



Mikromol™



## Certificate of Analysis

ISO 9001

### Reference Material

#### Product name

2-[2-(Diethylamino)ethoxy]ethanol

#### Product code

MM0547.02

#### CAS number

140-82-9

#### Molecular weight

161.24

#### Molecular formula

C<sub>8</sub>H<sub>19</sub>NO<sub>2</sub>

#### Lot number

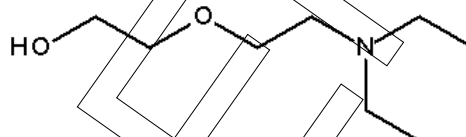
1025253

#### Appearance

pale yellow liquid

#### Long-term storage

2 to 8 °C, dark  
very hygroscopic



Assay "as is"  
99.8 %

Date of shipment:

02 Sep 2019

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

<b>Release by:</b>	<b>Date of Release:</b>		Product Release
Dr. Sabine Schröder	Luckenwalde, 18 Aug 2019		



**Mikromol<sup>TM</sup>**

## 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

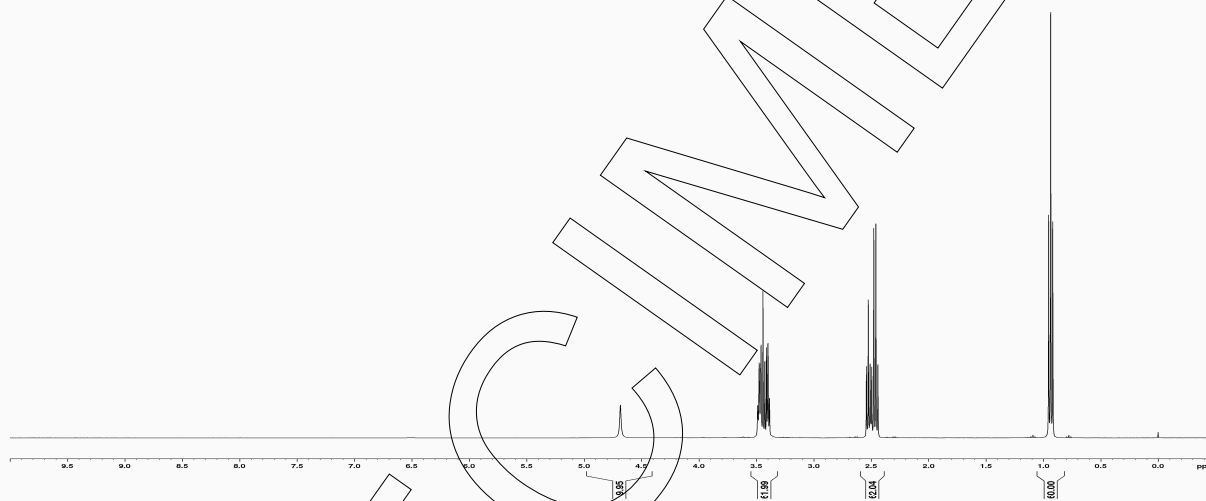
SPECIMEN



## Identity

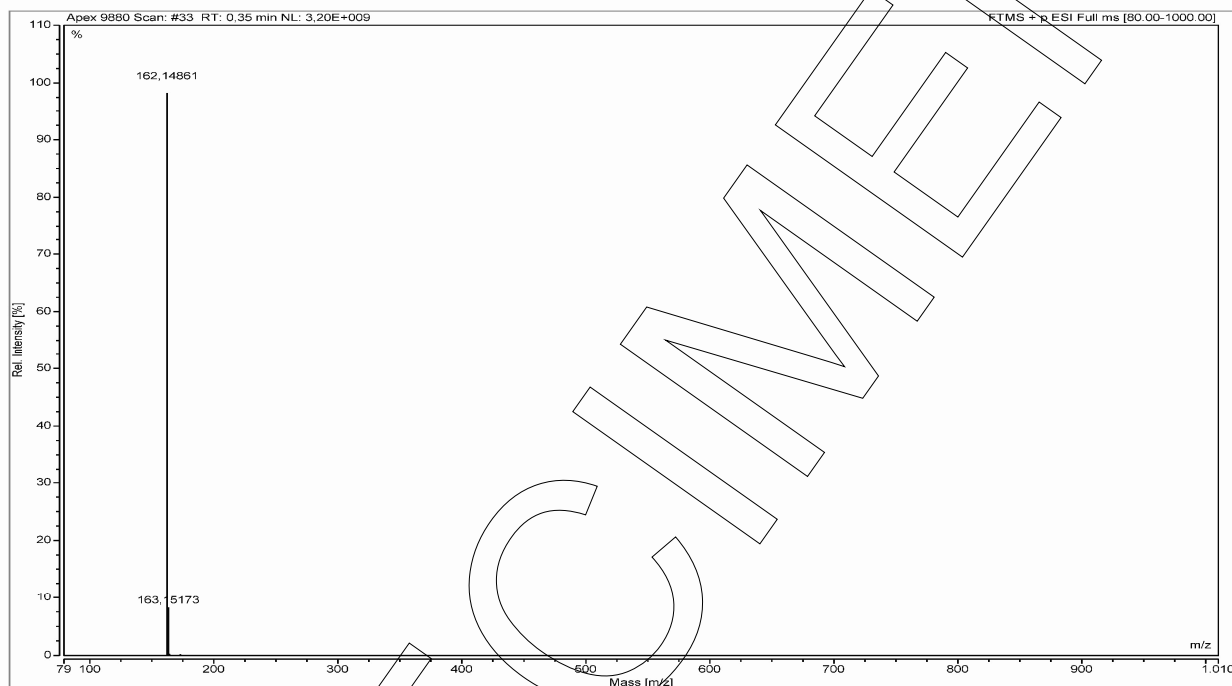
The identity of the reference material was established by following analyses.

Method	Conditions	Result
<sup>1</sup> H-NMR	400 MHz, DMSO-d <sub>6</sub>	Structure confirmed



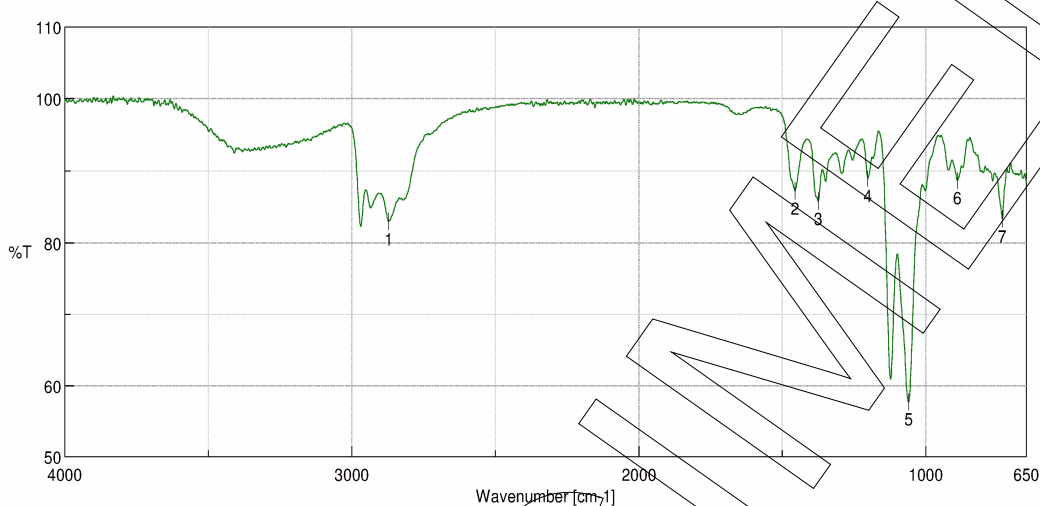


Method	Conditions	Result
MS	3.5 kV ESI+; capillary temperature: 269 °C Theoretical value: 162.14886	Structure confirmed





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



Results of Peak Find

No.	Position	Intensity
1	2871.49	82.9179
2	1455.99	87.0542
3	1375	85.6719
4	1202.4	88.7989
5	1059.69	57.7296
6	889.987	88.5214
7	733.782	83.2706

## Assay

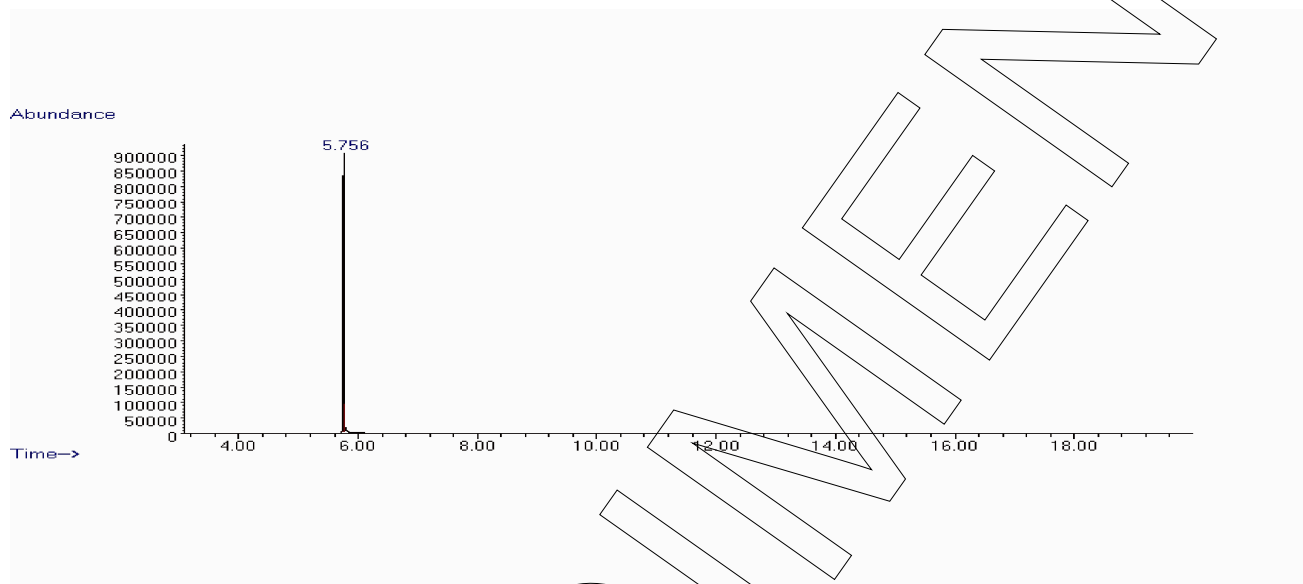
The assay of the reference material was assessed by following analyses.

### Purity by Gas Chromatography (GC)

GC Conditions:	
Column	HP-5MS 30 m x 0.25 mm x 0.25 µm
Detector	EI, 70 eV; 35 to 550 amu; 280 °C
Injector	Split 20:1, 220 °C
Flow rate	Helium 1.50 ml/min
Oven program	Initial Temp.: 70 °C for 3 min Heating Rate: 30 °C/min Final Temp.: 250 °C for 11 min



## GC chromatogram and peak table



### Area percent report - sorted by signal

Pk #	Retention time	Area	Area %	
1	5.756	8040296	100.00	
<b>Totals</b>		<b>8040296</b>	<b>100.00</b>	

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)

100.00 %; SD < 0.01 %

### Volatile content

#### Water content

<b>Method</b>	Karl Fischer titration
<b>Result (n = 3)</b>	0.19 %; SD = 0.03 %



## Residual solvents

**Method**<sup>1</sup>H-NMR**Result (n = 1)**

No significant amounts of residual solvents were detected (&lt; 0.05 %).

## Final result

**Assay "as is": 99.81 %**

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	18 Aug 2019	Release of the Certificate of Analysis - initial version

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