



Mikromol™



Certificate of Analysis

ISO 9001

Reference Material

Product name

Cloxacillin Sodium Monohydrate

Product code

MM0682.00

CAS number

7081-44-9

Molecular weight

475.88

Molecular formula

$C_{19}H_{17}ClN_3O_5S$
 H_2O Na

Lot number

1033460

Appearance

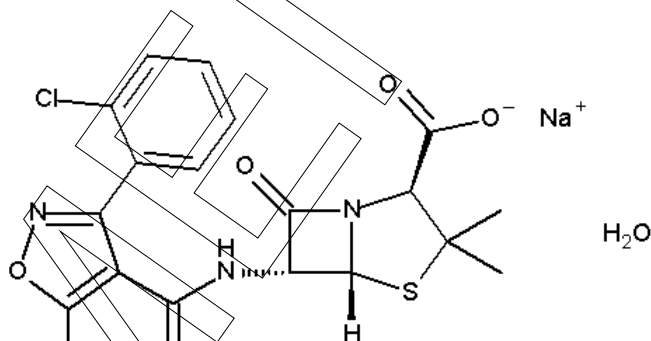
white solid

Melting point

192 °C (dec)

Long-term storage

-18 °C, dark



Assay "as is"
98.0 %

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.

Release by:	Date of Release:		Product Release
Dr. Sabine Schröder	Luckenwalde, 29 Aug 2019		



MikromolTM

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

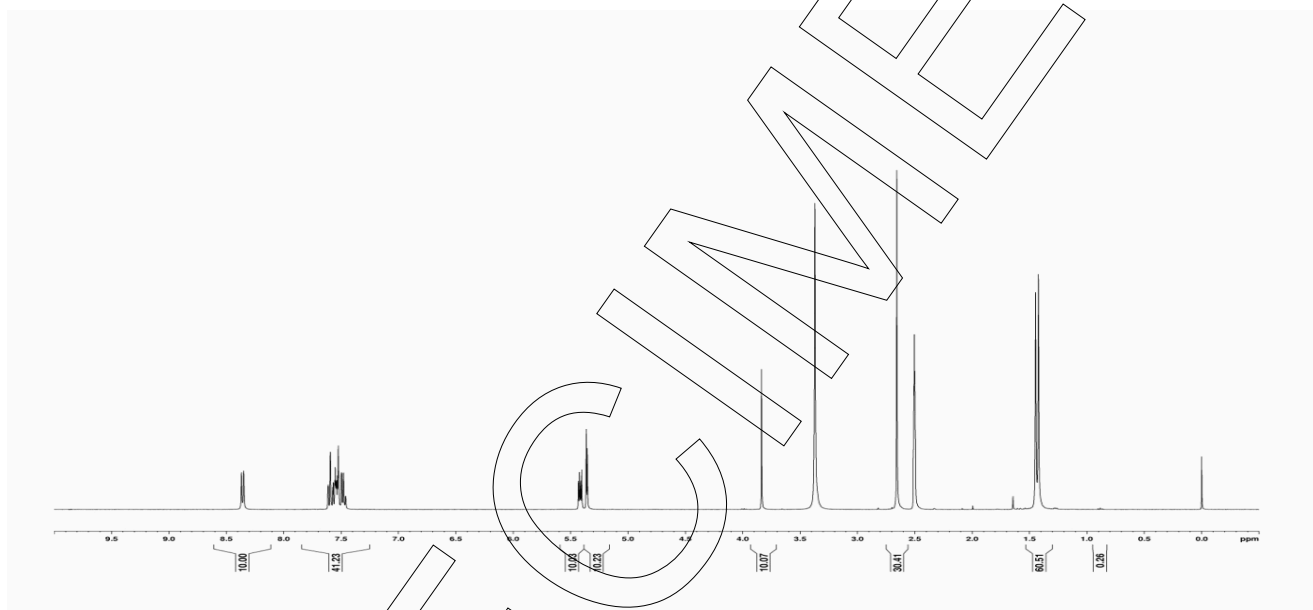
SPECIMEN



Identity

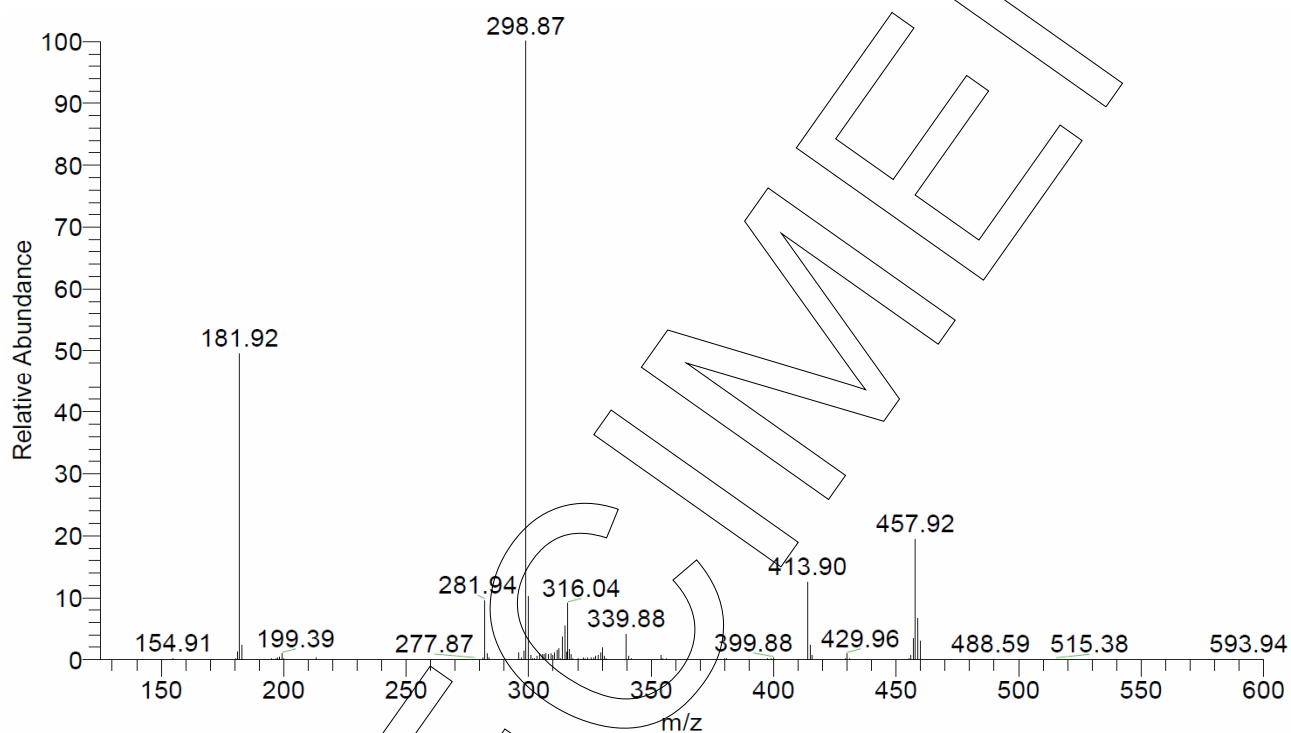
The identity of the reference material was established by following analyses.

Method	Conditions	Result
¹ H-NMR	400 MHz, DMSO-d ₆	Structure confirmed



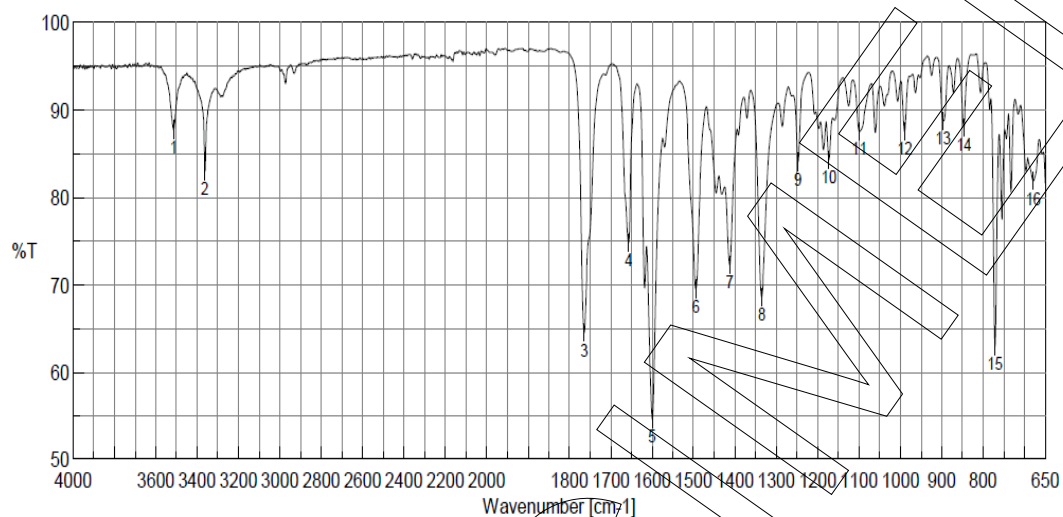


Method	Conditions	Result
MS	4.5 kV ESI+; vaporization temperature: 200 °C	Structure confirmed





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



Result of Peak Picking		
No.	Position	Intensity
1	3514.63	87.743
2	3362.28	82.9034
3	1764.55	64.4609
4	1656.55	74.7708
5	1599.66	54.5576
6	1494.56	69.4769
7	1412.6	72.189
8	1335.46	68.5877
9	1247.72	84.0523
10	1172.51	84.2447
11	1099.23	87.4739
12	989.304	87.4703
13	896.737	88.6881
14	846.597	87.9295
15	771.387	62.8324
16	678.82	81.8592



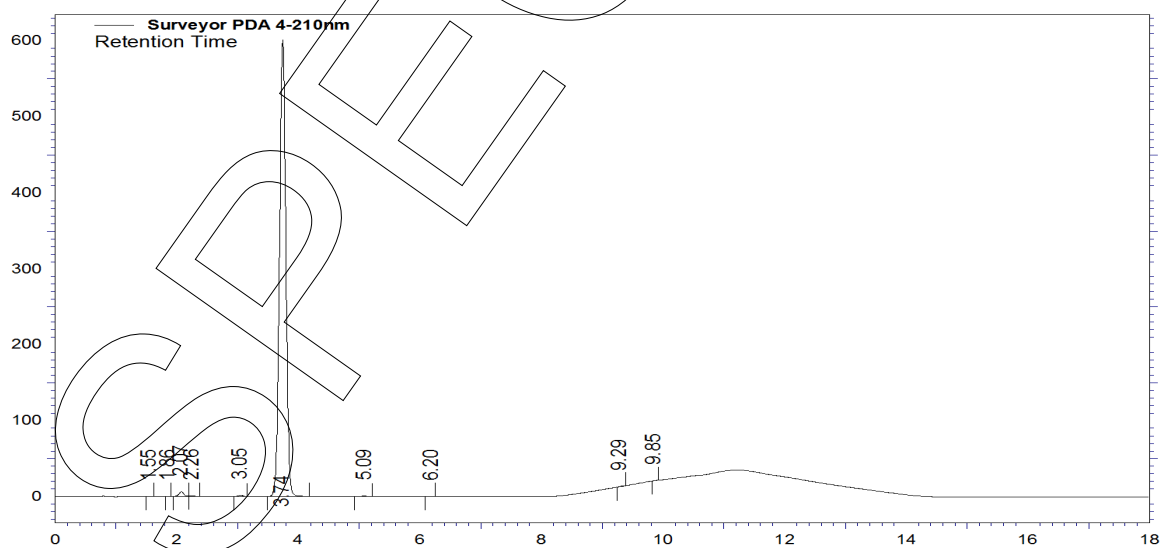
Assay

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

Purity by High Performance Liquid Chromatography (HPLC)

HPLC Conditions:	
Column	LiChrospher 60 RP-select B; 5 µm, 125 x 4.0 mm
Column temperature	40 °C
Detector	DAD, 210 nm
Injector	Auto 5.00 µl; 0.057 mg/ml in Acetonitrile/Water 50/50 (v/v)
Flow rate	1.0 ml/min
Phase A	Water, 0.1 % H ₃ PO ₄
Phase B	Acetonitrile, 0.1 % H ₃ PO ₄
Gradient program	0-6 min A/B 60/40 6-9 min A/B to 20/80 9-12 min A/B to 60/40 12-18 min A/B 60/40 (v/v)

HPLC chromatogram and peak table





Area percent report - sorted by signal

Pk #	Retention time	Area	Area %
1	1.55	795	0.02
2	1.86	931	0.02
3	2.07	32865	0.74
4	2.26	5078	0.11
5	3.05	10470	0.24
6	3.74	4374183	98.71
7	5.09	4553	0.10
8	6.20	413	0.01
9	9.29	1501	0.03
10	9.85	548	0.01
Totals		4431337	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) 98.69 %; SD = 0.10 %

Volatile content

Water content

Method	Karl Fischer titration
Result (n = 3)	4.36 %; SD = 0.16 %
Theoretical value	3.79 %
Result (content of excessive water)	0.57 %

Residual solvents

Method	¹ H-NMR
Result (n = 1)	Sum: 0.17 %



0.08 % n-Hexane; 0.08 % Acetic acid
0.01 % Acetone

Final result

Assay "as is": 97.96 %

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	29 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.