Silver Nitrate

$AgNO_3$ 169.87

Nitric acid silver(1+) salt;

Silver(1+) nitrate   CAS RN®: 7761-88-8; UNII: 95IT3W8JZE.

Change to read:

DEFINITION

Silver Nitrate, powdered and then dried in the dark over silica gel for 4 h, contains NLT ▲98.0%▲ (USP 1-Aug-2023) and NMT ▲102.0%▲ (USP 1-Aug-2023) of silver nitrate ($AgNO_3$).

IDENTIFICATION

Delete the following:

▲• **A.** Iᴅᴇɴᴛɪғɪᴄᴀᴛɪᴏɴ Tᴇsᴛs—Gᴇɴᴇʀᴀʟ ⟨191⟩, *Chemical Identification Tests, Silver*▲ (USP 1-Aug-2023)

Add the following:

▲• **A.** Characteristic emission lines for silver at 328 and 338 nm from the *Sample solution* correspond to those of the *Standard solution*, as obtained in the *Assay.*▲ (USP 1-Aug-2023)

Change to read:

• **B.**

  Sample solution: 100 mg/mL ▲of Silver Nitrate in water▲ (USP 1-Aug-2023)

  Analysis: Add 1 drop of diphenylamine TS to the *Sample solution*, and then carefully superimpose it upon sulfuric acid.

  Acceptance criteria: A deep blue color appears at the zone of contact.

ASSAY

Change to read:

• Pʀᴏᴄᴇᴅᴜʀᴇ

  ▲Use water with a resistivity of NLT 18 megohm-cm to prepare the solutions.

  Blank solution: 2% (w/v) nitric acid in water

  Standard solution: 15 mg/L of USP Silver Nitrate RS in *Blank solution*

  Sample: Powder an appropriate portion of Silver Nitrate, and dry in the dark over silica gel for 4 h.

  Sample solution: 15 mg/L of Silver Nitrate in *Blank solution* from the *Sample*

  Instrumental conditions

    (See *Plasma Spectrochemistry ⟨730⟩*.)

    Mode: ICP−OES

    Analytical wavelengths: Characteristic emission line for silver at 338 nm. For *Identification A*, detect additional silver emission line at 328 nm.

  System suitability

    Sample: *Standard solution*

    Suitability requirements

      Relative standard deviation: NMT 1.0% from five replicate analyses

      Drift: NMT 2.0%. Compare emission intensities from the *Standard solution* before and after the analysis of the *Sample solution*.

  Analysis

    Samples: *Blank solution*, *Standard solution*, and *Sample solution*

    Calculate the percentage of silver nitrate ($AgNO_3$) in the portion of Silver Nitrate taken:

$$\text{Result} = [(r_U - r_B)/(r_S - r_B)] \times (C_S/C_U) \times 100$$

      r_U = emission intensity of silver from the *Sample solution*

      r_B = emission intensity of silver from the *Blank solution*

r_S = emission intensity of silver from the *Standard solution*

C_S = concentration of [USP Silver Nitrate RS](#) in the *Standard solution* (mg/L)

C_U = concentration of Silver Nitrate in the *Sample solution* (mg/L)

▲ (USP 1-Aug-2023)

Acceptance criteria: ▲98.0%–102.0%▲ (USP 1-Aug-2023)

SPECIFIC TESTS

Change to read:

• CLARITY AND COLOR OF SOLUTION

Sample solution: 100 mg/mL ▲of Silver Nitrate in [water](#)▲ (USP 1-Aug-2023)

Acceptance criteria: The solution is clear and colorless.

Change to read:

• COPPER

Sample solution: 100 mg/mL ▲of Silver Nitrate in [water](#)▲ (USP 1-Aug-2023)

Analysis: To 5 mL of the *Sample solution* add [6 N ammonium hydroxide](#), dropwise, until a precipitate first formed is just dissolved.

Acceptance criteria: No blue color is produced.

ADDITIONAL REQUIREMENTS

• PACKAGING AND STORAGE: Preserve in tight, light-resistant containers.

Add the following:

▲• [USP REFERENCE STANDARDS ⟨11⟩](#)

[USP Silver Nitrate RS](#)▲ (USP 1-Aug-2023)

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

Topic/Question	Contact	Expert Committee
SILVER NITRATE	[Documentary Standards Support](#)	SM12020 Small Molecules 1
REFERENCE STANDARD SUPPORT	RS Technical Services [RSTECH@usp.org](#)	SM12020 Small Molecules 1

Chromatographic Database Information: [Chromatographic Database](#)