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Ammonium Alum

$AlNH_4(SO_4)_2 \cdot 12H_2O$ 453.33
$AlNH_4(SO_4)_2$ 237.15

Sulfuric acid, aluminum ammonium salt (2:1:1), dodecahydrate;

Aluminum ammonium sulfate (1:1:2), dodecahydrate CAS RN®: 7784-26-1; UNII: 5C36DRL9ZN.

Anhydrous CAS RN®: 7784-25-0; UNII: DPU64XYB1D.

DEFINITION

Ammonium Alum contains NLT 99.0% and NMT 100.5% of ammonium alum [$AlNH_4(SO_4)_2$], calculated on the dried basis.

IDENTIFICATION

- **A.**

  Sample solution: 50 mg/mL

  Analysis: Add 1 N sodium hydroxide dropwise to the *Sample solution*.

  Acceptance criteria: A precipitate is formed, and it dissolves in an excess of the reagent with the evolution of ammonia, recognizable by its alkaline effect upon moistened red litmus paper exposed to the vapor.

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

  Sample solution: 50 mg/mL

  Acceptance criteria: Meets the requirements

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

  Sample solution: 50 mg/mL

  Analysis: Proceed as directed in *Identification Tests—General, Sulfate* ⟨191⟩, except centrifuge the neutral solutions of sulfates and use the supernatants for test *B*.

  Acceptance criteria: Meets the requirements

ASSAY

- **Procedure**

  Edetate disodium titrant: Prepare and standardize as directed in *Reagents*, *Volumetric Solutions*, *Edetate Disodium, Twentieth-Molar (0.05 M)*.

  Sample: 800 mg of Ammonium Alum

  Analysis: Transfer the *Sample* to a 400-mL beaker, moisten with 1 mL of glacial acetic acid, and add 50 mL of water, 50.0 mL of *Edetate disodium titrant* and 20 mL of acetic acid–ammonium acetate buffer TS. Warm on a steam bath until the solution is complete, and boil gently for 5 min. Cool, add 50 mL of alcohol and 2 mL of dithizone TS, and titrate the excess edetate disodium with 0.05 M zinc sulfate VS to a bright rose-pink color. Perform a blank determination, and make any necessary correction. Each mL of 0.05 M *Edetate disodium titrant* is equivalent to 11.86 mg of $AlNH_4(SO_4)_2$.

  Acceptance criteria: 99.0%–100.5% on the dried basis

IMPURITIES

- **Iron**

  Sample solution: 6.7 mg/mL

  Analysis: Add 5 drops of potassium ferrocyanide TS to 20 mL of the *Sample solution*.

  Acceptance criteria: No blue color is produced immediately.

SPECIFIC TESTS

- **Loss on Drying** ⟨731⟩

  Sample: 2.0 g

  Analysis: Transfer the *Sample*, in a tared porcelain crucible, to a muffle furnace at 200°. Increase the temperature to 300°, and dry at 300° to a constant weight. Cool in a desiccator, and weigh.

  Acceptance criteria: 45.0%–48.0%

- **Limit of Alkalies and Alkaline Earths**

  Sample: 1 g

  Analysis: Completely precipitate the aluminum from a boiling solution of the *Sample* in 100 mL of water by the addition of sufficient 6 N ammonium hydroxide to render the solution distinctly alkaline to methyl red TS, and filter. Evaporate the filtrate to dryness, and ignite.

Acceptance criteria: The weight of the residue is NMT 5 mg (0.5%).

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

Topic/Question	Contact	Expert Committee
AMMONIUM ALUM	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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