



Certificate of Analysis

ISO 9001

Reference Material

Product name

2,2-Dimethyl-4-(1-methylethyl)-1,3-benzodioxole

Product code

MM0461.14-0025

CAS number

201166-22-5

Molecular weight

192.25

Molecular formula

C₁₂H₁₆O₂

Lot number

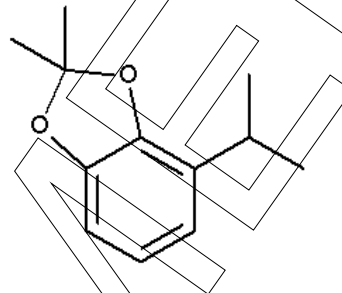
1030380

Appearance

yellowish liquid

Long-term storage

2 to 8 °C, dark



Assay "as is"
93.7 %

Date of shipment:

13 Sep 2019

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, 03 Sep 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

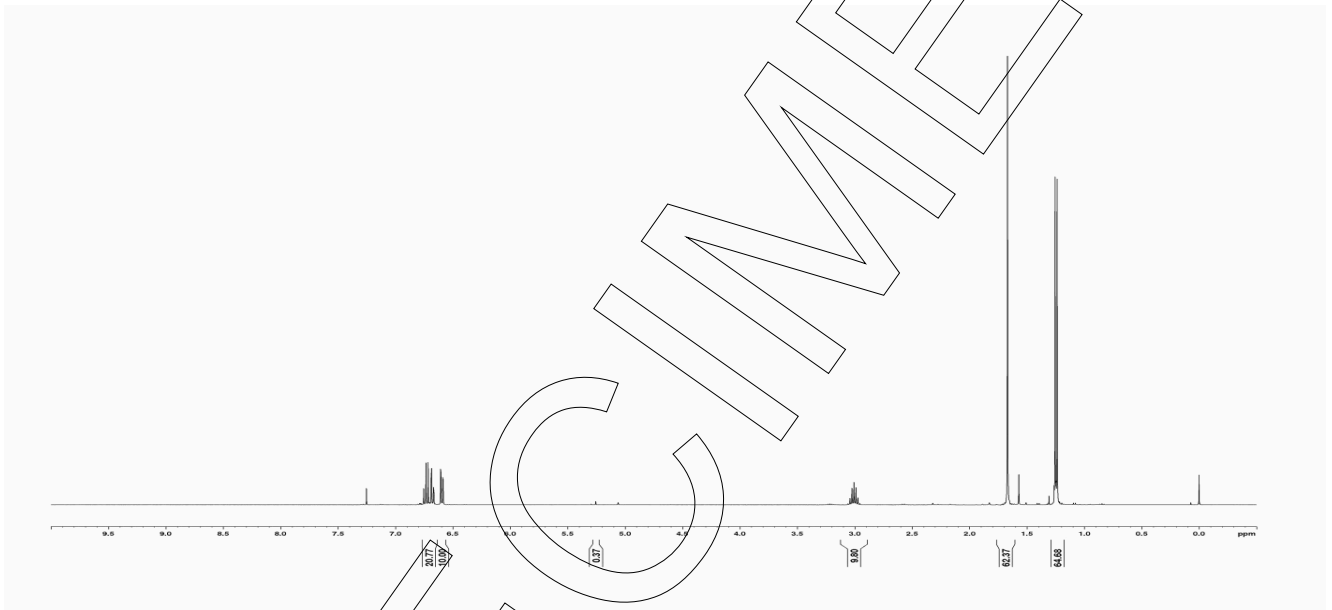
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Identity

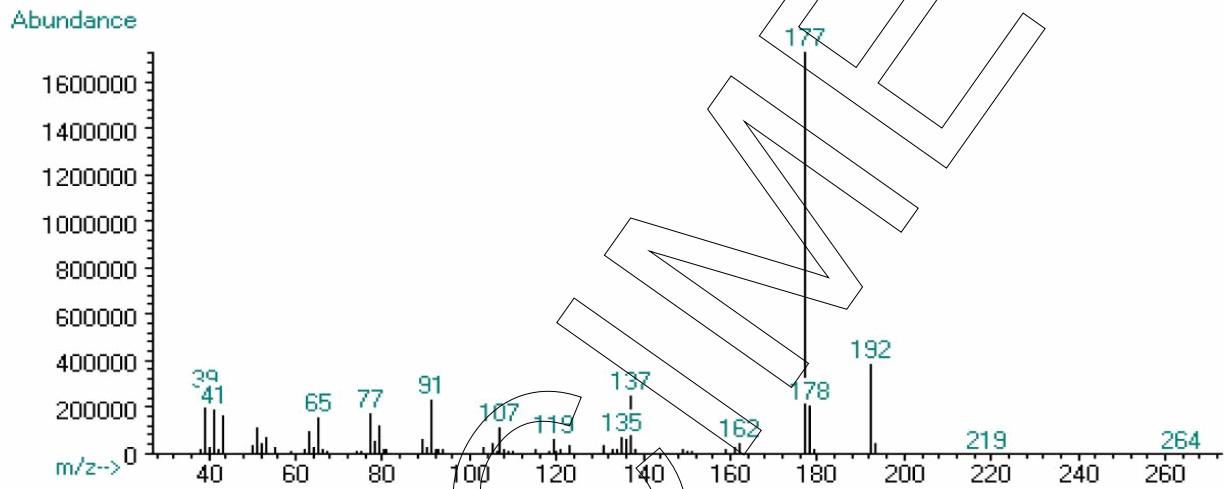
The identity of the reference material was established by following analyses.

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



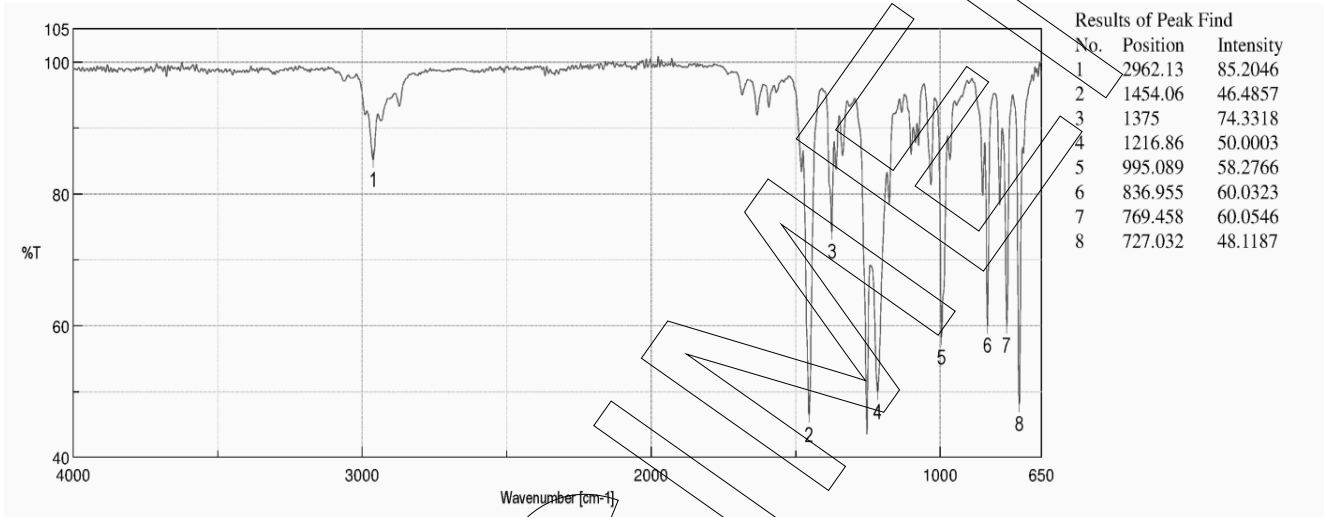


Method	Conditions	Result
MS	EI, 70eV, detector temperature: 280 °C	Structure confirmed





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



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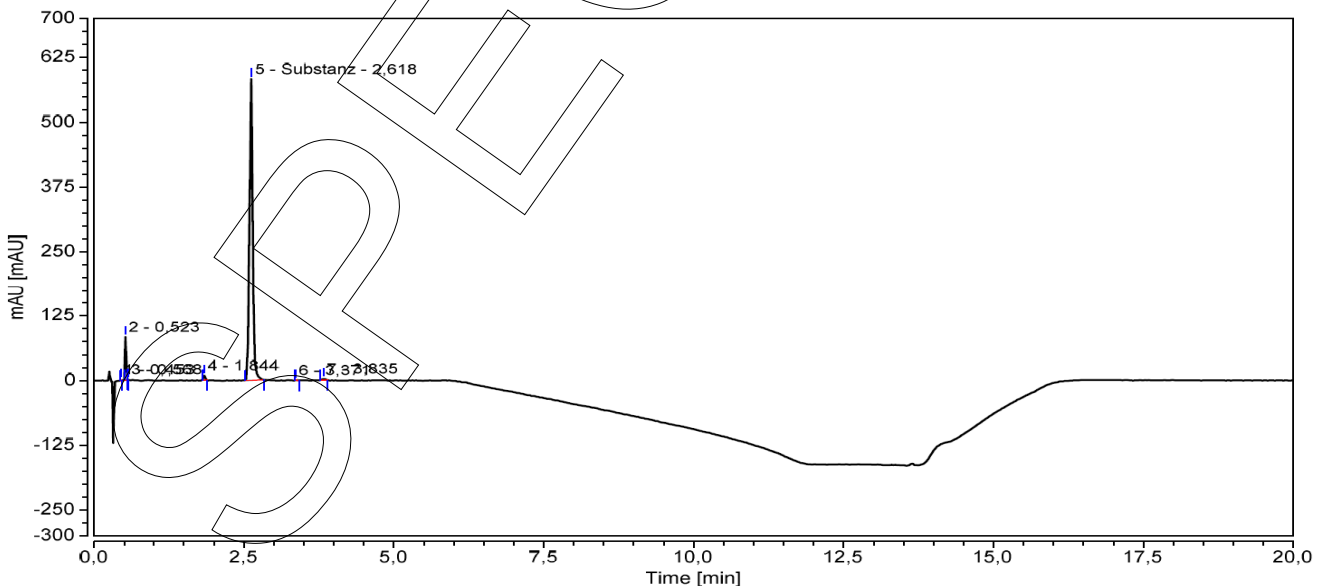
Assay

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

Purity by High Performance Liquid Chromatography (HPLC)

HPLC Conditions:	
Column	Cortecs UPLC C18 +; 1.6 µm, 75 x 2.1 mm
Column temperature	40 °C
Detector	DAD, 200 nm
Injector	Auto 1.00 µl; 0.096 mg/ml in Acetonitrile/Water 50/50 (v/v)
Flow rate	0.5 ml/min
Phase A	Water, 0.1 % HCOOH
Phase B	Acetonitrile, 0.1 % HCOOH
Gradient program	0-5 min A/B 45/55 5-11 min A/B to 2/98 11-13 min A/B 2/98 13-15 min A/B to 45/55 15-20 min A/B 45/55 (v/v)

HPLC chromatogram and peak table





Area percent report - sorted by signal			
Pk #	Retention time	Area	Area %
1	0.453	0.030	0.08
2	0.523	1.413	3.72
3	0.568	0.015	0.04
4	1.844	0.375	0.99
5	2.618	35.94	94.48
6	3.371	0.040	0.11
7	3.835	0.226	0.59
Totals		38.039	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 %. System peaks were ignored in calculation.

Result (n = 3) 94.48 %; SD = 0.02 %

Volatile content

Water content

Method Karl Fischer titration
Result (n = 3) 0.08 %; SD = 0.01 %

Residual solvents

Method ¹H-NMR
Result (n = 1) Sum: 0.80 %
0.80 % Dichloromethane



Final result

Assay "as is": 93.65 %

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	03 Sep 2019	Release of the Certificate of Analysis - initial version

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