

▪ Certificate of Analysis ▪

Product: WatR™ Pollution Trace Metals
Catalog Number: 500
Lot No. P256-500
Certificate Issue Date: August 02, 2016
Expiration Date: September 30, 2018
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	1630	0.456	1420 - 1860	1350 - 1870
Antimony	814	0.598	708 - 904	668 - 935
Arsenic	254	0.600	221 - 282	205 - 301
Barium	827	1.50	752 - 901	703 - 951
Beryllium	275	0.644	248 - 300	234 - 316
Boron	807	1.03	724 - 920	686 - 928
Cadmium	256	0.496	227 - 271	218 - 294
Chromium	870	0.460	792 - 948	740 - 1000
Cobalt	413	0.464	384 - 458	351 - 475
Copper	587	0.460	531 - 640	499 - 675
Iron	545	0.464	491 - 605	463 - 627
Lead	413	1.60	373 - 454	351 - 475
Manganese	793	1.45	733 - 864	674 - 912
Molybdenum	577	2.27	518 - 629	502 - 646
Nickel	531	0.466	483 - 579	463 - 603
Selenium	309	0.482	270 - 343	263 - 355
Silver	551	2.74	494 - 606	468 - 634
Strontium	96.6	0.508	87.4 - 106	82.1 - 111
Thallium	550	0.446	482 - 610	454 - 637
Vanadium	1640	2.19	1490 - 1750	1390 - 1890
Zinc	1770	0.458	1600 - 1950	1500 - 2040

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	1630	1670	102	57	3101a	103
Antimony	814	811	99.7	58	3102a	97.8
Arsenic	254	252	99.2	67	3103a	99.1
Barium	827	826	99.8	58	3104a	101
Beryllium	275	273	99.5	56	3105a	100
Boron	807	833	103	37	3107	100
Cadmium	256	254	99.1	78	3108	99.0
Chromium	870	875	101	75	3112a	102
Cobalt	413	433	105	57	3113	102
Copper	587	586	99.8	86	3114	97.7
Iron	545	553	102	64	3126a	99.1
Lead	413	414	100	81	3128	101
Manganese	793	809	102	71	3132	103
Molybdenum	577	571	98.9	48	3134	100
Nickel	531	533	100	75	3136	98.4
Selenium	309	305	98.7	61	3149	100
Silver	551	555	101	65	3151	104
Strontium	96.6	101	105	33	3153a	102
Thallium	550	550	100	53	3158	102
Vanadium	1640	1630	99.3	53	3165	100
Zinc	1770	1770	100	82	3168a	95.6

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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

Brian Miller



Quality Officer

Patrick Larson

