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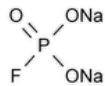
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## Sodium Monofluorophosphate



$\text{Na}_2\text{PFO}_3$  143.95

Phosphorofluoridic 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 ( $\text{Na}_2\text{PFO}_3$ ), 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  $\mu\text{g}/\text{mL}$  of [USP Sodium Fluoride RS](#), 1.4  $\mu\text{g}/\text{mL}$  of [USP Sodium Acetate RS](#), 150  $\mu\text{g}/\text{mL}$  of [USP Sodium MonoFluorophosphate RS](#), and 150  $\mu\text{g}/\text{mL}$  of [USP Sodium Sulfate Anhydrous RS](#) in [water](#)

**Standard solution:** 150  $\mu\text{g}/\text{mL}$  of [USP Sodium MonoFluorophosphate RS](#) in [water](#)

**Sample solution:** 150  $\mu\text{g}/\text{mL}$  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 solutionCalculate the percentage of sodium monofluorophosphate ( $\text{Na}_2\text{PFO}_3$ ) 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:

$$\text{Result} = (r_u/r_s) \times (C_s/C_u) \times (A_f/M_f) \times 100$$

 $r_u$  = 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)

$A_f$  = atomic weight of fluoride, 19.00

$M_f$  = 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	<a href="#">Documentary Standards Support</a>	SM32020 Small Molecules 3
REFERENCE STANDARD SUPPORT	RS Technical Services <a href="mailto:RSTECH@usp.org">RSTECH@usp.org</a>	SM32020 Small Molecules 3

**Chromatographic Database Information:** [Chromatographic Database](#)

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