



Standard Test Method for Trace Chloride in Liquid Aromatic Hydrocarbons¹

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1. Scope

1.1 This test method covers the determination of total chloride (organic and inorganic) in liquid aromatic hydrocarbons and cyclohexane.

1.2 The test method is applicable to samples with chloride concentrations of 1 to 25 mg/kg.

1.3 Bromides and iodides, if present, will be calculated as chlorides.

1.4 Materials, such as styrene, that are polymerized by sodium biphenyl reagent cannot be analyzed by this test method.

1.5 The following applies to all specified limits in this test method: for purposes of determining conformance with this test method, an observed value or a calculated value shall be rounded off "to the nearest unit" in the last right-hand digit used in expressing the specification limit, in accordance with the rounding-off method of Practice E 29.

1.6 *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.* For a specific hazard statement, see Section 7.

2. Referenced Documents

2.1 ASTM Standards:

D 891 Test Method for Specific Gravity, Apparent, of Liquid Industrial Chemicals²

D 1193 Specification for Reagent Water³

D 3437 Practice for Sampling and Handling Liquid Cyclic Products⁴

D 3505 Test Method for Density or Relative Density of Pure Liquid Chemicals⁴

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter⁵

E 29 Practice for Using Significant Digits in Test Data to

Determine Conformance with Specifications⁶

2.2 Other Documents:

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200⁷

3. Summary of Test Method

3.1 A known amount of hydrocarbon sample is transferred into a separatory funnel containing toluene. Sodium biphenyl reagent is added to convert organic halogens into inorganic halides. The excess reagent is decomposed with water and the phases are separated. The aqueous phase is acidified, washed, and concentrated. Acetone is added and the solution is titrated with silver nitrate solution.

4. Significance and Use

4.1 Organic and inorganic chlorine compounds can have a deleterious effect on equipment and reactions in processes involving aromatic hydrocarbons.

4.2 Maximum chloride levels are often specified for process streams and for aromatic hydrocarbon products.

5. Apparatus

5.1 *Titration*, potentiometric, recording, + 2000 mV range, 1 mV resolution with dispenser having a volume readout of 0.00 to 9.99 mL or 0.00 to 99.99 mL and 0.01 % resolution.

5.2 *Electrode*, glass, reference.

5.3 *Electrode*, silver, billet type.

6. Reagents and Materials

6.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁸ 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.

¹ This test method is under the jurisdiction of ASTM Committee D-16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.0E on Instrumental Analysis.

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² *Annual Book of ASTM Standards*, Vol 15.05.

³ *Annual Book of ASTM Standards*, Vol 11.01.

⁴ *Annual Book of ASTM Standards*, Vol 06.04.

⁵ *Annual Book of ASTM Standards*, Vol 05.02.

⁶ *Annual Book of ASTM Standards*, Vol 14.02.

⁷ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁸ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopoeia and National Formulary*, U.S. Pharmaceutical Convention, Inc. (USPC), Rockville, MD.