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American National Standard Z11.48

American National Standards Institute

Méthod 5501—Federal Test

Method Standard No. 791b

Deutsche Norm Din 51 769 Blatt 1 und Blatt 3

British Standard 2878

DISCONTINUED

Standard Method of Test for LEAD IN GASOLINE, GRAVIMETRIC METHOD¹

This Standard is issued under the fixed designation D 526; 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. This is also a standard of the Institute of Petroleum issued under the fixed designation IP 96. The final number indicates the year of last revision.

This method was adopted as a joint ASTM-IP standard in 1964.

1. Scope

1.1 This method covers the gravimetric determination of the total lead content of gasoline and other volatile distillates blended with lead alkyls (tetraethyllead, tetramethyllead, dimethyldiethyllead, methyltriethyllead, or mixtures thereof) within the concentration range of 0.2 to 5.0 g of lead/U.S. gal, 0.24 to 6.0 g lead/U.K. gal, or 0.05 to 1.3 g lead/liter.

NOTE 1—ASTM Method D 2547, Test for Lead in Gasoline, Volumetric Chromate Method,² is also available for this test.

NOTE 2—The method has not been cooperatively tested below 0.2 g/U.S. gal.

2. Summary of Method

2.1 The lead alkyl is converted to lead chloride and extracted from the gasoline by refluxing with concentrated hydrochloric acid. The acid extract is evaporated to dryness, any organic material present is removed by oxidation with nitric acid, and the lead is determined gravimetrically as lead chromate.

3. Apparatus

3.1 *Extraction Apparatus*, fabricated from borosilicate glass, conforming to the dimensions given in Fig. 1, and consisting of the following component parts:

3.1.1 *Boiling Flask*, 500-ml capacity.

3.1.2 *Hopkins Reflux Condenser*, having a vapor outlet connected by a rubber tube to an outside vent or to a suction hood.

3.1.3 *Thistle Tube*, approximately 70-ml capacity, with a line to indicate approximately the 50-ml level.

3.1.4 *Heating Tube*, containing a chimney

for increasing convection in the liquid.

3.1.5 *Heating Coil*, 250-W, consisting of 9 ft (2.4 m) of No. 30 B & S gage (0.25 mm) or equivalent Nichrome wire.

3.1.6 *Rheostat*, 25- Ω resistance, 2-A minimum capacity, for regulating the heater.

3.2 *Filtering Crucible*, of approximately 25-ml capacity No. 4 porosity sintered glass, or 25-ml porcelain crucibles, having porous bottoms equivalent to Selas No. 3001, or 25-ml Gooch crucibles, capable of retaining a fine precipitate.

4. Reagents and Materials

4.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.³ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

4.2 *Purity of Water*—Unless otherwise in-

¹ This method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants.

Current edition effective Sept. 11, 1970. Originally issued 1939. Replaces D 526-66.

In the IP, this method is under the jurisdiction of the Standardization Committee.

In 1970 the scope of the method was extended down to 0.2 g of lead per U.S. gallon.

² 1974 Annual Book of ASTM Standards, Part 24.

³ "Reagent Chemicals, American Chemical Society Specifications," Am. Chemical Soc., Washington, D.C. For suggestions on the testing of reagents not listed by the American Chemical Society, see "Reagent Chemicals and Standards," by Joseph Rosin, D. Van Nostrand Co., Inc., New York, N.Y., and the "United States Pharmacopeia."