method covers the separation of tetraethyllead and tetramethyllead when both are present in a gasoline blend. It also provides a qualitative test to confirm the suspected presence or absence of either of these compounds or the mixed alkyl lead antiknock compounds in gasoline blends or other volatile distillates.

NOTE 1—The hydrocarbon composition of the gasoline does not affect the completeness of the separation.

1.2 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see Sections 6.1, and 6.2.

2. Applicable Documents

2.1 ASTM Standards:

- D 2547 Test Method for Lead in Gasoline, Volumetric Chromate Method²
- D 3237 Test Method for Lead in Gasoline by Atomic Absorption Spectrometry³
- D 3341 Test Method for Lead in Gasoline—Iodine Monochloride Method³
- D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products³

3. Summary of Method

3.1 The sample is separated into two fractions by distillation after dilution with a xylene-toluene mixture. The distillate or fraction that distills

below 133°C contains the tetramethyllead and the more volatile portions of the mixed lead alkyls; the residue or fraction that distills above 133°C contains the tetraethyllead and the less volatile portion of the mixed lead alkyls. The lead in each fraction is determined by either method for lead in gasoline: ASTM Method D 3237, Test D 3341, and D 2547.

4. Significance and Use

4.1 This test method provides a means for determining the concentrations of the two lead compounds in the gasoline.

5. Apparatus

5.1 *Distillation Apparatus*, as shown in Fig. 1. A standard-taper 12/5 ball-and-socket joint may be substituted for greater flexibility at the side arm-condenser connection.

5.2 *Glass Beads*, 5-mm. Other size beads may alter the distillation characteristics.

5.3 *Heating Mantle*, to fit the 200-mL distillation flask.

5.4 *Hengar Granules*, plain.

5.5 *Graduated Cylinder*, 100-mL, glass-stoppered.

5.6 *Pipet*, 100-mL.

5.7 *Thermometer*, -10 to +250°C, with standard taper 10/30, and bulb 76 mm below the

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.03.

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² *Annual Book of ASTM Standards*, Vol 05.02.

³ *Annual Book of ASTM Standards*, Vol 05.03.