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Piperazine Phosphate

• H_3PO_4

$C_4H_{10}N_2 \cdot H_3PO_4 \cdot H_2O$ 202.15

Piperazine phosphate (1:1), monohydrate.

Piperazine phosphate (1:1), monohydrate CAS RN®: 18534-18-4; UNII: 8TIF7T48FP.

Anhydrous 184.13 CAS RN®: 14538-56-8; UNII: P7S1V82385.

» Piperazine Phosphate contains not less than 98.5 percent and not more than 100.5 percent of $C_4H_{10}N_2 \cdot H_3PO_4$, calculated on the anhydrous basis.

Packaging and storage—Preserve in tight containers, and store at room temperature.

Labeling—Label it to indicate that it is for veterinary use only.

USP Reference Standards ⟨11⟩—

USP Piperazine Phosphate RS

Identification—

Change to read:

A: ▲*Spectroscopic Identification Tests ⟨197⟩, Infrared Spectroscopy: 197K*▲ *(CN 1-May-2020)*

Test specimen: previously dried at 105° for 3 hours.

B: In the test for *Chromatographic purity,* the principal spot in the chromatogram obtained from *Test solution 2,* observed after spraying with the ninhydrin solutions, corresponds in R_F value, color, and size to that in the chromatogram obtained from *Standard solution 1*.

C: It meets the requirements of the test for *Phosphate ⟨191⟩*.

pH ⟨791⟩: between 6.0 and 6.5, in a solution (1 in 100).

Water, *Method I* **⟨921⟩:** between 8.0% and 9.5%.

Chromatographic purity—

Solvent—Prepare a mixture of 13.5 N ammonium hydroxide and dehydrated alcohol (3:2).

Test solution 1—Prepare a solution of Piperazine Phosphate in *Solvent* containing 100 mg per mL.

Test solution 2—Mix 1 mL of *Test solution 1* and 9 mL of *Solvent*.

Standard solution 1—Prepare a solution of USP Piperazine Phosphate RS in *Solvent* containing 10 mg per mL.

Standard solution 2—Prepare a solution of ethylenediamine in *Solvent* containing 0.25 mg per mL.

Standard solution 3—Prepare a solution of triethylenediamine in *Solvent* containing 0.25 mg per mL.

Resolution solution—Prepare a solution in *Solvent* containing 0.25 mg of triethylenediamine and 10 mg of Piperazine Phosphate per mL.

Procedure—Separately apply 5-µL portions of *Test solution 1, Test solution 2, Standard solution 1, Standard solution 2, Standard solution 3,* and the *Resolution solution* to a suitable thin-layer chromatographic plate (see *Chromatography ⟨621⟩*), coated with a 0.25-mm layer of chromatographic silica gel. Allow the spots to dry, and develop the chromatograms in a solvent system consisting of a freshly prepared mixture of acetone and 13.5 N ammonium hydroxide (80:20) until the solvent front has moved about three-fourths of the length of the plate. Remove the plate from the developing chamber, mark the solvent front, and dry the plate at 105°. Spray the plate with a 0.3% solution of ninhydrin in a mixture of butyl alcohol and glacial acetic acid (100:3). Spray the plate again with a 0.15% solution of ninhydrin in dehydrated alcohol, dry the plate at 105° for 10 minutes, and examine the plate: any secondary spot in the chromatogram obtained from *Test solution 1* is not more intense than the principal spot in the chromatogram obtained from *Standard solution 2* (0.25%). Spray the plate with 0.1 N iodine TS, allow to stand for 10 minutes, and examine the plate: any spot corresponding to triethylenediamine in the chromatogram obtained from *Test solution 1* is not more intense than the principal spot in the chromatogram obtained from *Standard solution 3* (0.25%). In a valid test, the chromatogram obtained from the *Resolution solution* shows a spot due to triethylenediamine clearly separated from the principal spot. Disregard any spot at the origin of any chromatogram.

Change to read:

Assay—Dissolve about 200 mg of Piperazine Phosphate in 4 mL of ethylene glycol using a 150-mL beaker. Add 25 mL of glacial acetic acid, rinsing the walls of the beaker with a small amount of the glacial acetic acid. Add crystal violet TS, and titrate with 0.1 N perchloric acid VS. Perform a blank determination, and make any necessary correction. Each mL of 0.1 N perchloric acid is equivalent to ▲9.207 mg of $C_4H_{10}N_2 \cdot H_3PO_4$·▲ (ERR 1-Jun-2019)

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

Topic/Question	Contact	Expert Committee
PIPERAZINE PHOSPHATE	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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