



CERTIFICATE OF ANALYSIS

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1. Identification

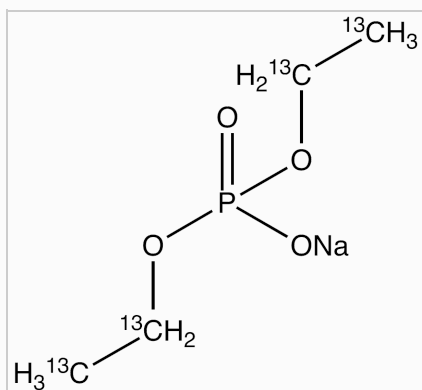
Catalogue Number: D444722

CAS Number: 1329613-90-2

Product: Diethyl Phosphate-13C4 Sodium Salt (>90%)

Synonym: Phosphoric Acid Diethyl Ester-13C4 Sodium Salt; Ethyl Sodium Phosphate-13C4 ; Diethyl-13C4 Sodium Phosphate; Sodium Diethyl Phosphate-13C4;

Structure:



Molecular Formula:

$^{13}\text{C}_4\text{H}_{10}\text{NaO}_4\text{P}$

Molecular weight:

180.05

Source of Product:

Synthetic

Solubility:

Methanol (Slightly), Water (Slightly)

Lot Number: 5-NES-38-1

Purity: >90%

Shipping Condition: This Product Is Stable To Be Shipped At Room Temperature

Storage Condition: -20°C

2. Warning

Warning 1:

Warning 2:

Warning 3:

3. Analytical Information

| Tests: | Specifications: | Results: |
|--------------------|--|-----------------------------------|
| Appearance | White to Yellow Oil to Low-Melting Solid | White to Off-White Solid |
| NMR | Conforms to Structure | Conforms |
| P NMR | Conforms to Structure | Conforms |
| C NMR | Conforms to Structure | Conforms |
| Elemental Analysis | Conforms | %C: 25.52, %H: 5.91 |
| HPLC Purity | Report Result | 95.73% (ELSD) |
| MS | Conforms to Structure | Conforms |
| Isotopic Purity | >95% | 99.4% |
| Sodium Content | Report Result | 12.47% by Ion Chromatography |
| Water Content | Report Result | ~4.3% based on Elemental Analysis |

Additional Information:

Normalized Intensity: $^{13}\text{C}0 = 0.01\%$, $^{13}\text{C}1 = 0.00\%$, $^{13}\text{C}2 = 0.05\%$, $^{13}\text{C}3 = 2.38\%$, $^{13}\text{C}4 = 97.56\%$

Purity is based on the analytical results of the tests performed. NMR and Elemental Analysis (if available) may have an accuracy of $\pm 2\%$. Isotopic purity is based on mass distribution observed. The contents of the specifications are subject to change without advance notice, and the specification values displayed here are the most up to date values.

4. Signatures

Reviewed By

Nicole Yip



Reviewed By

Toni Rantanen



**C of A Approved
By**

Chanell Chu



Test Date

7/26/2022

Retest Date

7/24/2026