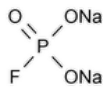


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Sodium Monofluorophosphate



Na_2PFO_3 143.95
Phosphorofluoric acid, disodium salt;
Disodium phosphorofluoridate CAS RN®: 10163-15-2; UNII: C810JCZ56Q.

DEFINITION
Sodium Monofluorophosphate contains NLT 91.7% and NMT 100.5% of sodium monofluorophosphate (Na_2PFO_3), calculated on the dried basis.

- IDENTIFICATION**
- **A.** The retention time of the monofluorophosphate peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.
 - **B.** [IDENTIFICATION TESTS—GENERAL \(191\)](#), [Chemical Identification Tests, Sodium](#): Meets the requirements

ASSAY

- **PROCEDURE**
[NOTE—Use water with a resistivity of NLT 18 megohm-cm to prepare the solutions.]
Solution A: 100 mM [potassium hydroxide](#) in [water](#)
Solution B: [Water](#)
Mobile phase: See [Table 1](#).

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	15	85
20	15	85
30	30	70
35	60	40
45	60	40
45.1	15	85
50	15	85

Alternatively, *Mobile phase* can be generated electrolytically using an automatic eluent generator.

System suitability solution: 4.0 µg/mL of [USP Sodium Fluoride RS](#), 1.4 µg/mL of [USP Sodium Acetate RS](#), 150 µg/mL of [USP Sodium MonoFluorophosphate RS](#), and 150 µg/mL of [USP Sodium Sulfate Anhydrous RS](#) in [water](#)
Standard solution: 150 µg/mL of [USP Sodium MonoFluorophosphate RS](#) in [water](#)
Sample solution: 150 µg/mL of Sodium Monofluorophosphate in [water](#)

Chromatographic system(See [Chromatography \(621\), System Suitability](#).)**Mode:** LC**Detector:** Conductivity with suppression**Columns****Guard:** 4.0-mm × 5-cm; 13-μm packing [L120](#)**Analytical:** 4.0-mm × 25-cm; 7.5-μm packing [L113](#). [NOTE—Alternatively, a 4.0-mm × 25-cm; 4.6-μm packing [L91](#) column may be used.]**Column temperature:** 40°**Flow rate:** 1.0 mL/min**Injection volume:** 10 μL**System suitability****Samples:** *System suitability solution* and *Standard solution*

[NOTE—The relative retention times for fluoride, acetate, monofluorophosphate, and sulfate ions are 0.16, 0.18, 1.0, and 1.1, respectively.]

Suitability requirements**Resolution:** NLT 1.5 between the monofluorophosphate and sulfate ions, *System suitability solution***Tailing factor:** NMT 2.5 for the monofluorophosphate ion, *Standard solution***Relative standard deviation:** NMT 2.0% for the monofluorophosphate ion, *Standard solution***Analysis****Samples:** *Standard solution* and *Sample solution*Calculate the percentage of sodium monofluorophosphate (Na₂PFO₃) in the portion of Sodium Monofluorophosphate taken:

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

 r_U = peak response of monofluorophosphate from the *Sample solution* r_S = peak response of monofluorophosphate from the *Standard solution* C_S = concentration of [USP Sodium MonoFluorophosphate RS](#) in the *Standard solution* (μg/mL) C_U = concentration of Sodium Monofluorophosphate in the *Sample solution* (μg/mL)**Acceptance criteria:** 91.7%–100.5% on the dried basis**IMPURITIES****Change to read:**• ▲ [ARSENIC \(211\), Procedures, Procedure 1](#) ▲ (CN 1-JUN-2023) : NMT 3 ppm• **LIMIT OF FLUORIDE ION**

[NOTE—Use plasticware throughout this test.]

Solution A, Solution B, Mobile phase, System suitability solution, Sample solution, and Chromatographic system: Proceed as directed in the Assay.**Standard solution:** 4.0 μg/mL of [USP Sodium Fluoride RS](#) in [water](#)**System suitability****Samples:** *System suitability solution* and *Standard solution*

[NOTE—The relative retention times for fluoride, acetate, monofluorophosphate, and sulfate ions are 0.16, 0.18, 1.0, and 1.1, respectively.]

Suitability requirements**Resolution:** NLT 1.5 between the fluoride and acetate ions, *System suitability solution***Relative standard deviation:** NMT 5.0% for the fluoride ion, *Standard solution***Analysis****Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of fluoride ion in the portion of Sodium Monofluorophosphate taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (A_r/M_r) \times 100$$

 r_U = peak response of fluoride from the *Sample solution* r_S = peak response of fluoride from the *Standard solution* C_S = concentration of [USP Sodium Fluoride RS](#) in the *Standard solution* (μg/mL)

C_U = concentration of Sodium Monofluorophosphate in the *Sample solution* (µg/mL)

A_r = atomic weight of fluoride, 19.00

M_r = molecular weight of sodium fluoride, 41.99

Acceptance criteria: NMT 1.2%

SPECIFIC TESTS

• [pH \(791\)](#)

Sample solution: 20 mg/mL of Sodium Monofluorophosphate in [water](#)

Acceptance criteria: 6.5–8.0

• [Loss on Drying \(731\)](#)

Analysis: Dry at 105° to constant weight.

Acceptance criteria: NMT 0.2%

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in tight containers.

• [USP Reference Standards \(11\)](#)

[USP Sodium Acetate RS](#)

[USP Sodium Fluoride RS](#)

[USP Sodium MonoFluorophosphate RS](#)

[USP Sodium Sulfate Anhydrous RS](#)

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

Topic/Question	Contact	Expert Committee
SODIUM MONOFLUOROPHOSPHATE	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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