

REFERENCE MATERIAL CERTIFICATE

ISO 17034

Certified Reference Material

Product Name

PAH Mixture 1014 2000 µg/mL in Benzene/Dichloromethane 1:1

This certificate is designed in accordance with ISO 17034 and ISO Guide 31. This certified reference material (CRM) was designed, produced and verified in accordance with
ISO/IEC 17025, ISO 17034 and a registered quality management system ISO 9001.

Product Code	Lot Number	Format	Expiry Date	Storage Temp
DRE-GA09001014BD	2-H421963NA	Multicomponent Solution	30 Oct 2021	≤ -10 ºC

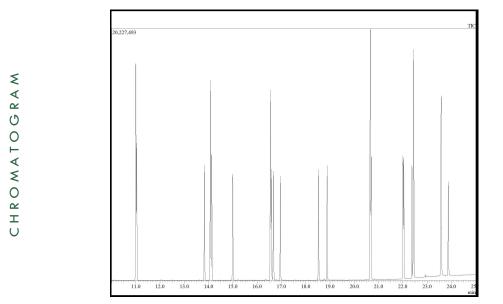
Concentration	Expanded Uncertainty	CAS	Lot Number	Purity (%)	Amount (ma)	RT (min)
(<u>9</u>) = 7	, ,					
2005	72	91-20-3	26.29.1P	99.9	4.82	11.04
2005	63	208-96-8	14.421.3P	99.2	4.85	13.83
1993	62	83-32-9	13.1.4P	99	4.83	14.13
1993	62	86-73-7	24.271.1.1P	99	4.83	14.99
1997	72	85-01-8	27.1.3P	98.9	4.85	16.59
1999	72	120-12-7	15.29.1.1P	99.2	4.84	16.67
2008	71	86-74-8	239.1.1.1P	99	4.87	16.96
1997	59	206-44-0	23.7.2.1P	99.2	4.83	18.53
2008	60	129-00-0	28.29.3P	98.4	4.90	18.88
1992	71	56-55-3	16.7.2P	99	4.83	20.65
1991	71	218-01-9	21.286.1P	98	4.88	20.70
2022	60	205-99-2	17.1.13P	99.8	4.86	22.00
1995	59	207-08-9	18.421.1P	99.3	4.82	22.04
1994	59	50-32-8	20.282.3.3P	99.5	4.81	22.38
2040	61	193-39-5	25.286.1P	99.82	4.90	23.57
1995	63	53-70-3	22.286.1.1P	99.5	4.81	23.58
1999	72	191-24-2	19.286.1P	96	5.00	23.88
	Concentration (mg/L) 2005 2005 1993 1993 1997 1999 2008 1997 2008 1997 2008 1997 2008 1997 2008 1997 2008 1997 1991 2022 1995 1994 2040 1995	(mg/L) U (mg/L) 2005 72 2005 63 1993 62 1993 62 1997 72 1999 72 2008 71 1997 59 2008 60 1992 71 1991 71 2022 60 1995 59 2040 61 1995 63	Concentration (mg/L) Expanded Uncertainty (mg/L) CAS 2005 72 91-20-3 2005 63 208-96-8 1993 62 83-32-9 1993 62 86-73-7 1997 72 85-01-8 1999 72 120-12-7 2008 71 86-74-8 1997 59 206-44-0 2008 60 129-00-0 1997 71 56-55-3 1991 71 218-01-9 2022 60 205-99-2 1995 59 207-08-9 1994 59 50-32-8 2040 61 193-39-5 1995 63 53-70-3	Concentration (mg/L) Expanded Uncertainty (mg/L) CAS Lot Number 2005 72 91-20-3 26.29.1P 2005 63 208-96-8 14.421.3P 1993 62 83-32-9 131.4P 1993 62 86-73-7 24.271.11P 1997 72 85-01-8 271.3P 1999 72 120-12-7 15.29.11P 1999 72 206-44-0 237.21P 2008 60 129-00-0 28.29.3P 1997 59 206-44-0 237.21P 2008 60 129-00-0 28.29.3P 1991 71 218-01-9 21.286.1P 1991 71 218-01-9 21.286.1P 2022 60 205-99-2 17.113P 1995 59 207-08-9 18.421.1P 1994 59 50-32-8 20.282.3.3P 2040 61 193-39-5 25.286.1P 1995 63 53-70-3 <t< td=""><td>Concentration (mg/L) Expanded Uncertainty (mg/L) CAS Lot Number Purity (%) 2005 72 91-20-3 26.29.1P 99.9 2005 63 208-96-8 14.421.3P 99.2 1993 62 83-32-9 131.4P 99 1993 62 86-73-7 24.271.11P 99 1997 72 85-01-8 271.3P 98.9 1997 72 85-01-8 239.11P 99 2008 71 86-74-8 239.11P 99 1997 59 206-44-0 237.21P 99.2 1997 59 206-44-0 237.21P 99.2 1997 59 206-644-0 23.72.1P 99.2 1997 59 206-644-0 28.29.3P 98.4 1992 71 218-01-9 21.286.1P 99.3 1991 71 218-01-9 21.286.1P 99.3 1995 59 207.08-9 18.421.1P 99.3</td><td>Concentration (mg/L) Expanded Uncertainty (mg/L) CAS Lot Number Purity (%) Amount (mg) 2005 72 91-20-3 26.29.1P 99.9 4.82 2005 63 208-96-8 14.421.3P 99.2 4.85 1993 62 83-32-9 131.4P 99.2 4.83 1993 62 86-73-7 24.271.11P 99.4 4.83 1997 72 85-01-8 271.3P 98.9 4.85 1997 72 20-12-7 15.29.11P 99.2 4.84 2008 71 86-74-8 239.11P 99.2 4.83 1997 59 206-44-0 237.21P 99.2 4.83 1997 59 206-44-0 282.93P 98.4 4.90 1992 71 218-01-9 282.03P 98.4 4.83 1992 71 218-01-9 99.3 4.83 2022 60 205-99-2 171.13P 99.3 4.82</td></t<>	Concentration (mg/L) Expanded Uncertainty (mg/L) CAS Lot Number Purity (%) 2005 72 91-20-3 26.29.1P 99.9 2005 63 208-96-8 14.421.3P 99.2 1993 62 83-32-9 131.4P 99 1993 62 86-73-7 24.271.11P 99 1997 72 85-01-8 271.3P 98.9 1997 72 85-01-8 239.11P 99 2008 71 86-74-8 239.11P 99 1997 59 206-44-0 237.21P 99.2 1997 59 206-44-0 237.21P 99.2 1997 59 206-644-0 23.72.1P 99.2 1997 59 206-644-0 28.29.3P 98.4 1992 71 218-01-9 21.286.1P 99.3 1991 71 218-01-9 21.286.1P 99.3 1995 59 207.08-9 18.421.1P 99.3	Concentration (mg/L) Expanded Uncertainty (mg/L) CAS Lot Number Purity (%) Amount (mg) 2005 72 91-20-3 26.29.1P 99.9 4.82 2005 63 208-96-8 14.421.3P 99.2 4.85 1993 62 83-32-9 131.4P 99.2 4.83 1993 62 86-73-7 24.271.11P 99.4 4.83 1997 72 85-01-8 271.3P 98.9 4.85 1997 72 20-12-7 15.29.11P 99.2 4.84 2008 71 86-74-8 239.11P 99.2 4.83 1997 59 206-44-0 237.21P 99.2 4.83 1997 59 206-44-0 282.93P 98.4 4.90 1992 71 218-01-9 282.03P 98.4 4.83 1992 71 218-01-9 99.3 4.83 2022 60 205-99-2 171.13P 99.3 4.82

The producer certifies that this reference material meets the specification stated in this certificate until the expiry date, provided it is stored unopened at the recommended temperature herein. Product warranties for this reference material are set out in the		CERTIFIED ON	Nurthen Stern	RM
terms and conditions of purchase.	HuiChen Stavros, Ph.D.	1 Sep 2020		Release



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ISO 17034



Instrument GC/MS

Detection MS

1µL

Column/Flow Phenomenex ZB-Semivolatile 30m x 0.25 mm, ID 0.25 um / 1 mL/min

 Method Details

 Rate Temp.(C) Hold time (min)

 40.0
 2.0

 10.0
 100.0
 0.0

 15.0
 250.0
 0.0

 20.0
 345.0
 3.25

Method of Preparation

The certified value is based on gravimetric and volumetric preparation of this CRM. This CRM has been confirmed by the appropriate analytical techniques.

Batch Information

Solvent: MeCl2:Benzene 1:1, Lot no. 183741:SHBJ2786, 2.4 mL

Intended Use

This CRM is intended for use in a laboratory as a calibration and quality control standard or in method development for analytical techniques.

Safety

Proper precautions should be observed while handling. See Safety Data Sheet.

Uncertainty

The certified value(s) and uncertainty(ies) are determined in accordance with ISO 17034 with an 95% confidence level (k=2). Uncertainty is based on the Total Combined Uncertainty, including uncertainties of preparation, purity of neat materials, homogeneity, long-term stability testing, and transportation stability.

Traceability

The balances used for gravimetric measurements are calibrated with weights traceable to the national standards (NIST). The calibration of the balances is verified daily internally and annually by an external accredited calibration service. Only Class A glassware is used for volumetric measurements.

Homogeneity

Random replicate samples of the final packaged CRM have been analysed to prove homogeneity consistent with ISO 17034.

Storage

The CRM should be stored in the original sealed bottle at the indicated temperature.

Instructions for Use

The CRM should be used shortly after opening to avoid concentration changes due to evaporation. It is recommended to use 1 μ L as the minimum sample size. If storage after opening is necessary, it should be transferred to an amber vial with minimum head space and a Teflon lined silicon septum. If handled as recommended, use period after opening is a maximum of 298 days for an estimated 5% drift in concentration as a result of analyte and/or solvent transpiration. Visit the support section of our website lgcstandards.com for a series of Dr. Ehrenstorfer Tech Tip videos and frequently asked questions.

LGC Group

7290-B Investment Drive North Charleston, SC 29418 United States T | +1 843 763 4884 F | +1 866 509 5146 E | dr.ehrenstorfer@lgcgroup.com The producer of this reference material is registered to ISO 9001:2015 under 56 100 19560019 by TUV USA and accredited to ISO 17025:2017 and ISO 17034:2016 by A2LA with the accreditation numbers 3031.01 and 3031.02.

