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Strong Ammonia Solution

NH_3 17.03

Ammonia CAS RN®: 7664-41-7.

DEFINITION

Strong Ammonia Solution is a solution of NH_3, containing NLT 27.0% and NMT 31.0% (w/w) of NH_3. On exposure to air, it loses ammonia rapidly.

[**Caution—**Use care in handling Strong Ammonia Solution because of the caustic nature of the Solution and the irritating properties of its vapor. Cool the container well before opening, and cover the closure with a cloth or similar material while opening. Do not taste Strong Ammonia Solution, and avoid inhalation of its vapor.]

IDENTIFICATION

• **A.**

Analysis: Hold a glass rod moistened with hydrochloric acid near the surface of the Solution.

Acceptance criteria: Dense, white fumes are produced.

ASSAY

• **Procedure**

Sample: Transfer quickly a portion of Strong Ammonia Solution to a stoppered, thick-walled container (a pressure bottle is suitable) to obtain a column height of about 20 cm, insert the stopper, and cool the container and contents to 10° or lower. Accurately weigh a glass-stoppered, 125-mL conical flask containing 35.0 mL of 1 N sulfuric acid VS. Insert a graduated 10-mL measuring pipet into the cooled solution, allow the liquid to rise in the pipet without vacuum, remove the pipet, wipe off adhering liquid, and discard the first mL of the solution permitted to run from the pipet. Hold the pipet just above the surface of the 1 N sulfuric acid VS in the conical flask, and transfer about 2 mL of the solution into the flask. Insert the stopper, and again weigh to obtain the weight of the portion taken of the *Sample*.

Titrimetric system

(See *Titrimetry* ⟨541⟩.)

Mode: Residual titration

Titrant: 1 N sulfuric acid VS

Back titrant: 1 N sodium hydroxide VS

Blank: Proceed as directed for the *Sample*, omitting the Strong Ammonia Solution

Endpoint detection: Colorimetric

Analysis

Calculate the percentage of NH_3 in the portion of the *Sample* taken:

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

B = 1 N sodium hydroxide VS consumed by the *Blank* (mL)

V = 1 N sodium hydroxide VS consumed by the *Sample* (mL)

N = actual normality of the *Back titrant* (mEq/mL)

F = equivalency factor, 17.03 mg/mEq

W = weight of the *Sample* (mg)

Titrate the excess acid with 1 N sodium hydroxide VS, using methyl red TS as the indicator. Perform a blank determination. Each mL of 1 N sulfuric acid is equivalent to 17.03 mg of NH_3.

Acceptance criteria: 27.0%–31.0%

IMPURITIES

• **Limit of Nonvolatile Residue**

Sample: 10 mL

Analysis: Evaporate the *Sample* in a tared platinum or porcelain dish to dryness, and dry at 105° for 1 h.

Acceptance criteria: NMT 5 mg of residue remains (0.05%).

- **Readily Oxidizable Substances**

Sample solution: 4 mL of Strong Ammonia Solution

Analysis: Mix the *Sample solution* with 6 mL of water, and add a slight excess of 2 N sulfuric acid and 0.10 mL of 0.1 N potassium permanganate.

Acceptance criteria: The pink color does not completely disappear within 10 min.

ADDITIONAL REQUIREMENTS

- **Packaging and Storage:** Preserve in tight containers, at a temperature not above 25°.

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

Topic/Question	Contact	Expert Committee
STRONG AMMONIA SOLUTION	Documentary Standards Support	SE2020 Simple Excipients

Chromatographic Database Information: Chromatographic Database

Most Recently Appeared In:
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