▪ Certificate of Analysis ▪

Product: Low-Level PAHs in Soil
Catalog Number: 722
Lot No. D083-722
Certificate Issue Date: April 04, 2014
Expiration Date: June 25, 2016
Revision Number: Original

CERTIFICATION

Parameter	Certified Value[1]	Uncertainty[2]	QC Performance Acceptance Limits[3]	PT Performance Acceptance Limits[4]
	µg/kg	%	µg/kg	µg/kg
Acenaphthene	608	1.18	182 - 626	90.0 - 746
Acenaphthylene	396	0.788	105 - 369	39.6 - 527
Anthracene	772	2.72	293 - 738	111 - 980
Benzo(a)anthracene	388	1.18	174 - 419	122 - 488
Benzo(b)fluoranthene	362	0.846	172 - 420	130 - 434
Benzo(k)fluoranthene	238	7.54	111 - 264	73.1 - 309
Benzo(g,h,i)perylene	742	4.60	303 - 868	74.2 - 1110
Benzo(a)pyrene	479	1.35	177 - 479	93.6 - 604
Chrysene	75.3	8.11	36.1 - 88.9	18.6 - 122
Dibenz(a,h)anthracene	218	2.24	102 - 255	50.1 - 300
Fluoranthene	794	0.794	384 - 913	227 - 998
Fluorene	322	0.660	114 - 341	60.6 - 417
Indeno(1,2,3-cd)pyrene	183	0.796	81.6 - 210	33.1 - 274
Naphthalene	704	0.642	154 - 739	70.4 - 931
Phenanthrene	356	1.03	162 - 406	91.2 - 427
Pyrene	417	4.32	181 - 492	110 - 516

ANALYTICAL VERIFICATION

Parameter	Certified Value[1]	Proficiency Testing Study			NIST Traceability	
		Mean	Recovery[5]	n	SRM Number	Recovery
	µg/kg	µg/kg	%			%
Acenaphthene	608	418	68.8	39	-	-

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Parameter	Certified Value[1]	Proficiency Testing Study			NIST Traceability	
		Mean	Recovery[5]	n	SRM Number	Recovery
	µg/kg	µg/kg	%			%
Acenaphthylene	396	263	66.5	38	-	-
Anthracene	772	545	70.6	39	-	-
Benzo(a)anthracene	388	305	78.6	39	-	-
Benzo(b)fluoranthene	362	282	78.0	39	-	-
Benzo(k)fluoranthene	238	191	80.2	39	-	-
Benzo(g,h,i)perylene	742	591	79.6	39	-	-
Benzo(a)pyrene	479	349	72.8	39	-	-
Chrysene	75.3	70.5	93.7	39	-	-
Dibenz(a,h)anthracene	218	175	80.4	39	-	-
Fluoranthene	794	612	77.1	39	-	-
Fluorene	322	239	74.2	39	-	-
Indeno(1,2,3-cd)pyrene	183	153	83.8	39	-	-
Naphthalene	704	473	67.3	39	-	-
Phenanthrene	356	259	72.8	39	-	-
Pyrene	417	313	75.0	39	-	-

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1. The **Certified Values** are the actual "made-to" concentrations confirmed by ERA analytical verification. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA, multiplied by a coverage factor. The uncertainty applies to the product as supplied and does not take into account any required or optional dilution and/or preparations the laboratory may perform while using this product.

3. The **QC Performance Acceptance Limits (QC PALs™)** are based on actual historical data collected in ERA's Proficiency Testing program. The QC PALs™ reflect any inherent biases in the methods used to establish the limits and closely approximate a 95% confidence interval of the performance that experienced laboratories should achieve using accepted environmental methods. Use the QC PALs™ to realistically evaluate your performance against your peers.

4. The **PT Performance Acceptance Limits (PT PALs™)** are calculated using the regression equations and fixed acceptance criteria specified in the NELAC proficiency testing requirements. Use the PT PALs™ when analyzing this QC standard alongside USEPA and NELAC compliant PT standards. Please note that many PT study acceptance limits are concentration dependent (some non-linearly) and, therefore, the acceptance limits of this QC standard and any PT standard may differ relative to their difference in concentrations.

5. The **PT Data/Traceability** data include the mean value, percent recovery and number of data points reported by the laboratories in our Proficiency Testing study compared to the Certified Values. In addition, where NIST Standard Reference Materials (SRMs) are available, each analyte has been analytically traced to the NIST SRM listed. This product is traceable to the lot numbers of its starting materials. All gravimetric and volumetric measurements related to its manufacture are traceable to NIST through an unbroken chain of comparisons.
Traceability Recovery (%) = [(% recovery certified standard)/(% recovery NIST SRM)]*100
The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

6. For additional information on this product such as intended use, instructions for use, level of homogeneity, and safety information, please refer to the provided Instruction Sheet

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or send an email to info@eraqc.com.

Certifying Officer

Mike Blades

Quality Officer

Kristina Sanchez

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