

▪ Certificate of Analysis ▪

Product: WatR™ Pollution Trace Metals
Catalog Number: 500
Lot No. P257-500
Certificate Issue Date: October 18, 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	2350	1.97	2050 - 2680	1950 - 2680
Antimony	344	0.710	299 - 382	271 - 405
Arsenic	548	0.576	477 - 608	460 - 630
Barium	1790	1.80	1630 - 1950	1520 - 2060
Beryllium	266	0.644	240 - 290	226 - 306
Boron	1250	2.23	1120 - 1420	1060 - 1440
Cadmium	697	0.468	618 - 739	592 - 802
Chromium	466	0.468	424 - 508	396 - 536
Cobalt	632	0.454	588 - 702	537 - 727
Copper	141	0.452	128 - 154	120 - 162
Iron	1140	2.17	1030 - 1270	969 - 1310
Lead	567	2.33	511 - 624	482 - 652
Manganese	1130	0.456	1040 - 1230	960 - 1300
Molybdenum	403	0.474	361 - 439	348 - 454
Nickel	653	0.462	594 - 712	572 - 739
Selenium	272	0.490	238 - 302	231 - 313
Silver	882	1.41	791 - 970	750 - 1010
Strontium	246	0.544	223 - 271	209 - 283
Thallium	625	0.444	548 - 694	517 - 722
Vanadium	199	0.464	181 - 213	169 - 229
Zinc	835	0.460	757 - 918	710 - 960

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	2350	2350	99.7	26	3101a	102
Antimony	344	341	99.2	28	3102a	95.7
Arsenic	548	527	96.2	34	3103a	99.8
Barium	1790	1770	98.8	30	3104a	102
Beryllium	266	262	98.6	25	3105a	102
Boron	1250	1270	101	22	3107	99.9
Cadmium	697	681	97.7	42	3108	99.6
Chromium	466	471	101	39	3112a	100
Cobalt	632	646	102	22	3113	104
Copper	141	140	99.2	42	3114	94.0
Iron	1140	1140	100	35	3126a	96.5
Lead	567	558	98.4	43	3128	104
Manganese	1130	1150	101	34	3132	101
Molybdenum	403	397	98.6	21	3134	102
Nickel	653	650	99.5	44	3136	100
Selenium	272	262	96.4	33	3149	101
Silver	882	872	98.8	31	3151	103
Strontium	246	256	104	15	3153a	101
Thallium	625	632	101	22	3158	102
Vanadium	199	193	97.1	21	3165	98.6
Zinc	835	833	99.8	43	3168a	97.3

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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

