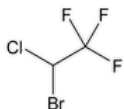


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Halothane



$C_2HBrClF_3$ 197.38

Ethane, 2-bromo-2-chloro-1,1,1-trifluoro-, (±)-;

(±)-2-Bromo-2-chloro-1,1,1-trifluoroethane CAS RN®: 151-67-7; UNII: UQT9G45D1P.

DEFINITION

Halothane contains NLT 0.008% and NMT 0.012% of thymol, by weight, as a stabilizer.

IDENTIFICATION

Change to read:

- **A.** ▲ [SPECTROSCOPIC IDENTIFICATION TESTS \(197\)](#), [Infrared Spectroscopy: 197S](#) ▲ (CN 1-MAY-2020)

Sample solution: 1 in 25

Medium: Carbon disulfide

Acceptance criteria: Meets the requirements

OTHER COMPONENTS

• THYMOL CONTENT

Buffer: Use pH 8.0 Alkaline Borate Buffer (see [Reagents, Indicators, and Solutions—Solutions](#)).

Chlorimide solution: 4 mg/mL of 2,6-dibromoquinonechlorimide in dehydrated alcohol. [NOTE—Prepare a fresh solution for each assay.]

Standard thymol solution: 0.1 mg/mL of thymol in 0.25 N sodium hydroxide

Standard solution A: Pipet 1 mL of *Standard thymol solution* into a 100-mL volumetric flask, and add 0.25 N sodium hydroxide to make the final volume 5 mL. Add 10 mL of *Buffer*, mix by gentle swirling, and add 1 mL of *Chlorimide solution*. Allow to stand for 15 min, accurately timed. Add 3 mL of 0.25 N sodium hydroxide, and dilute with water to volume.

Standard solution B: Pipet 3 mL of *Standard thymol solution* into a 100-mL volumetric flask. Proceed as directed for *Standard solution A*, beginning with “add 0.25 N sodium hydroxide...”.

Standard solution C: Pipet 5 mL of *Standard thymol solution* into a 100-mL volumetric flask. Proceed as directed for *Standard solution A*, beginning with “Add 10 mL of *Buffer*...”.

Sample solution: Place 2 mL of Halothane in a 100-mL volumetric flask containing 5 mL of 0.25 N sodium hydroxide, and mix by gentle swirling. Evaporate the halothane under a stream of nitrogen, and add 10 mL of *Buffer* and 1 mL of *Chlorimide solution*. Swirl gently, and allow to stand for 15 min, accurately timed. Add 3 mL of 0.25 N sodium hydroxide, and add water to volume.

Blank solution: Pipet 5.0 mL of 0.25 N sodium hydroxide into a 100-mL volumetric flask. Add 10 mL of *Buffer*, mix by gentle swirling, and add 1 mL of *Chlorimide solution*. Allow to stand for 15 min, accurately timed. Add 3 mL of 0.25 N sodium hydroxide, and dilute with water to volume.

Instrumental conditions

(See [Ultraviolet-Visible Spectroscopy \(857\)](#).)

Mode: Vis

Analytical wavelength: 590 nm

Analysis

Samples: *Standard solution A*, *Standard solution B*, *Standard solution C*, *Sample solution*, and *Blank solution*

Measure the absorbances of *Standard solution A*, *Standard solution B*, and *Standard solution C* relative to the *Blank solution*. Plot the readings, and draw the curve of best fit. Read the absorbance of the *Sample solution*, and by reference to the Standard thymol curve, calculate the percentage of thymol in the weight of Halothane taken.

Acceptance criteria: 0.008%–0.012%, by weight

IMPURITIES

• LIMIT OF NONVOLATILE RESIDUE

Analysis: Evaporate 50 mL in a tared dish on a steam bath to dryness, dry the residue at 105° for 2 h, and weigh.

Acceptance criteria: NMT 1 mg of the residue remains.

• CHLORIDE AND BROMIDE

Analysis: Shake 25 mL with 25 mL of water for 5 min, and allow the liquids to separate completely. Draw off the water layer, and to 10 mL add 1 drop of nitric acid and 5 drops of silver nitrate TS.

Acceptance criteria: No opalescence is produced.

• ORGANIC IMPURITIES

Standard solution: Add 1.0 µL of 1,1,2-trichloro-1,2,2-trifluoroethane to 20.0 mL of Halothane.

Sample solution: Halothane

Chromatographic system

(See [Chromatography \(621\)](#), [System Suitability](#).)

Mode: GC

Detector: Flame ionization

Column: 3-m × 2-mm stainless steel; 20% G24 on support S1AB

Temperatures

Column: 60°

Injection port: 200°

Detector: 200°

Carrier gas: Nitrogen

Flow rate: 15 mL/min

Injection volume: 2 µL

System suitability

Sample: *Standard solution*

[NOTE—The retention times for 1,1,2-trichloro-1,2,2-trifluoroethane and halothane are 5 and 13 min, respectively.]

Analysis

Samples: *Standard solution* and *Sample solution*

Acceptance criteria: 0.005%; the total area of all peaks (except that of halothane) recorded from the *Sample solution* does not exceed that due to the added 1,1,2-trichloro-1,2,2-trifluoroethane in the *Standard solution*.

SPECIFIC TESTS

• ACIDITY OR ALKALINITY

Analysis: Shake 20 mL with 20 mL of carbon dioxide-free water for 3 min, and allow the layers to separate.

Acceptance criteria: The aqueous layer requires NMT 0.1 mL of 0.010 N sodium hydroxide or NMT 0.6 mL of 0.010 N hydrochloric acid for neutralization, using bromocresol purple TS as the indicator.

• [DISTILLING RANGE, Method II \(721\)](#): NLT 95% distills within a 1° range between 49° and 51°, and NLT 100% distills between 49° and 51°, a correction factor of 0.040°/mm being applied as necessary.

• [REFRACTIVE INDEX \(831\)](#): 1.369–1.371 at 20°

• [SPECIFIC GRAVITY \(841\)](#): 1.872–1.877 at 20°

• [WATER DETERMINATION, Method I \(921\)](#): NMT 0.03%

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers, preferably of Type NP glass, and avoid exposure to excessive heat. Dispense it only in the original container.

• [USP REFERENCE STANDARDS \(11\)](#)

[USP Halothane RS](#)

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
HALOTHANE	Documentary Standards Support	SM52020 Small Molecules 5

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:

Pharmacopeial Forum: Volume No. Information currently unavailable

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