

Certificate of Analysis

Organic Standard Solution

This document is designed and the certified value(s) and uncertainty(ies) are determined in accordance with ISO Guide 31^[1], ISO Guide 35^[2], and Eurachem / CITAC Guides^[3]

№ S82540

Barcode: 92095656

Certification Date: 27.10.2010

Description of the Reference Material (CRM):

Solution of: 6 components; 10mg/l each of 2-Methylphenol [CAS:95-48-7] ; Phenol [CAS:108-95-2] ; 3-Methylphenol [CAS:108-39-4] ; 4-Methylphenol [CAS:106-44-5] ; 2,6-Dimethylphenol [CAS:576-26-1] ; 2,5-Dimethylphenol [CAS:95-87-4] ;

Ref number:

9835.10.ML.10

Certified value/ Uncertainty:	Component	Chem. Formula	CAS No.	Certified Value / Uncertainty (mg/l)*
	2-Methylphenol	C ₇ H ₈ O	95-48-7	9.953 ± 0.124
	Phenol	C ₆ H ₅ OH	108-95-2	10.002 ± 0.126
	3-Methylphenol	C ₇ H ₈ O	108-39-4	9.893 ± 0.119
	4-Methylphenol	C ₇ H ₈ O	106-44-5	9.929 ± 0.123
	2,6-Dimethylphenol	C ₈ H ₁₀ O	576-26-1	10.084 ± 0.130
	2,5-Dimethylphenol	C ₈ H ₁₀ O	95-87-4	10.005 ± 0.125

Concept of Certification and traceability statement:

This certified reference material is produced by gravimetric measurement and dissolving the individual substances in Methanol.

Method of certification:

CRM's calibration procedure (CP-002)

The certified value was obtained gravimetrically and confirmed experimentally by GC/MS or HPLC

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

Property of the result of a measurement whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties (ISO VIM^[5])

The metrological traceability is assured through gravimetric measurement and dissolving the certified reference material from accredited according to ISO/IEC 17025^[6] and/or ISO Guide 34^[7] laboratories/producers and traceable to SI. All contributions in relation to the certification of standard solutions are considered when evaluating the uncertainty.

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 and are daily checked.

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.

Starting material, purity (Lot N):

2-Methylphenol	99.3% (41039199)
Phenol	99.5% (41038703)
3-Methylphenol	99.5% (41039540)
4-Methylphenol	99% (41038826)
2,6-Dimethylphenol	98.8% (41039854)

Density:

0.7907 g/cm³ at 21.3 °C

Expiry date:

until 11.2012

Intended use:

For Laboratory Use Only

This CRM is intended for:

- Calibration of TLC, GC/FID, GC/TCD, GC/ECD, GC/MS, HPLC/UV and HPLC/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 reference material:

This certified reference material can be used directly or can be diluted in an appropriate solvent. Only a clean class A glassware should be used. Do not pipet from container. 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.



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Stability and storage:

This CRM is with a guaranteed stability until $\pm 0.5\%$ of the certified concentration for a period of 24 months. Stability is guaranteed provided that the solution is kept in its original packaging, tightly closed under normal laboratory conditions. According to an in-house procedure (OQP 5.14.1) the producer will monitor this CRM at appropriate intervals and the purchasers will be notified of any significant changes resulting in recertification or with withdrawal of the CRM during the state period of the validity of the certificate.

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 as safety data sheet.

Level of homogeneity

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

This Certified Reference Material was produced under ISO 9001 Quality Control System. The instructions of the ISO Guide 34 [7] were considered for the preparation of this solution.

Names and signatures of certifying officers:

Laboratory:  Tihomir Stoyanov

Manager:  Krassimira Taralova

[1] ISO Guide 31: Reference materials - Contents of certificates and labels

[2] ISO Guide 35: Reference materials - General and statistical principles for certification

[3] EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement

[4] EA 4/02: Expression of the Uncertainty of Measurement in Calibration

[5] ISO/IEC Guide 99: International Vocabulary of Metrology-Basic and general concepts and associated terms (VIM)

[6] ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories

[7] ISO Guide 34: General Requirements for the Competence of Reference Material Producers

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.

Additional Information Gravimetric Data

Component	Purity %	Source Lot No	Weighed quantity, g	Final quantity, kg.10 ⁻³	Bulk/Standard Solution lot No	Concentration mg/kg	Chemist ID
2-Methylphenol	99.3	41039199	0.00978	3.3434	91101662	2904.69	AS
		91101662	0.1713	7.9220	92095762	62.809	PA
		92095762	3.1692	15.8147	92095656	12.5866	PA
Phenol	99.5	41038703	0.01052	3.0585	91108715	3422.4	AS
		91108715	0.1461	7.9220	92095762	63.117	PA
		92095762	3.1692	15.8147	92095656	12.6483	PA
3-Methylphenol	99.5	41039540	0.01259	3.1052	91108234	4034.2	AS
		91108234	0.1226	7.9220	92095762	62.434	PA
		92095762	3.1692	15.8147	92095656	12.5114	PA
4-Methylphenol	99	41038826	0.01106	3.0263	91108869	3618.1	AS
		91108869	0.1372	7.9220	92095762	62.661	PA
		92095762	3.1692	15.8147	92095656	12.5570	PA
2,6-Dimethylphenol	98.8	41039854	0.0097	3.0890	91108210	3102.49	AS
		91108210	0.1625	7.9220	92095762	63.639	PA
		92095762	3.1692	15.8147	92095656	12.7530	PA
2,5-Dimethylphenol	99	41047859	0.01063	3.0906	91108388	3405.1	AS
		91108388	0.1469	7.9220	92095762	63.141	PA

Custom Made