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Monobasic Sodium Phosphate

NaH_2PO_4 119.98
 $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ 137.99
 $\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$ 156.01

Phosphoric acid, monosodium salt, monohydrate;

Monosodium phosphate monohydrate CAS RN[®]: 10049-21-5.

Phosphoric acid, monosodium salt, dihydrate;

Monosodium phosphate dihydrate CAS RN[®]: 13472-35-0.

Anhydrous CAS RN[®]: 7558-80-7.

DEFINITION

Monobasic Sodium Phosphate contains one or two molecules of water of hydration, or is anhydrous. It contains NLT 98.0% and NMT 103.0% of monobasic sodium phosphate (NaH_2PO_4), calculated on the anhydrous basis.

IDENTIFICATION

- **A.** [IDENTIFICATION TESTS—GENERAL, Sodium<191>](#).

Sample solution: 50 mg/mL

Acceptance criteria: Meets the requirements

- **B.** [IDENTIFICATION TESTS—GENERAL, Phosphate<191>](#).

Sample solution: 50 mg/mL

Acceptance criteria: Meets the requirements

ASSAY

- **PROCEDURE**

Sample: 2.5 g

Titrimetric system

(See [Titrimetry<541>](#).)

Mode: Direct titration

Titrant: 1 N sodium hydroxide VS

Endpoint detection: Visual

Analysis: Dissolve the *Sample* in 10 mL of cold water. Add 20 mL of a cold, saturated solution of sodium chloride, add phenolphthalein TS, and then titrate with *Titrant*, keeping the temperature of the solution between 10° and 15° during the entire titration. Perform a blank determination, and make any necessary correction. Each mL of *Titrant* is equivalent to 120.0 mg of monobasic sodium phosphate (NaH_2PO_4).

Acceptance criteria: 98.0%–103.0% on the anhydrous basis

IMPURITIES

- **INSOLUBLE SUBSTANCES**

Sample solution: Equivalent to 10.0 g of $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ in 100 mL of hot water

Analysis: Pass through a tared filtering crucible, wash the insoluble residue with hot water, and dry at 105° for 2 h.

Acceptance criteria: NMT 20 mg (0.2%)

- **CHLORIDE AND SULFATE, Chloride<221>**

Sample: Equivalent to 1.0 g of $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$

Control: 0.20 mL of 0.020 N hydrochloric acid

Acceptance criteria: NMT 0.014%; the *Sample* shows no more chloride than the *Control*.

• **CHLORIDE AND SULFATE, *Sulfate* (221).**

Sample: Equivalent to 0.20 g of $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$

Control: 0.30 mL of 0.020 N sulfuric acid

Acceptance criteria: NMT 0.15%; the *Sample* shows no more sulfate than the *Control*.

• **ALUMINUM, CALCIUM, AND RELATED ELEMENTS**

Sample solution: Equivalent of 1.0 g of $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ in 10 mL of water

Acceptance criteria: The *Sample solution* does not become turbid when rendered slightly alkaline to litmus paper with 6 N ammonium hydroxide.

Change to read:

• **▲ *ARSENIC (211), *Procedures, Procedure 1**** ▲ (CN 1-JUN-2023)

Test preparation: Equivalent of 0.375 g of $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ in 35 mL of water

Acceptance criteria: NMT 8 ppm

SPECIFIC TESTS

• ***pH (791).***

Sample solution: Equivalent to 1.0 g of $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ in 20 mL of water

Acceptance criteria: 4.1–4.5

• ***WATER DETERMINATION, *Method I* (921).***

Test preparation: For the monohydrate, before performing the test, the sample may be ground to a fine powder in an atmosphere of temperature and relative humidity known not to influence the results.

Acceptance criteria: See [Table 1](#).

Table 1

Hydrate Form	Acceptance Criteria (%)
Anhydrous	<2.0
Monohydrate	10.0–15.0
Dihydrate	18.0–26.5

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in well-closed containers.
- **LABELING:** Label it to indicate whether it is anhydrous, monohydrate, or dihydrate.

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

Topic/Question	Contact	Expert Committee
MONOBASIC SODIUM 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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