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Manganese Sulfate

$MnSO_4 \cdot H_2O$ 169.02
Sulfuric acid, manganese(2+) salt (1:1) monohydrate;
Manganese(2+) sulfate (1:1) monohydrate CAS RN®: 10034-96-5; UNII: W00LYS4T26.
Anhydrous 151.00 CAS RN®: 7785-87-7; UNII: IGA15S9H40.

DEFINITION

Manganese Sulfate contains NLT 98.0% and NMT 102.0% of $MnSO_4 \cdot H_2O$.

IDENTIFICATION

- **A. Identification Tests—General, *Manganese*⟨191⟩**

  Sample solution: 100 mg/mL

  Acceptance criteria: Meets the requirements

- **B. Identification Tests—General, *Sulfate*⟨191⟩**

  Sample solution: 100 mg/mL

  Acceptance criteria: Meets the requirements

ASSAY

- **Procedure**

  Sample: 350 mg

  Analysis: Dissolve the *Sample* in 200 mL of water. Add 10 mg of ascorbic acid. Begin the titration by adding 25 mL of 0.05 M edetate disodium VS using a suitable buret, then add 10 mL of ammonia–ammonium chloride buffer TS and 0.15 mL of eriochrome black TS. Complete the titration with 0.05 M edetate disodium VS to a blue endpoint. Each mL of 0.05 M edetate disodium is equivalent to 8.451 mg of $MnSO_4 \cdot H_2O$.

  Acceptance criteria: 98.0%–102.0%

IMPURITIES

- **Substances Not Precipitated by Ammonium Sulfide**

  Sample: 2.0 g

  Analysis: Dissolve the *Sample* in 90 mL of water, add 5 mL of ammonium hydroxide, warm the solution, and pass hydrogen sulfide through the solution for about 30 min. Dilute with water to 100 mL, mix, and allow the precipitate to settle. Decant the supernatant through a filter, transfer 50 mL of the clear filtrate to a tared dish, evaporate to dryness, and ignite, gently at first and finally at 800 ± 25°.

  Acceptance criteria: The weight of the residue does not exceed 5 mg (NMT 0.5%).

SPECIFIC TESTS

- **Loss on Ignition ⟨733⟩**

  Analysis: Ignite a sample at 450° to constant weight: it loses 10.0%–13.0% of its weight.

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight containers. Store at controlled room temperature.

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

Topic/Question	Contact	Expert Committee
MANGANESE SULFATE	Documentary Standards Support	SM32020 Small Molecules 3
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

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