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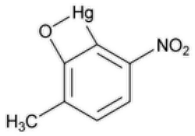
Nitromersol



$C_7H_5HgNO_3$ 351.71

7-Oxa-8-mercurabicyclo[4.2.0]octa-1,3,5-triene, 5-methyl-2-nitro-;

5-Methyl-2-nitro-7-oxa-8-mercurabicyclo[4.2.0]octa-1,3,5- triene CAS RN®: 133-58-4; UNII: RU6242GP15.

DEFINITION

Nitromersol, dried at 105° for 2 h, contains NLT 98.0% and NMT 100.5% of nitromersol ($C_7H_5HgNO_3$).

IDENTIFICATION

- **A.**

  Sample solution: 1 mg/mL in 1 N sodium hydroxide

  Analysis: The *Sample solution* possesses a reddish orange color. Add 3 N hydrochloric acid.

  Acceptance criteria: The reddish orange color disappears, and a yellowish, flocculent precipitate forms.

- **B.**

  Sample solution: Dissolve 250 mg of Nitromersol in 2.5 mL of 1 N sodium hydroxide, and dilute with water to 20 mL.

  Analysis 1: Add 3 mL of 3 N hydrochloric acid to the *Sample solution*.

  Acceptance criteria 1: A yellowish precipitate is formed.

  Analysis 2: Filter the solution obtained after *Analysis 1*. The filtrate is nearly colorless or slightly yellow. Retain the filtrate for the test for *Mercury Ions*. Dissolve the precipitate in 20 mL of water to which 2.5 mL of 1 N sodium hydroxide has been added. Add 0.5 g of sodium hydrosulfite, and heat to boiling.

  Acceptance criteria 2: A heavy deposit of metallic mercury is formed.

ASSAY

- **Procedure**

  Sample: 200 mg of Nitromersol, previously ground to a fine powder and dried

  Titrimetric system

  Mode: Direct titration

  Titrant: 0.1 N ammonium thiocyanate VS

  Endpoint detection: Visual

  Analysis: Transfer the *Sample* to a 500-mL Kjeldahl flask. Add 15 mL of sulfuric acid, and digest cautiously with occasional swirling over a flame until the solution becomes a clear, light yellowish brown. Cool, and add, dropwise, enough 30% hydrogen peroxide to decolorize the solution. Digest for 2–3 min, adding more hydrogen peroxide if necessary, to produce a colorless solution. Cool, dilute with water to 100 mL, and add potassium permanganate TS until a permanent pink color persists on heating. Then add hydrogen peroxide TS, dropwise, until the color is completely discharged. Cool, and add 5 mL of nitric acid that has been diluted with 10 mL of water. Add 5 mL of ferric ammonium sulfate TS, and titrate with *Titrant*. Each mL of 0.1 N ammonium thiocyanate is equivalent to 17.59 mg of nitromersol ($C_7H_5HgNO_3$).

  Acceptance criteria: 98.0%–100.5% on the dried basis

IMPURITIES

- **Residue on Ignition (281):** NMT 0.1%
- **Mercury Ions**

  Sample solution: The filtrate obtained in *Identification* test *B, Analysis 2*

Analysis: Add an equal volume of hydrogen sulfide TS to the *Sample solution*.

Acceptance criteria: No darkening in color is produced, although a small amount of a flocculent, light yellow precipitate may form.

• **Alkali-Insoluble Substances**

Sample: 1.0 g of Nitromersol

Analysis: Add 7 mL of 1 N sodium hydroxide to the *Sample*, then dilute with water to 20 mL. The resulting solution, upon standing in a glass-stoppered vessel in the dark for 24 h, shows NMT a slight amount of insoluble material. Collect the insoluble residue, if any, in a tared filter crucible, wash the residue with warm water, and dry at 105° for 1 h.

Acceptance criteria: 0.1%; the weight of the insoluble material is NMT 1 mg.

• **Uncombined Nitrocresol**

Sample: 500 mg of Nitromersol

Analysis: Shake the *Sample* with 50 mL of benzene, filter, evaporate the filtrate in a tared dish to dryness, and dry the residue at 80° for 2 h.

Acceptance criteria: 1%; the weight of the residue is NMT 5 mg.

SPECIFIC TESTS

• **Loss on Drying** ⟨731⟩

Analysis: Dry at 105° for 2 h.

Acceptance criteria: NMT 1.0%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight, light-resistant containers.

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
NITROMERSOL	Documentary Standards Support	SM12020 Small Molecules 1
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM12020 Small Molecules 1

Chromatographic Database Information: Chromatographic Database

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