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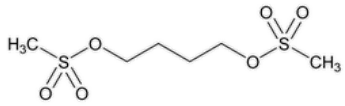
Busulfan



$C_6H_{14}O_6S_2$ 246.30

1,4-Butanediol, dimethanesulfonate;

1,4-Butanediol dimethanesulfonate CAS RN®: 55-98-1; UNII: G1LN9045DK.

DEFINITION

Busulfan contains NLT 98.0% and NMT 100.5% of busulfan ($C_6H_{14}O_6S_2$), calculated on the dried basis.

IDENTIFICATION

- **A.**

  Sample: 100 mg

  Analysis: Fuse the *Sample* with 100 mg of potassium nitrate and a pellet of potassium hydroxide weighing 250 mg. Cool, dissolve the residue in water, acidify with 3 N hydrochloric acid, and add a few drops of barium chloride TS.

  Acceptance criteria: A white precipitate is formed.

- **B.**

  Sample: 100 mg

  Analysis: Add 10 mL of water and 5 mL of 1 N sodium hydroxide to the *Sample*. Heat until a clear solution is obtained.

  Acceptance criteria: An odor characteristic of methanesulfonic acid is perceptible.

- **C.**

  Sample solution: Use the solution from the *Analysis* in *Identification* test *B*.

  Analysis: Cool the *Sample solution*, and divide it into two equal portions. To the first portion add 1 drop of potassium permanganate TS. Acidify the second portion of the solution with 2 N sulfuric acid, and add 1 drop of potassium permanganate TS.

  Acceptance criteria

  For first portion: The purple color changes to violet, then to blue, and finally to emerald-green.

  For second portion: The color of the permanganate is not discharged.

ASSAY

- **Procedure**

  Sample solution: Transfer 80 mg of Busulfan into a 250-mL conical flask. Add 30 mL of water, swirl, add phenolphthalein TS, and neutralize with 0.05 N sodium hydroxide. Connect the flask to a reflux air condenser, and boil the mixture gently for NLT 30 min, adding water occasionally to maintain the volume. Cool to room temperature.

  Titrimetric system

  Mode: Direct titration

  Titrant: 0.05 N sodium hydroxide VS

  Endpoint detection: Visual

  Analysis: Add phenolphthalein TS to the *Sample solution*, and titrate with *Titrant*. Each mL of *Titrant* is equivalent to 6.158 mg of busulfan ($C_6H_{14}O_6S_2$).

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

IMPURITIES

- **Residue on Ignition ⟨281⟩:** NMT 0.1%

SPECIFIC TESTS

- **Melting Range or Temperature ⟨741⟩:** 115°–118°
- **Loss on Drying ⟨731⟩**

  Analysis: Dry a sample under vacuum at 60° to constant weight.

  Acceptance criteria: NMT 2.0%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight containers.

• **Labeling:** The label bears a warning that great care should be taken to prevent inhaling particles of Busulfan and exposing the skin to it.

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

Topic/Question	Contact	Expert Committee
BUSULFAN	Documentary Standards Support	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
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