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Sulfur Dioxide

SO_2 64.06

Sulfur dioxide CAS RN®: 7446-09-5.

DEFINITION

Sulfur Dioxide contains NLT 97.0%, by volume, of sulfur dioxide (SO_2).

[**Caution—**Sulfur Dioxide is poisonous.]

ASSAY

• **Procedure**

Sample: 100.0 mL of gaseous Sulfur Dioxide

Titrimetric system

(See *Titrimetry* ⟨541⟩.)

Mode: Direct titration

Titrant: 0.1 N iodine VS

Endpoint detection: Visual

Analysis: Collect the *Sample* over mercury, and note the temperature of the *Sample* and the pressure upon it. Slowly introduce 50.0 mL of 0.1 N sodium hydroxide into the air space over the mercury, and absorb the *Sample* in the solution by shaking. When absorption is complete, transfer the solution to a 250-mL conical flask, add 3 mL of starch TS, and titrate with *Titrant* until the solution is pale blue in color. Calculate the percentage of sulfur dioxide (SO_2) at a temperature of 0° and a pressure of 760 mm of mercury in the portion of Sulfur Dioxide taken. Each mL of 0.1 N iodine is equivalent to 1.094 mL of SO_2.

Acceptance criteria: NLT 97.0%, by volume

IMPURITIES

• **Limit of Nonvolatile Residue**

Sample: 300 g (209 mL)

Analysis: Transfer the *Sample* to a tared, 250-mL conical flask, and allow the liquid to evaporate spontaneously in a well-ventilated hood. When evaporation appears complete, blow a current of dry, filtered air through the flask until the odor of sulfur dioxide is no longer apparent.

Acceptance criteria: NMT 7.5 mg (0.0025%)

• **Sulfuric Acid**

Analysis: To the flask containing the residue obtained in the test for *Limit of Nonvolatile Residue* add 25 mL of water previously neutralized to methyl red TS. Swirl the flask, and titrate with 0.10 N sodium hydroxide.

Acceptance criteria: NMT 1.3 mL is required (about 0.002%).

SPECIFIC TESTS

• **Water Determination,** *Method I* ⟨921⟩

Sample: 3 g (2.1 mL)

Analysis: Taking precautions to avoid absorption of moisture, transfer the *Sample* to a suitable flask, and add 20 mL of anhydrous pyridine.

Acceptance criteria: NMT 2.0%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in cylinders.

[NOTE—Sulfur Dioxide is used most in the form of a gas in pharmaceutical applications, and is described herein for such purposes. However, it is usually packaged under pressure, hence the preceding specifications are designed for testing it in liquid form.]

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

Topic/Question	Contact	Expert Committee
SULFUR DIOXIDE	Documentary Standards Support	SE2020 Simple Excipients
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SE2020 Simple Excipients

Chromatographic Database Information: Chromatographic Database

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