Cayman Chemical
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CERTIFIED REFERENCE MATERIAL

17 components: Acetone [CAS:67-64-1] 5000ug/ml ; Benzene [CAS:71-43-2] 100ug/ml ; Chloroform [CAS:67-66-3] 100ug/ml ; Cyclohexane [CAS:110-82-7] 5000ug/ml ; Dichloromethane [CAS:75-09-2] 1000ug/ml ; Ethanol [CAS:64-17-5] 5000ug/ml ; Ethyl Acetate [CAS:141-78-6] 5000ug/ml ; n-Heptane [CAS:142-82-5] 5000ug/ml ; n-Hexane [CAS:110-54-3] 1000ug/ml ; 2-Propanol [CAS:67-63-0] 5000ug/ml ; Methanol [CAS:67-56-1] 5000ug/ml ; n-Pentane [CAS:109-66-0] 5000ug/ml ; Toluene [CAS:108-88-3] 1000ug/ml ; Trichloroethene [CAS:79-01-6] 100ug/ml ; o-Xylene [CAS:95-47-6] 3000ug/ml ; m-Xylene [CAS:108-38-3] 3000ug/ml ; p-Xylene [CAS:106-42-3] 3000ug/ml in N,N-Dimethylacetamide

Lot N: 0826780
Barcode: 93608084

Ref N: 46787

Certification Date: 28 Sep 2026

Component	Certified Value* and uncertainty [µg/ml]	CAS	Chemical Formula
Acetone	5032 ± 47	67-64-1	C_3H_6O
Benzene	101.83 ± 1.04	71-43-2	C_6H_6
Chloroform	101.37 ± 0.97	67-66-3	$CHCl_3$
Cyclohexane	5005 ± 47	110-82-7	C_6H_{12}
Dichloromethane	1016.0 ± 9.7	75-09-2	CH_2Cl_2
Ethanol	4990 ± 51	64-17-5	C_2H_5OH
Ethyl Acetate	4995 ± 54	141-78-6	$C_4H_8O_2$
n-Heptane	5011 ± 55	142-82-5	C_7H_{16}
n-Hexane	997.9 ± 9.6	110-54-3	C_6H_{14}
2-Propanol	5002 ± 56	67-63-0	C_3H_7OH
Methanol	5021 ± 47	67-56-1	CH_4O
n-Pentane	5008 ± 47	109-66-0	C_5H_{12}
Toluene	1017.3 ± 9.8	108-88-3	$C_6H_5CH_3$
Trichloroethene	100.14 ± 1.09	79-01-6	C_2HCl_3
o-Xylene	3006.4 ± 32.7	95-47-6	C_8H_{10}
m-Xylene	2996.5 ± 31.0	108-38-3	C_8H_{10}
p-Xylene	3005.9 ± 28.2	106-42-3	C_8H_{10}

***** *WQP 5.15.1/2 The certified value was obtained gravimetrically and confirmed experimentally by GC/MS or HPLC*

Density 0.9263 g/cm^3 at 20°C

Starting Material	Purity, Batch
Acetone	99.66% (41630341)
Benzene	99.88% (41623848)
Chloroform	99.92% (41659489)
Cyclohexane	99.87% (41626702)
Dichloromethane	99.9% (41626856)
Ethanol	99.7% (41615621)
Ethyl Acetate	99.64% (41611869)
n-Heptane	99.79% (41626726)
n-Hexane	98.8% (41640579)
2-Propanol	99.75% (41621912)
Methanol	99.92% (41626948)
n-Pentane	99.6% (41653647)
Toluene	99.93% (41591017)

LRQA CERTIFIED ISO 9001
UKAS MANAGEMENT SYSTEMS 0001

CPAchem Ltd. is

Accredited to ISO 17034 (Cert No AR-1835) and ISO/IEC 17025 (Cert No AT-1836) by ANAB

Accredited to ISO 17034 (Cert No 7668.01) and ISO/IEC 17025 (Cert No 7668.02) by A2LA

Produced by:
CPAchem Ltd
Bogomilovo 6065
Stara Zagora, BULGARIA
http://www.cpachem.com
e-mail: info@cpachem.com
tel: +359 42952901

Trichloroethene	99.79% (41654880)
o-Xylene	99.32% (41617731)
m-Xylene	99.55% (41643181)
p-Xylene	99.27% (41649770)

Storage Conditions: Store in a freezer at -18°C or below

Expiry Date: 28 Oct 2028

Concept of Certification and traceability statement:
This certified reference material is produced by gravimetric measurement and directly dissolving the individual substances in the corresponding solvent, when such is needed. In case direct dissolution is not possible, the individual substances are pre-dissolved in a suitable solvent and then gravimetrically added into the solution.
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA 4/02 and incorporates the uncertainties of the raw-material purity, the mass and the volume.
The metrological traceability is defined as the "property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty".
The metrological traceability is ensured through gravimetric measurement and dissolving of certified reference material/s (traceable to SI) from laboratories/producers, accredited according to ISO 17034.
The measurement results are traceable to SI. All analytical balances used for the preparation of the solution are calibrated yearly under an in-house procedure with class E1 and class E2 analytical weights, traceable to SI (DKD), and are checked daily.
Class A laboratory glassware is used.
The results from temperature measurement are traceable to SI. The thermometers used for solution's calibration are calibrated from an ISO 17025 accredited laboratory. The ambient conditions are controlled with a hygrometer calibrated from an ISO 17025 accredited laboratory.
Both, purity of the starting materials and solvent, were checked using appropriate analytical instrument.

Intended use: *For Laboratory Use Only*
This CRM is intended for:
Calibration of TLC, GC/FID, GC/TCD, GC/ECD, GC/MS, GC/MS/MS, LC/UV, LC/MS and LC/MS/MS
Validation of analytical methods
Preparation of "working reference samples"
Detection limit and linearity studies
This statement is not intended to restrict the use for other purposes.

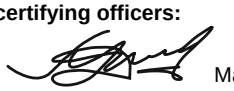
Instructions for the correct use of this certified reference material:
The CRM should be used shortly after opening to avoid concentration changes due to evaporation.
It is recommended to use 1 ml as the minimum sample size.
This CRM can be used directly or can be diluted in an appropriate solvent. Only a clean class A glassware should be used. Obtained concentration (in mg/l) after dilution is a result from the multiplication of certified value of CRM concentration and the CRM's volume used for dilution and divided into the flask's volume used for dilution. For quantitative analysis, we recommend analyzing this mixture separately, without mixing it with other solutions, to ensure accurate results for every compound.

Stability and storage:
This CRM is with a guaranteed stability until ±5% of the certified concentration for a period of 24 months. Stability is guaranteed of an unopened original packaging stored, as written in the section: Storage Conditions. Even if the product is stable at normal laboratory conditions, in order to increase its stability, we highly recommend it to be stored in a refrigerator.
The product should be used shortly after opening to avoid concentration changes due to evaporation. Warranty does not apply to a product stored after opening.

Hazardous situation:
The normal laboratory safety precautions should be observed when working with this RM. Further details for the handling of this RM are available in a safety data sheet.

Level of homogeneity
This solution was mixed according to an in-house procedure (MQP 5.13.1) and is guaranteed to be homogeneous.
To ensure sufficient homogeneity of the sample prior to use thoroughly mix by inversion or sonicate.

Names of certifying officers:

Laboratory:  Margarita Bochukova

Manager:  Krassimira Taralova

This document QF 5.17.1/1 version 1 is designed and the certified value(s) and uncertainty(ies) are determined in accordance with ISO 33401 , ISO 33405,and Eurachem / CITAC Guides

This certificate relates solely to the lot number given above.
All processes (including generating of this certificate) are completely controlled by the specialized Computer-Aided-Manufacturing (CAM) software.

This Certified Reference Material was produced under a quality management system that is:
- Registered to ISO 9001 Quality Management System (Lloyd's Register Quality Assurance Ltd Cert No 0039638)
- Accredited according to ISO/IEC 17025
- Accredited according to ISO 17034

Additional Information

Analytical Data:

GC Conditions:

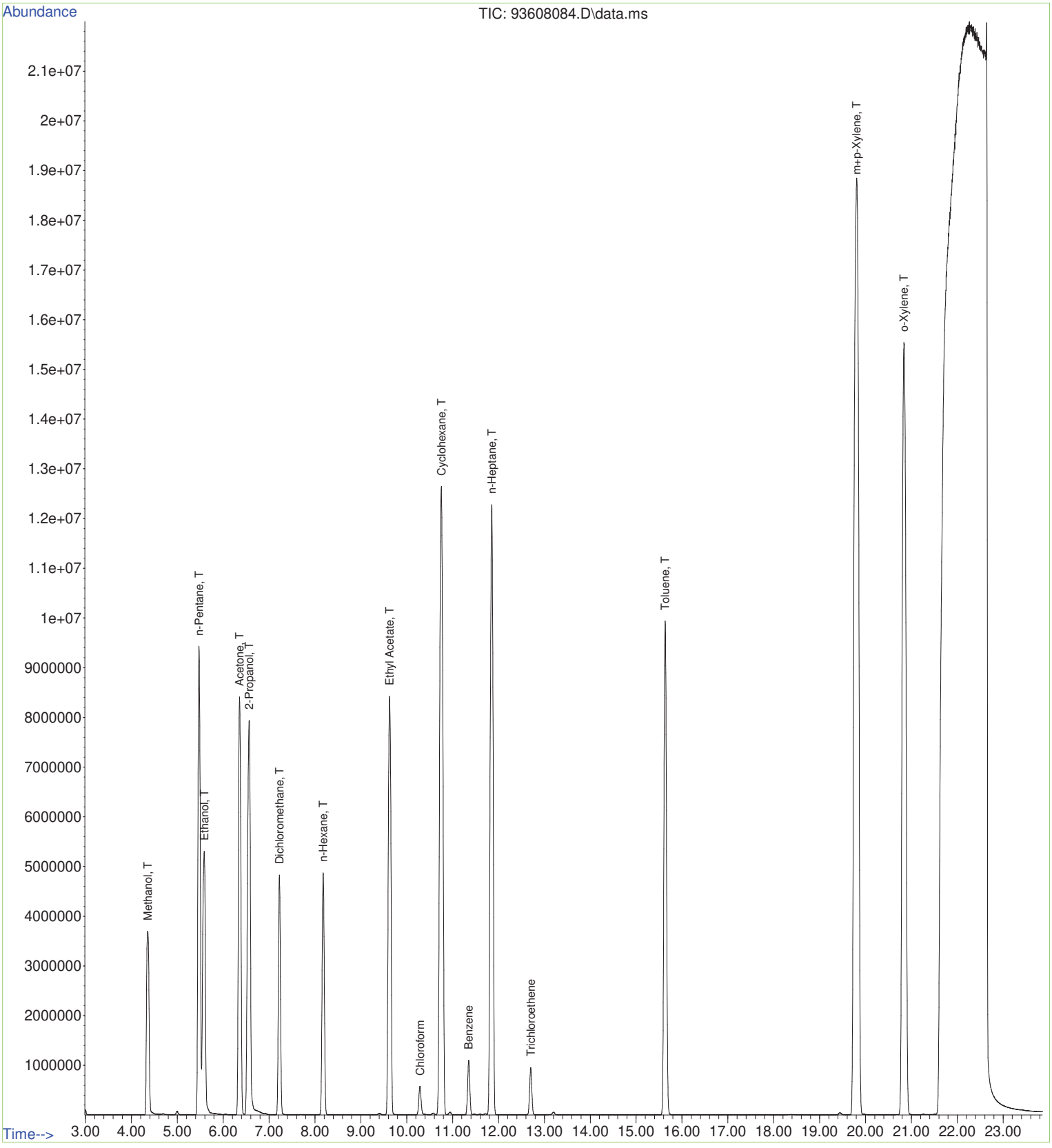
Column	Agilent CP9105 J&W VF-624ms 60m, 0.32mm, 1.80µm	Oven	Temperature	Hold
Flow rate	1.6 ml/min	Initial	40°C	2
Injector	200 °C	5°C/min	180°C	0
Injection volume	1µl split	20°C/min	220°C	3
Carrier gas	He, constant flow			

MS Conditions:

Transfer line	230°C	Ionization mode	EI
MS Source	230°C	Mode	Scan
MS Quad	150°C		

Gravimetric Data

Component	Purity %	Source Lot No	Weighed quantity, g	Final quantity, g	Bulk/ Standard Solution lot No	Concen-tration mg/kg	Chemist ID
Acetone	99.66	41630341	0.5049	92.625	93608084	5432.4	EB
Benzene	99.88	41623848	0.1019	9.3981	93608107	10829.6	EB
		93608107	0.9403	92.625	93608084	109.939	EB
Chloroform	99.92	41659489	0.1014	9.3981	93608107	10780.8	EB
		93608107	0.9403	92.625	93608084	109.443	EB
Cyclohexane	99.87	41626702	0.5011	92.625	93608084	5403.0	EB
Dichloromethane	99.9	41626856	0.1017	92.625	93608084	1096.87	EB
Ethanol	99.7	41615621	0.5005	92.625	93608084	5387.3	EB
Ethyl Acetate	99.64	41611869	0.5013	92.625	93608084	5392.7	EB
n-Heptane	99.79	41626726	0.5021	92.625	93608084	5409.4	EB
n-Hexane	98.8	41640579	0.101	92.625	93608084	1077.33	EB
2-Propanol	99.75	41621912	0.5014	92.625	93608084	5399.7	EB
Methanol	99.92	41626948	0.5025	92.625	93608084	5420.8	EB
n-Pentane	99.6	41653647	0.5028	92.625	93608084	5406.6	EB
Toluene	99.93	41591017	0.1018	92.625	93608084	1098.29	EB
Trichloroethene	99.79	41654880	0.1003	9.3981	93608107	10649.9	EB
		93608107	0.9403	92.625	93608084	108.114	EB
o-Xylene	99.32	41617731	0.3027	92.625	93608084	3245.8	EB
m-Xylene	99.55	41643181	0.301	92.625	93608084	3235.0	EB
p-Xylene	99.27	41649770	0.3028	92.625	93608084	3245.2	EB


Abundance
TIC: 93608084.D\data.ms
2.1e+07
2e+07
1.9e+07
1.8e+07
1.7e+07
1.6e+07
1.5e+07
1.4e+07
1.3e+07
1.2e+07
1.1e+07
1e+07
9000000
8000000
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Time-->
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9.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00
21.00
22.00
23.00
Methanol, T
Ethanol, T
n-Pentane, T
Acetone, T
2-Propanol, T
Dichloromethane, T
n-Hexane, T
Ethyl Acetate, T
Chloroform
Cyclohexane, T
Benzene
n-Heptane, T
Trichloroethene
Toluene, T
m+p-Xylene, T
o-Xylene, T