

▪ Certificate of Analysis ▪

Product: WatR™ Pollution Trace Metals
Catalog Number: 500
Lot No. P247-500
Certificate Issue Date: December 22, 2015
Expiration Date: November 30, 2017
Revision Number: Original

CERTIFICATION

Parameter	Certified Value ¹	Uncertainty ²	QC Performance Acceptance Limits ³	PT Performance Acceptance Limits ⁴
	µg/L	%	µg/L	µg/L
Aluminum	1340	3.61	1170 - 1530	1100 - 1550
Antimony	617	2.07	537 - 685	502 - 713
Arsenic	472	0.672	411 - 524	394 - 545
Barium	1200	1.13	1090 - 1310	1020 - 1380
Beryllium	292	0.462	263 - 318	248 - 336
Boron	1810	0.436	1620 - 2060	1540 - 2080
Cadmium	148	0.454	131 - 157	126 - 170
Chromium	464	0.454	422 - 506	394 - 534
Cobalt	490	0.452	456 - 544	416 - 564
Copper	895	0.454	810 - 976	761 - 1030
Iron	2280	3.65	2050 - 2530	1940 - 2620
Lead	401	0.460	362 - 441	341 - 461
Manganese	1650	0.452	1520 - 1800	1400 - 1900
Molybdenum	403	0.464	361 - 439	348 - 454
Nickel	618	0.454	562 - 674	541 - 700
Selenium	118	0.452	103 - 131	100 - 136
Silver	302	0.466	271 - 332	257 - 347
Strontium	113	3.52	102 - 124	96.0 - 130
Thallium	587	0.983	514 - 652	485 - 679
Vanadium	1800	2.38	1640 - 1930	1530 - 2070
Zinc	474	0.464	429 - 521	403 - 545

ANALYTICAL VERIFICATION

ISO/IEC GUIDE 34:2009

ISO/IEC 17025:2005



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Parameter	Certified Value ¹	Proficiency Testing Study		n	NIST Traceability	
		Mean	Recovery ⁵		SRM Number	Recovery
	µg/L	µg/L	%			%
Aluminum	1340	1340	99.5	54	3101a	102
Antimony	617	602	97.6	51	3102a	97.4
Arsenic	472	457	96.8	57	3103a	100
Barium	1200	1200	99.9	53	3104a	101
Beryllium	292	285	97.7	48	3105a	102
Boron	1810	1780	97.9	32	3107	102
Cadmium	148	146	98.5	66	3108	98.8
Chromium	464	459	98.9	64	3112a	103
Cobalt	490	502	102	42	3113	105
Copper	895	878	98.1	72	3114	102
Iron	2280	2270	100	63	3126a	99.5
Lead	401	400	99.7	68	3128	99.3
Manganese	1650	1660	101	59	3132	104
Molybdenum	403	397	98.5	44	3134	98.2
Nickel	618	601	97.3	62	3136	99.6
Selenium	118	116	98.3	57	3149	101
Silver	302	297	98.3	55	3151	99.5
Strontium	113	115	102	26	3153a	103
Thallium	587	580	98.7	49	3158	101
Vanadium	1800	1770	98.1	45	3165	101
Zinc	474	473	99.8	67	3168a	99.1

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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 **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 (%) = $[(\% \text{ recovery certified standard}) / (\% \text{ recovery NIST SRM})] * 100$

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

Tom Widera



Quality Officer

David Kilhefner

