

# Certificate of Analysis

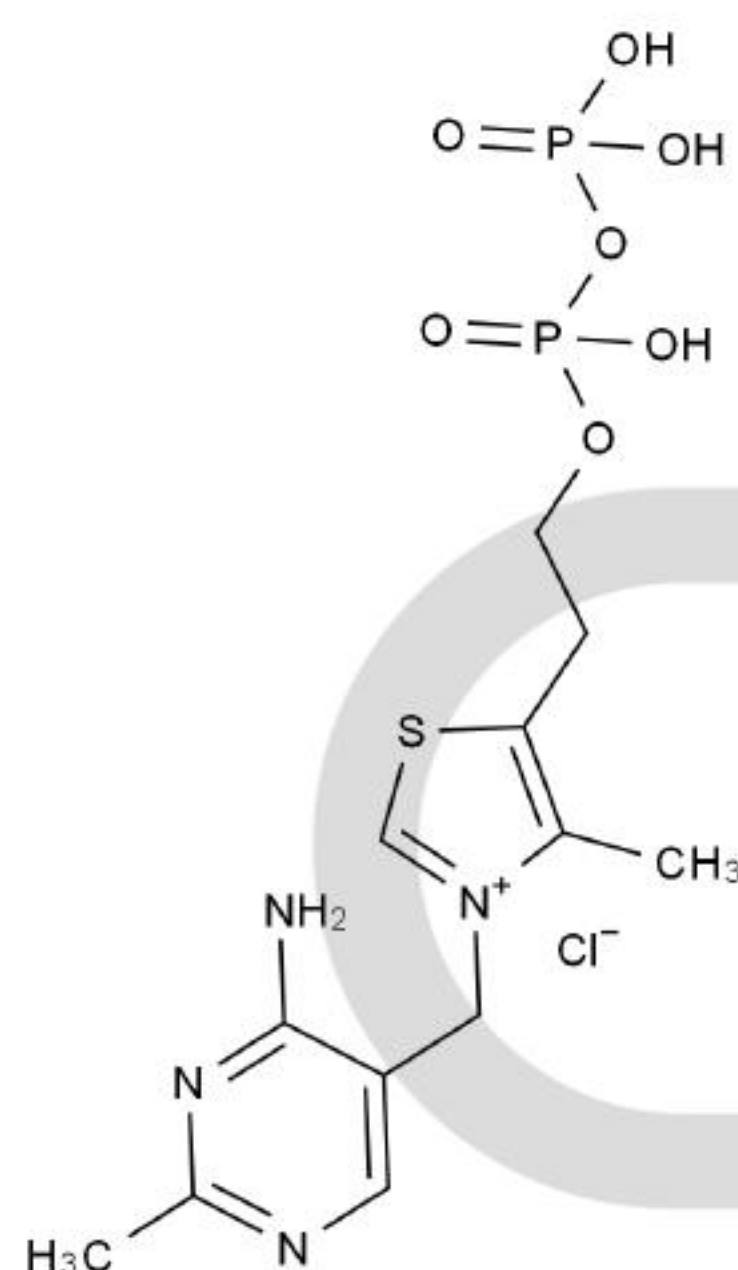
## Reference Material & Standard

|                    |                                                                                   |                     |                                           |
|--------------------|-----------------------------------------------------------------------------------|---------------------|-------------------------------------------|
| Product Name:      | Thiamine Pyrophosphate                                                            | Catalogue Number:   | CCFD201330                                |
| Synonyms:          | N/A                                                                               | Lot Number:         | 1121-RF-0059                              |
| CAS Number:        | 154-87-0                                                                          | Expiry Date:        | Nov 20, 2028                              |
| Molecular Formula: | C <sub>12</sub> H <sub>19</sub> N <sub>4</sub> O <sub>7</sub> P <sub>2</sub> S Cl | Storage:            | -20°C±5°C Protected from light and Sealed |
| Molecular Weight:  | 425.31 35.45                                                                      | Shipping Condition: | Shipping with Ice Packs                   |

Warning:



Chemical Structure:



| Test Items     | Method            | Results     |
|----------------|-------------------|-------------|
| Appearance     | Visual inspection | White Solid |
| Identification | LCMS&HNMR         | Confirmed   |
| Purity         | HPLC              | 97.8%       |
| Assay          | qNMR              | 93.3%       |
| Uncertainty    |                   | ±2.0%       |

## Comment:

1. Assay was determined by quantitative <sup>1</sup>H-NMR.
2. The uncertainty values are the expanded uncertainty and represent an estimated standard deviation equal to the positive square root of the total variation of the uncertainty of components. A normal distribution is assumed and a coverage factor of K=2 is chosen using approximately a 95% confidence level.

Signature:

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Reviewed by:

*Lisa*

Approved by General Manager:

*David*

Date: Nov 21, 2024

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