



Designation: D2384 – 23

Standard Test Methods for Traces of Volatile Chlorides in Butane-Butene Mixtures¹

This standard is issued under the fixed designation D2384; 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 These test methods cover the determination of the total volatile organic chlorides in concentrations from 10 mg/kg to 100 mg/kg in butane-butene mixtures. The amperometric finish is not directly applicable in the presence of other substances that combine with silver ion or oxidize chloride ion in dilute acid solution. Bromides, sulfides, ammonia, tobacco smoke, and more than 25 μg of hydrogen peroxide in the test solution interfere in the spectrophotometric procedure.

1.2 Dissolved sodium chloride is not quantitatively determined using these test methods.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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 Sections 5, 8, 11, 14, 19, and Annex A1.

1.4.1 *The user is advised to obtain LPG safety training for the safe operation of this test method procedure and related activities.*

1.5 *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

D329 Specification for Acetone

¹ These test methods are under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and are the direct responsibility of Subcommittee D02.D0.04 on C4 and C5 Hydrocarbons.

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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.

D1266 Test Method for Sulfur in Petroleum Products (Lamp Method)

3. Summary of Test Methods

3.1 *Combination Test Methods*—Either the lamp or oxy-hydrogen test method may be used for combustion.

NOTE 1—Lamp combustion is readily applicable to multiple testing. Although an oxy-hydrogen burner does not lend itself to multiple testing, it affords much more rapid analysis for a single sample than does the lamp combustion.

3.1.1 *Lamp Combustion*—The sample is burned in an atmosphere of carbon dioxide and oxygen or in purified air; the halogen-containing combustion products are absorbed in dilute sodium carbonate solution.

3.1.2 *Oxy-Hydrogen Combustion*—The sample is burned in an oxy-hydrogen atomizer burner, and the combustion products are absorbed in a dilute solution of sodium carbonate.

3.2 *Finishes*—Either the amperometric titration or spectrophotometric finish may be used for the chloride ion determination.

3.2.1 *Amperometric Titration*—The chloride ion in aqueous solution is titrated amperometrically with standard silver nitrate solution, using a saturated calomel electrode as reference electrode. The diffusion currents are plotted against the corresponding volumes of silver nitrate solution used; the end point is taken as the intersection of the two straight-line portions of the curve.

3.2.2 *Spectrophotometric Finish*—Chloride ion in the absorber solution is determined by reaction with mercuric thiocyanate to release thiocyanate, which forms a reddish orange complex with Fe^{+++} . The intensity of the color is measured at 460 nm with a spectrophotometer or filter photometer.

4. Significance and Use

4.1 These test methods are used to determine trace amounts of volatile chlorides in butane-butene mixtures. Such information is valuable in cases where chloride is deleterious in the use of this product; also, chloride contributes to corrosion problems in processing units in instances where further processing of this material is involved.

5. Purity of Reagents

5.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that

*A Summary of Changes section appears at the end of this standard