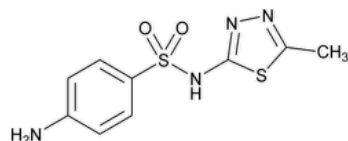


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Sulfamethizole



$C_9H_{10}N_4O_2S_2$ 270.33

Benzenesulfonamide, 4-amino-*N*-(5-methyl-1,3,4-thiadiazol-2-yl)-;

*N*¹-(5-Methyl-1,3,4-thiadiazol-2-yl) sulfanilamide CAS RN®: 144-82-1; UNII: 25W8454H16.

DEFINITION

Sulfamethizole contains NLT 98.0% and NMT 101.0% of sulfamethizole ($C_9H_{10}N_4O_2S_2$), calculated on the dried basis.

IDENTIFICATION

• **A.** [SPECTROSCOPIC IDENTIFICATION TESTS \(197\)](#), [Infrared Spectroscopy](#): 197M

• **B.**

Sample: 0.1 g

Analysis: Add 5 mL of [3 N hydrochloric acid](#) to the *Sample*, and boil gently for 5 min. Cool in an ice bath, then add 4 mL of 1% [sodium nitrite](#) solution, add [water](#) to make 10 mL, and place the mixture in an ice bath for 10 min. To 5 mL of the cooled mixture add a solution of 50 mg of [2-naphthol](#) in 2 mL of 10% [sodium hydroxide](#) solution.

Acceptance criteria: An orange-red precipitate is formed, and it darkens on standing.

• **C.**

Sample: 20 mg

Analysis: Suspend the *Sample* in 5 mL of [water](#), add dropwise [1 N sodium hydroxide](#) until dissolved, then add 2 or 3 drops of [cupric sulfate TS](#).

Acceptance criteria: A light green precipitate is formed, and it does not change on standing.

• **D.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.

ASSAY

• PROCEDURE

Mobile phase: [Methanol](#), [glacial acetic acid](#), and [water](#) (30:1:69)

Standard stock solution: 0.4 mg/mL of [USP Sulfamethizole RS](#) in [methanol](#)

Standard solution: 8 µg/mL of [USP Sulfamethizole RS](#) from the *Standard stock solution* in *Mobile phase*

Sample stock solution: 0.4 mg/mL of Sulfamethizole in [methanol](#)

Sample solution: 8 µg/mL of Sulfamethizole from the *Sample stock solution* in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: UV 254 nm

Column: 3.9-mm × 30-cm; 10-µm packing [L1](#)

Flow rate: 1 mL/min

Injection volume: 50 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Column efficiency: NLT 2000 theoretical plates

Tailing factor: NMT 2.0

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of sulfamethizole ($C_9H_{10}N_4O_2S_2$) in the portion of Sulfamethizole taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

C_S = concentration of [USP Sulfamethizole RS](#) in the *Standard solution* (µg/mL)

C_U = concentration of Sulfamethizole in the *Sample solution* (µg/mL)

Acceptance criteria: 98.0%–101.0% on the dried basis

IMPURITIES

• [RESIDUE ON IGNITION \(281\)](#): NMT 0.1%

• [CHLORIDE AND SULFATE \(221\)](#), *Chloride*

Sample solution: A 25.0-mL portion of the filtrate prepared in the test for *Acidity*

Acceptance criteria: 0.014%; shows no more chloride than corresponds to 0.10 mL of 0.020 N [hydrochloric acid](#)

• [CHLORIDE AND SULFATE \(221\)](#), *Sulfate*

Sample solution: A 25.0-mL portion of the filtrate prepared in the test for *Acidity*

Acceptance criteria: 0.04%; shows no more sulfate than corresponds to 0.20 mL of [0.020 N sulfuric acid](#)

Delete the following:

▲ • [SELENIUM \(291\)](#): NMT 0.003% ▲ (USP 1-May-2022)

• [ORDINARY IMPURITIES \(466\)](#)

Standard solution: [Methanol](#)

Sample solution: [Methanol](#)

Eluant: [Acetone](#)

Visualization: 1

Acceptance criteria: Meets the requirements

SPECIFIC TESTS

• [MELTING RANGE OR TEMPERATURE \(741\)](#): 208°–212°

• **ACIDITY**

Sample: 2.0 g

Analysis: Digest the *Sample* with 100 mL of [water](#) at 70° for 5 min, cool immediately to about 20°, and filter. To 25.0 mL of the filtrate add 2 drops of [phenolphthalein TS](#), and titrate with [0.10 N sodium hydroxide](#). Save the remainder of the filtrate for the tests for *Chloride* and *Sulfate*.

Acceptance criteria: NMT 0.50 mL is required for neutralization.

• [LOSS ON DRYING \(731\)](#)

Analysis: Dry at 105° for 2 h.

Acceptance criteria: NMT 0.5%

• **CLARITY AND COLOR OF SOLUTION**

Sample: 1.0 g

Analysis: Dissolve the *Sample* in 20 mL of [water](#) and 5 mL of [1 N sodium hydroxide](#).

Acceptance criteria: The solution is clear and not more than pale yellow.

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in well-closed, light-resistant containers.

• [USP REFERENCE STANDARDS \(11\)](#)

[USP Sulfamethizole RS](#)