



# Certificate of Analysis

ISO 9001

## Reference Material

### Product name

1-Chloro-3,5-dimethyladamantane

### Product code

MM1045.04-0025

### CAS number

707-36-8

### Molecular weight

198.73

### Molecular formula

C<sub>12</sub>H<sub>19</sub>Cl

### Lot number

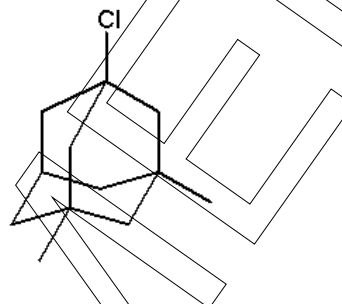
1030069

### Appearance

light yellow oil

### Long-term storage

2 to 8 °C, dark



Assay "as is"  
100.00 %

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, 22 Aug 2019		



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

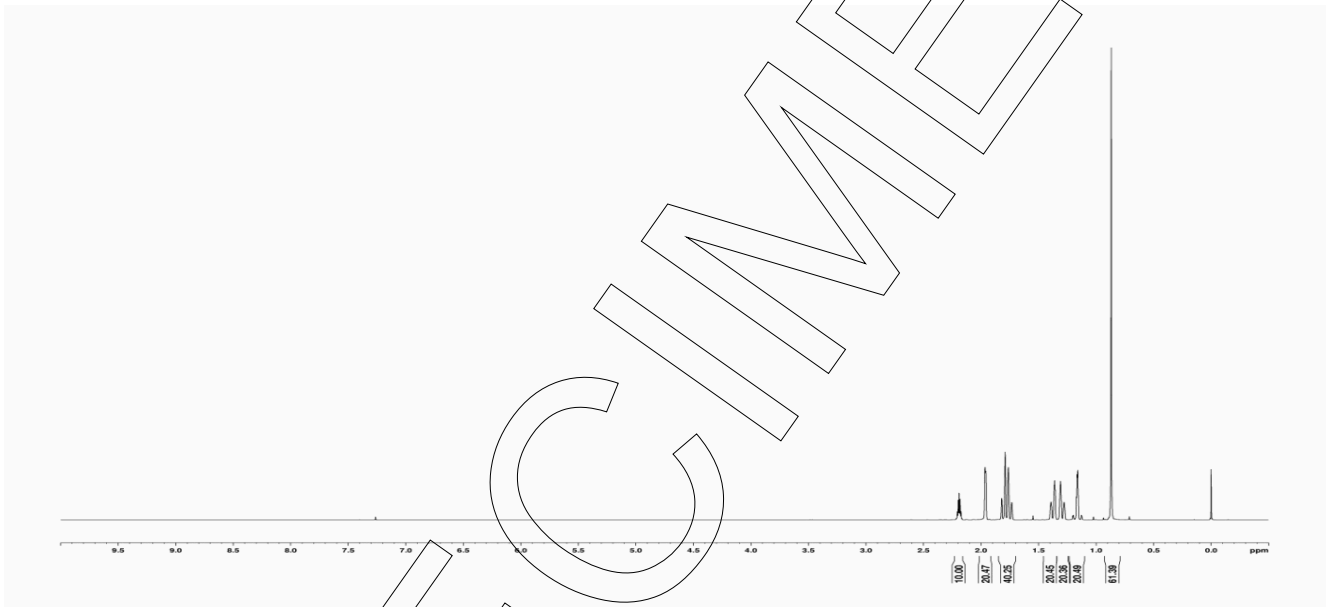
SPECIMEN



## Identity

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

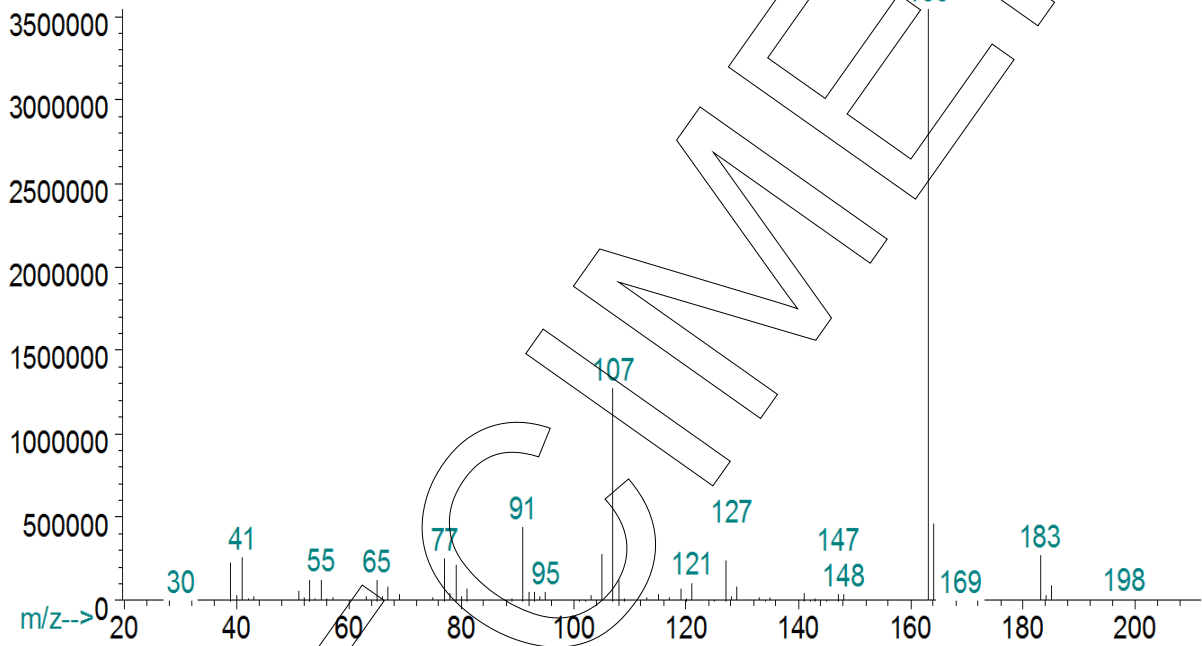
Method	Conditions	Result
<sup>1</sup> H-NMR	400 MHz, CDCl <sub>3</sub>	Structure confirmed





Method	Conditions	Result
MS	EI, 70eV, detector temperature: 280 °C	Structure confirmed

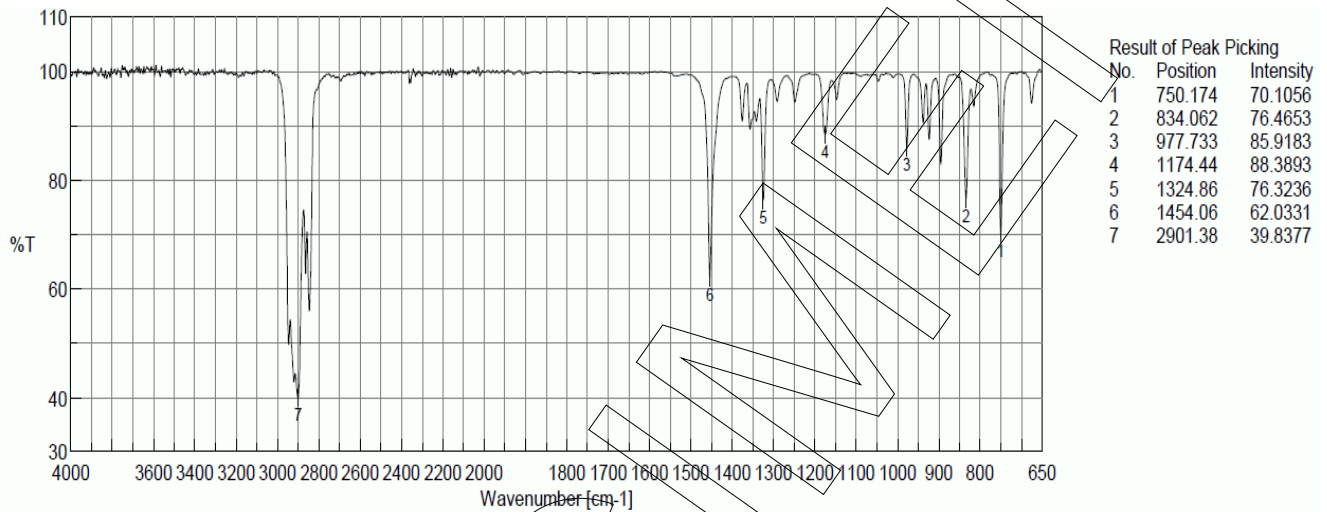
Abundance



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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.

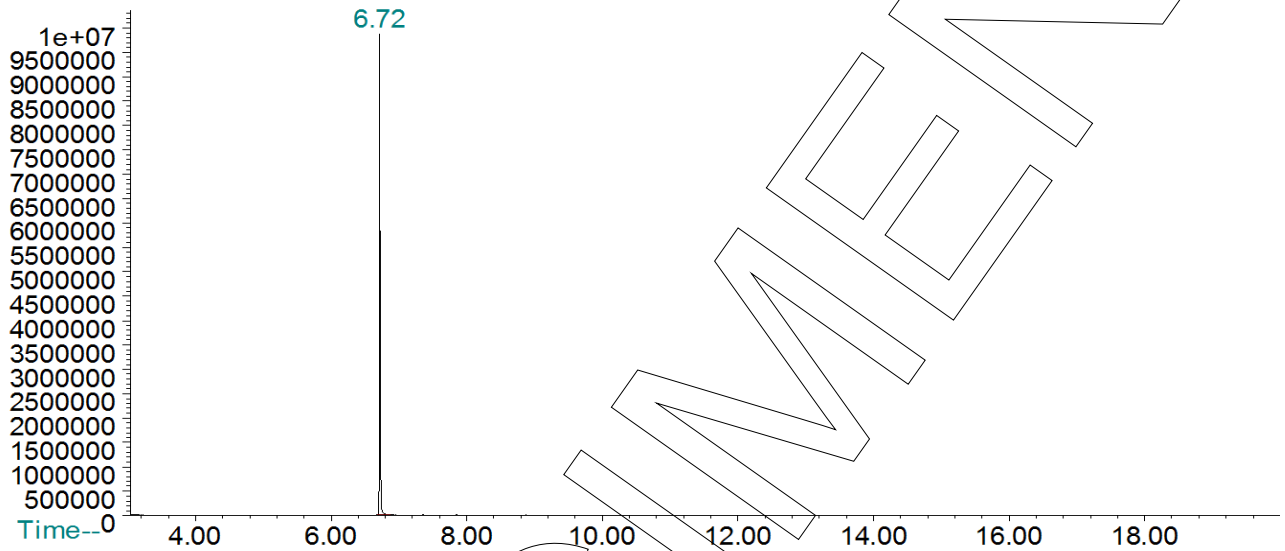
### Purity by Gas Chromatography (GC)

GC Conditions:	
Column	HP-5MS 30 m x 0.25 mm x 0.25 µm
Detector	EI, 70 eV; 30 to 550 amu; 280 °C
Injector	splitless Injection, 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



## GC chromatogram and peak table

Abundance



### Area percent report - sorted by signal

Pk #	Retention time	Area	Area %
1	6.722	92844638	100.00
<b>Totals</b>		<b>92844638</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

**Method**

Karl Fischer titration

**Result**

No significant amounts of water were detected (< 0.05 %).



## Residual solvents

**Method**

<sup>1</sup>H-NMR

**Result** (n = 1)

No significant amounts of residual solvents were detected (< 0.05 %).

## Final result

**Assay "as is": 100.00 %**

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	22 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.