



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

This standard is issued under the fixed designation D 2384; 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 approval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε¹ NOTE—Warning notes were placed in the text editorially in November 2000.

1. Scope

1.1 These test methods cover the determination of the total volatile organic chlorides in concentrations from 10 to 100 ppm 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 *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.* Specific precautionary statements are given in Sections 5, 8, 11, 14, 19, and Annex A1.

2. Referenced Documents

2.1 ASTM Standards:

D 329 Specification for Acetone²

D 1266 Test Method for Sulfur in Petroleum Products (Lamp Method)³

3. Summary of Test Methods

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

NOTE 1—Lamp combustion is readily applicable to multiple testing.

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

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² *Annual Book of ASTM Standards*, Vol 06.04.

³ *Annual Book of ASTM Standards*, Vol 05.01.

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.

