

# CERTIFICATE OF ANALYSIS



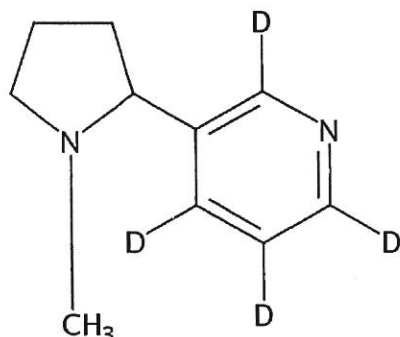
**Chiron AS**

Stiklestadvn. 1  
N-7041 Trondheim  
Norway  
Phone No.:  
+47 73 87 44 90  
Fax No.:  
+47 73 87 44 99  
E-mail:  
chiron@chiron.no  
Website:  
www.chiron.no  
Org. No.:  
967 607 657

## 1. DESCRIPTION OF THE REFERENCE MATERIAL SOLUTION

### 1.1. General Product Data

Compound: **(±)-Nicotine-2,4,5,6-d4 (pyridine-d4)**  
Chemical name: 5-(1-methyl-2-pyrrolidinyl)-pyridine-2,3,4,6-d<sub>4</sub>  
Synonym: -  
  
Catalogue #: **10520.10-100-AN**  
CAS #: [350818-69-8]  
Molecular formula: C<sub>10</sub>H<sub>10</sub>D<sub>4</sub>N<sub>2</sub>  
MW (g/mol): 166.20  
Structure:



### 1.2. Batch Specific Data

Batch #: **18 655 with neat 15 243**  
  
Concentration: **100 ± 2 µg/mL, adjusted for net purity.**  
Solvent: Acetonitrile, ChromAR HPLC, batch 1507801801  
CAS: 75-05-8  
Density: 0.7844 g/mL  
Purity solvent: >99.8 %  
Volume: 1.0 mL plus excess of minimum 0.1 mL  
Appearance: Clear Colourless Solution

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## 1.3. Chemical analysis of batch 15 243:

Chromatographic purity: 98.0 ± 0.5 %  
Net purity<sup>1,2</sup>: 98.0 ± 0.5 %

- 1 (100 – wt% residual solvent – wt% residual water – wt% residual inorganic) x wt% Chromatographic purity / 100, when known.
- 2 The expanded uncertainty, U, assumes a normal distribution and a coverage factor of k=2 is chosen using approximately a 95 % confidence level. Calculations are available on request.

	Method	Results	Specifications
Identity with GC-MS	10293	Complies	Complies
Chromatographic purity with GC-MS	10293	98.0 %	≥98 %
NMR	External	98 atom%D	≥98 atom%D

Appearance Clear orange liquid

Solubility Polar solvent

Analytical raw data and chromatograms are available on request.

Analysis date: November 7<sup>th</sup> 2015

Stability test No

## 1.4. Intended use of the reference material (RM)

- For laboratory use only
- For calibrations, assessments or assigning values

## 1.5. Correct use of the RM

The RM should be stored in a sealed container at 2-8°C or below in a dark place.

Allow the RM to reach room temperature before usage. The expiry date of this RM is based on the current knowledge and holds only for proper storage conditions. Exposure should be kept to a minimum for all laboratory chemicals, use appropriate personal protective equipment.

Expiry date: 2 years from delivery.

Can be changed due to stability test or other new knowledge.

## 2. Homogeneity Assessment

Homogeneity of the finished product is assessed by analyzing sample batches or by other methods consistent with the intended use of the product that comply with the appropriate quality system requirements.

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### 3. Manufacturing

All weights, volumes and temperatures are controlled daily using in-house procedures that are calibrated against traceable masters acc. to requirements in ISO 17025:2005.

### 4. Safety

See MSDS. Available at [www.chiron.no](http://www.chiron.no)

Issued by:

Trondheim, August 29, 2018

*Ida L. Nordby*

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The purchaser must determine the suitability of this product for its particular use. Chiron AS makes no warranty of any kind, express or implied, other than its products meet all quality control standards set by Chiron AS. We do not guarantee that the product can be used for a special application.

