



Certificate of Analysis

ISO 9001

Reference Material

Product name

N-Nitroso-N-n-butyl-N-methylamine

Product code

MM0487.14-0100

CAS number

7068-83-9

Molecular weight

116.16

Molecular formula

C₅H₁₂N₂O

Lot number

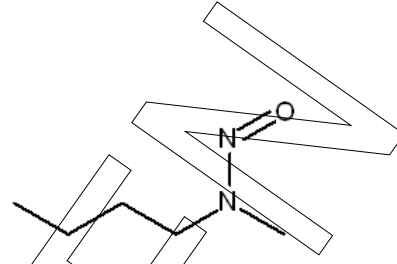
1183260

Appearance

colourless liquid

Long-term storage

2 to 8 °C, dark



Assay "as is"
99.2 %

Date of shipment:

08 Nov 2021

Producer confirms that this reference material (RM) meets the specification detailed on this Certificate of Analysis for **one year** from the date of shipment, provided the substance is stored under the recommended conditions unopened in the original container.

Release by:	Date of Release:		Product Release
Dr. Sabine Schröder	Luckenwalde, 04 Nov 2021		



Mikromol™

Product information

For laboratory use only. Not suitable for human or animal consumption.

Before usage of the RM, it should be allowed to warm to room temperature. No drying required, as the certified value is already corrected for the content of water and other volatile materials.

The product quality is controlled by regularly performed quality control tests (retests).

Further content

Identity

Assay

Final result

Revision table

SPECIMEN



Identity

The identity of the reference material was established by following analyses.

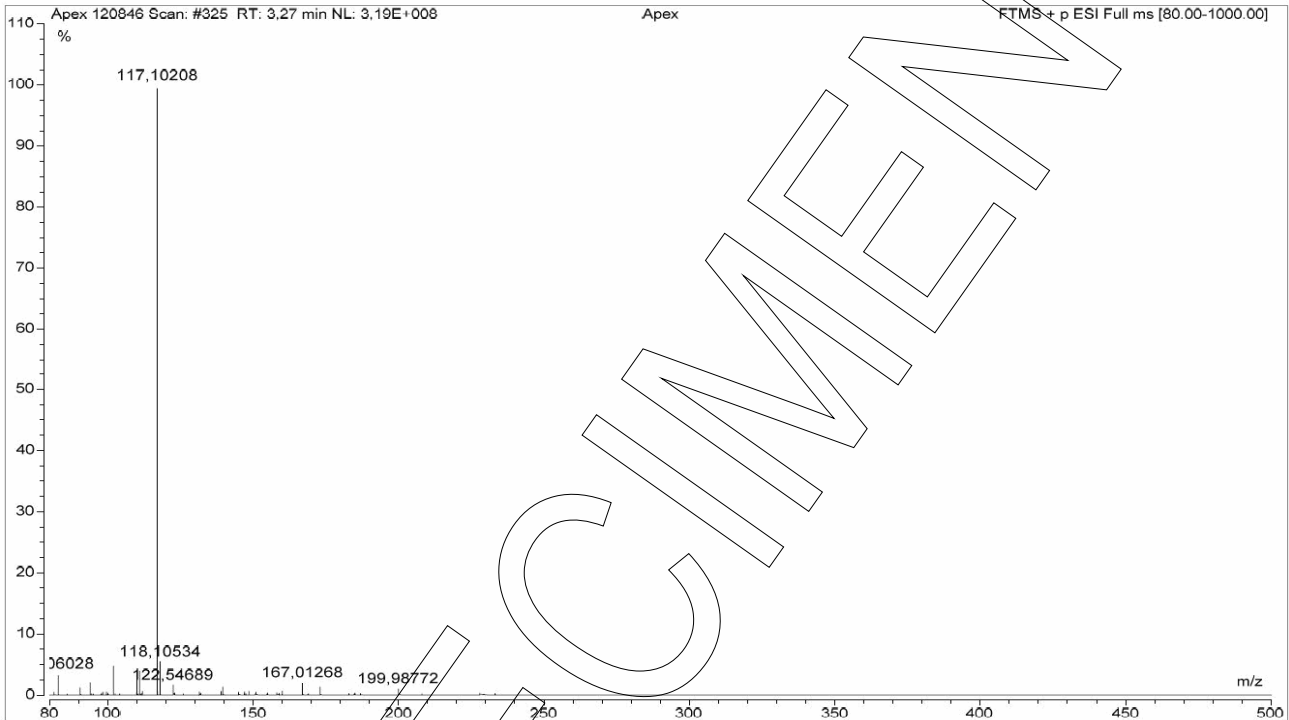
Method	Conditions	Result
¹ H-NMR	400 MHz, CDCl ₃	Structure confirmed



SPECIMEN



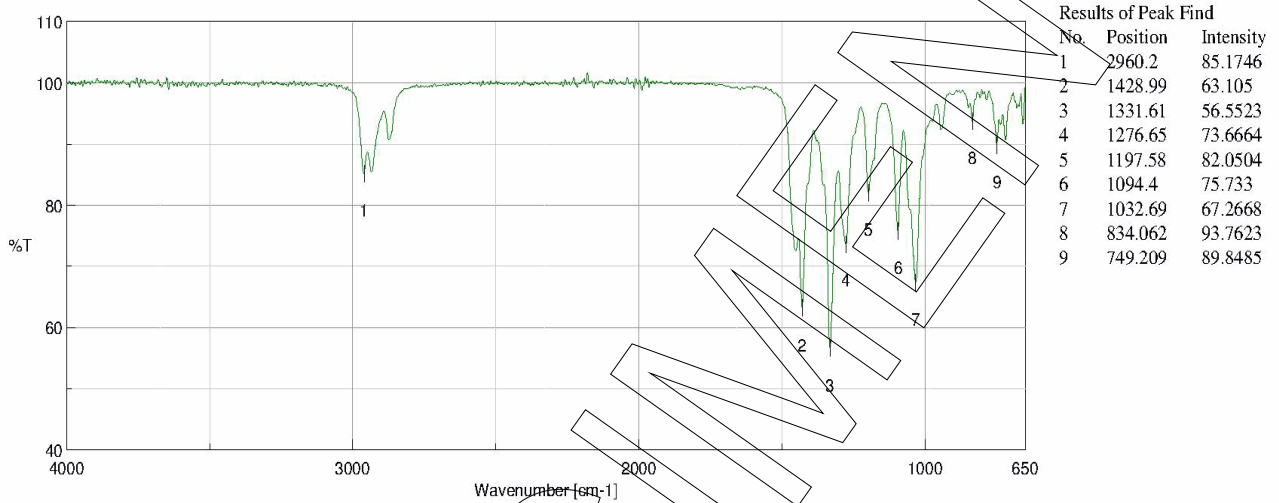
Method	Conditions	Result
MS	3.5 kV ESI+; capillary temperature: 269 °C Theoretical value: 117.10224	Structure confirmed



SPECIMEN



Method	Conditions	Result
IR	Attenuated Total Reflection Fourier Transform Infrared (ATR-FTIR) Spectroscopy	Structure confirmed



Assay

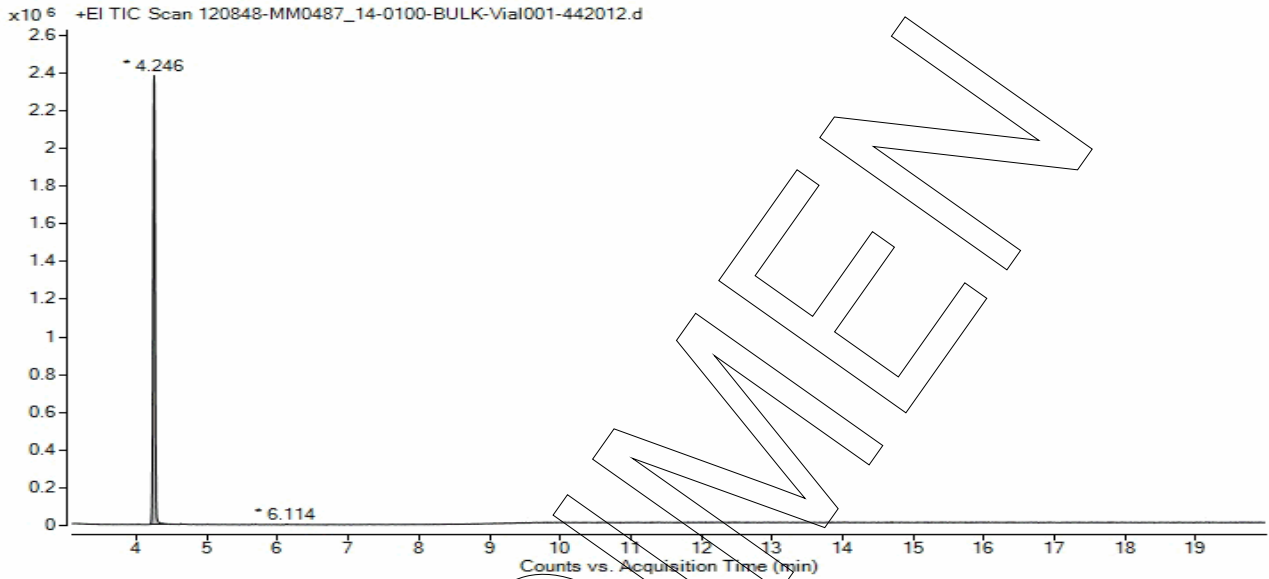
The assay of the reference material was assessed by following analyses.

Purity by gas chromatography (GC)

GC Conditions:	
Column	30 m x 0.25 mm x 0.25 µm; USP G27
Detector	El, 70 eV; 35 to 550 amu; 280 °C
Injector	Split 20:1, 220 °C
Flow rate	Helium 1.5 ml/min
Oven Program	Initial Temp.: 70 °C for 3 min Heating Rate: 30 °C/min to 250 °C Final Temp.: 250 °C for 11 min



GC chromatogram and peak table



Area percent report - sorted by signal

Pk #	Retention time	Area	Area %
1	4.246	4575918.01	99.84
2	4.629	3220.27	0.07
3	6.114	4342.29	0.09
Totals		4583480.57	100.00

The content of the analyte was determined as ratio of the peak area of the analyte and the cumulative areas of the purities, added up to 100 %. Air peaks were ignored in calculation.

Result (n = 3)

99.85 %; SD = 0.02 %



Volatile content

Water content	
Method	Karl Fischer titration
Result (n = 3)	0.27 %; SD = 0.12 %

Residual solvents	
Method	¹ H-NMR
Result (n = 1)	Sum: 0.36 % 0.36 % Methylene chloride

Final result

Assay "as is": 99.22 %

The assay "as is" is assessed by 100% method (mass balance) and is equivalent to the assay based on the not anhydrous and not dried substance respectively.

The calculation of the 100% method follows the formula:

$$\text{Assay (\%)} = (100\% - \text{volatile contents (\%)}) * \frac{\text{Purity (\%)}}{100\%}$$

Volatile contents are considered as absolute contributions and purity is considered as relative contribution. Inorganic residues are excluded by additional tests.

Revision table

Revision	Date	Reason for revision
00	04 Nov 2021	Release of the Certificate of Analysis - initial version

Product warranties for the RM are set out in the terms and conditions of purchase.