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Sulfuric Acid

H₂SO₄ 98.08
Sulfuric acid CAS RN®: 7664-93-9.

DEFINITION

Sulfuric Acid contains NLT 95.0% and NMT 98.0%, by weight, of sulfuric acid (H₂SO₄).

[CAUTION—When sulfuric acid is to be mixed with other liquids, always add it to the diluent, and exercise great caution.]

IDENTIFICATION

- A. [IDENTIFICATION TESTS—GENERAL, Sulfate \(191\)](#): Meets the requirements

ASSAY

PROCEDURE

Sample solution: Place 1 mL of Sulfuric Acid in a weighed, glass-stoppered flask containing 20 mL of water, and weigh again to obtain the weight of the Sulfuric Acid. Dilute with 25 mL of water, and cool.

Titrimetric system

(See [Titrimetry \(541\)](#).)

Mode: Direct titration

Titrant: 1 N sodium hydroxide VS

Blank: 45 mL of water

Endpoint detection: Visual

Analysis: To the *Sample solution* add methyl orange TS, and titrate with 1 N sodium hydroxide VS. Perform a blank determination. Calculate the percentage of sulfuric acid (H₂SO₄) taken:

$$\text{Result} = \{[(V_s - V_b) \times N \times F]/W\} \times 100$$

V_s = Titrant volume consumed by sulfuric acid in the *Sample solution* (mL)

V_b = Titrant volume consumed by the *Blank* (mL)

N = Titrant actual normality (mEq/mL)

F = equivalency factor, 49.04 mg/mEq

W = weight of sulfuric acid in the *Sample solution* (mg)

Acceptance criteria: 95.0%–98.0%

IMPURITIES

- [RESIDUE ON IGNITION \(281\)](#)

Sample: 22 mL (40 g)

Analysis: Evaporate the *Sample* to dryness, and ignite.

Acceptance criteria: NMT 2 mg of residue remains (0.005%).

- [CHLORIDE AND SULFATE, Chloride \(221\)](#): A dilution of 1.1 mL (2.0 g) in water shows no more chloride than corresponds to 0.15 mL of 0.020 N hydrochloric acid (50 ppm).

Change to read:

- [ARSENIC \(211\), Procedures, Procedure 1](#) ▲ (CN 1-JUN-2023)

Test preparation: Add 1.6 mL (3.0 g) to a mixture of nitric acid and water (3:20). Evaporate the solution until dense fumes of sulfur trioxide form. Cool, and cautiously wash the solution into an arsine generating flask with 50 mL of water.

Analysis: Proceed as directed in the chapter, omitting the addition of the 20 mL of 7 N sulfuric acid.

Acceptance criteria: NMT 1 ppm

SPECIFIC TESTS

• REDUCING SUBSTANCES**Sample:** 4.4 mL (8.0 g)**Analysis:** Carefully dilute the *Sample* with 50 mL of ice-cold water, keeping the solution cold during the addition. Add 0.10 mL of 0.10 N potassium permanganate.**Acceptance criteria:** The solution remains pink for 5 min.**ADDITIONAL REQUIREMENTS**

- **PACKAGING AND STORAGE:** Preserve in tight containers.

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

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

Chromatographic Database Information: [Chromatographic Database](#)**Most Recently Appeared In:**

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