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Sodium Nitroprusside

$Na_2[Fe(CN)_5NO] \cdot 2H_2O$ 297.95

Ferrate(2-), pentakis(cyano-*C*)nitrosyl-, disodium, dihydrate, (*OC*-6-22)-.

Disodium pentacyanonitrosylferrate(2-) dihydrate CAS RN®: 13755-38-9; UNII: EAO03PE1TC.

Sodium nitroferricyanide dihydrate.

Anhydrous 261.92 CAS RN®: 14402-89-2; UNII: XN654NKH9W.

» Sodium Nitroprusside contains not less than 99.0 percent of $Na_2[Fe(CN)_5NO] \cdot 2H_2O$.

Packaging and storage—Preserve in tight, light-resistant containers. Store at 25°, excursions permitted between 15° and 30°.

Labeling—Where it is intended for use in preparing injectable dosage forms, the label states that it is sterile or must be subjected to further processing during the preparation of injectable dosage forms.

USP Reference standards ⟨11⟩—

USP Sodium Nitroprusside RS

Identification—

Change to read:

A: ▲*Spectroscopic Identification Tests* ⟨197⟩*, Ultraviolet-Visible Spectroscopy: 197U*▲ (CN 1-May-2020) — [Note—Use low-actinic glassware.]

Solution: 1 in 135.

Medium: water.

Wavelength range: 350 nm to 700 nm.

B: Dissolve 5 mg in 2 mL of water, and add 2 drops of acetone and 0.5 mL of 2 N sodium hydroxide: an orange color is produced. Add 2 mL of acetic acid: the color changes to purple.

C: A solution (1 in 4) imparts an intense yellow color to a nonluminous flame.

Water Determination, *Method I* ⟨921⟩ **:** between 9.0% and 15.0%.

Insoluble substances—Dissolve 10.0 g in 50 mL of water, heat the solution on a steam bath for 30 minutes, filter, wash the residue with water, and dry at 105° to constant weight: the weight of the residue is not greater than 1 mg (0.01%).

Chloride—

Standard chloride solution—Dissolve 42.4 mg of potassium chloride in water to make 100.0 mL of solution. Each mL of this solution contains 0.2 mg of chloride.

Procedure—Transfer 1.0 g of Sodium Nitroprusside to a 250-mL conical flask, transfer 1.0 mL of *Standard chloride solution* to a similar flask, and add to each flask 85 mL of water. To the flask containing the substance under test, add 15 mL of cupric sulfate solution (83 in 1000), mix, and allow any undissolved particles to settle. Carefully add cupric sulfate solution (83 in 1000) to the flask containing the diluted *Standard chloride solution,* with mixing, so that its color matches that of the test solution in the first flask. Filter the contents of each flask, and discard the first 25 mL of the filtrate. To 10 mL of the subsequent filtrate from each flask add 2 mL of nitric acid, and mix. Add 1 mL of 1 N silver nitrate to each, and again mix: the test solution so treated becomes no more turbid than the treated *Standard chloride solution* (0.02%).

Limit of ferricyanide—Dissolve 500 mg in 20 mL of ammonium acetate TS, previously adjusted with 1 N acetic acid to a pH of 4.62. Divide this solution into halves, and transfer each half to a separate 50-mL volumetric flask, identified as *A* and *B,* respectively. To flask *B* add 1.0 mL of a freshly prepared solution of potassium ferricyanide containing 78 µg per mL. To both flasks add 5 mL of ferrous ammonium sulfate solution (1 in 1000), dilute with water to volume, and mix. Allow the flasks to stand for 1 hour, and concomitantly determine the absorbance of the solutions at the wavelength of maximum absorbance at about 720 nm, using as a blank a solution prepared by dissolving 250 mg of the specimen in 10 mL of the pH 4.62 ammonium acetate TS and diluting with water to 50 mL. The absorbance of the solution in flask *A* is not greater than the absorbance of the solution in flask *B* minus the absorbance of the solution in flask *A* (0.02% of ferricyanide).

Limit of ferrocyanide—Dissolve 2.0 g in 40 mL of water, divide the solution into halves, and transfer each half to a separate 50-mL volumetric flask, identified as *A* and *B,* respectively. To flask *B* add 2 mL of a freshly prepared solution of potassium ferrocyanide containing 200 µg per mL. To both flasks add 0.2 mL of ferric chloride TS, dilute with water to volume, and mix. Allow to stand for 20 minutes, accurately timed, and

concomitantly measure the absorbance of the solutions at the wavelength of maximum absorbance at about 695 nm, using as a blank a solution prepared by dissolving 1.0 g of the specimen in water to make 50 mL: the absorbance of the solution in flask *A* is not greater than the absorbance of the solution in flask *B* minus the absorbance of the solution in flask *A* (0.02% of ferrocyanide).

Sulfate—

Standard sulfate solution—Dissolve 15 mg of anhydrous sodium sulfate in water to make 100.0 mL of solution. Each mL of this solution contains 0.1 mg of sulfate.

Procedure—Dissolve 5.0 g of Sodium Nitroprusside in water to make 250.0 mL of solution, and filter the solution into a flat-bottom, 250-mL graduated flask. Transfer 5.0 mL of *Standard sulfate solution* to a similar flask, and dilute to the same volume as the test solution. To each flask add 10 drops of glacial acetic acid and 5 mL of 1 N barium chloride, and allow to stand for 10 minutes. Place both flasks over a fluorescent light source, and observe: the turbidity in the treated test solution is not more intense than that of the treated *Standard sulfate solution* (0.01%).

Other requirements—Where the label states that Sodium Nitroprusside is sterile, it meets the requirements for *Sterility Tests ⟨71⟩* and for *Bacterial endotoxins* under *Sodium Nitroprusside for Injection*. Where the label states that *Sodium Nitroprusside* must be subjected to further processing during the preparation of injectable dosage forms, it meets the requirements for *Bacterial endotoxins* under *Sodium Nitroprusside for Injection*.

Assay—Dissolve about 500 mg of Sodium Nitroprusside, accurately weighed, in 130 mL of chloride-free water. Titrate with 0.1 N silver nitrate VS, determining the endpoint potentiometrically, using a silver-silver chloride electrode system. Each mL of 0.1 N silver nitrate is equivalent to 14.90 mg of $Na_2[Fe(CN)_5NO] \cdot 2H_2O$.

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

Topic/Question	Contact	Expert Committee
SODIUM NITROPRUSSIDE	Documentary Standards Support	SM22020 Small Molecules 2
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM22020 Small Molecules 2

Chromatographic Database Information: Chromatographic Database

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