

# ▪ Certificate of Analysis ▪

**Product:** WatR™ Supply Haloacetic Acids (HAA)  
**Catalog Number:** 684  
**Lot No.** S276-684  
**Certificate Issue Date:** September 27, 2019  
**Expiration Date:** June 17, 2022  
**Revision Number:** Original

*Product use instructions are included as part of the certification packet and are paginated separately from this Certificate of Analysis. Please reference the product use instructions for catalog #684 revision 090119.*

## CERTIFICATION

Parameter	Certified Value <sup>1</sup>	Uncertainty <sup>2</sup>	QC Performance Acceptance Limits <sup>3</sup>	PT Performance Acceptance Limits <sup>4</sup>
	µg/L	%	µg/L	µg/L
Bromoacetic acid	14.9	15.8	10.9 - 18.9	8.94 - 20.9
Bromochloroacetic acid	22.9	13.5	16.4 - 28.6	13.7 - 32.1
Chloroacetic acid	32.9	5.20	22.4 - 42.1	19.7 - 46.1
Dibromoacetic acid	35.4	15.1	23.3 - 45.3	21.2 - 49.6
Dichloroacetic acid	24.4	9.76	17.7 - 30.0	14.6 - 34.2
Trichloroacetic acid	39.2	8.35	26.8 - 50.2	23.5 - 54.9

## ANALYTICAL VERIFICATION

Parameter	Certified Value <sup>1</sup>	Proficiency Testing Study			NIST Traceability	
		Mean	Recovery <sup>5</sup>	n	SRM Number <sup>6</sup>	Recovery
	µg/L	µg/L	%			%
Bromoacetic acid	14.9	15.8	106	41	-	-
Bromochloroacetic acid	22.9	24.2	106	27	-	-
Chloroacetic acid	32.9	32.8	99.8	42	-	-
Dibromoacetic acid	35.4	36.9	104	41	-	-
Dichloroacetic acid	24.4	24.5	100	41	-	-
Trichloroacetic acid	39.2	39.5	101	41	-	-

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1. The **Certified Values** are the actual gravimetric/volumetric "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** represents an expanded uncertainty and approximates a 95% confidence interval. The uncertainty is based on the characterization, homogeneity and stability characteristics of the product, multiplied by a coverage factor ( $k=2$ ). 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. The formula used to calculate the expanded uncertainty is:  

$$U_{\text{expanded}} = k * \text{SQRT}((U_{\text{char}})^2 + (U_{\text{homogen}})^2 + (U_{\text{LTS}})^2 + (U_{\text{STS}})^2 + (U_{\text{RSS}})^2)$$

Where:

$U_{\text{expanded}}$  = Expanded uncertainty.  
 $k$  = Coverage factor.  
 $U_{\text{char}}$  = Combined standard uncertainty of the manufacturing and/or analytical verification assessment.  
 $U_{\text{homogen}}$  = Standard uncertainty of the homogeneity assessment.  
 $U_{\text{LTS}}$  = Standard uncertainty associated with long-term stability.  
 $U_{\text{STS}}$  = Standard uncertainty associated with short-term (transport) stability.  
 $U_{\text{RSS}}$  = Standard uncertainty associated with repeated sampling of the product (where permitted by product use instructions).
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 certified reference material alongside USEPA and NELAC compliant PT study materials. Please note that many PT study acceptance limits are concentration dependent (some non-linearly) and therefore, the acceptance limits of this certified reference material and any PT study material may differ relative to their difference in concentrations.
5. The **PT Performance Data** include the mean value, percent recovery and number of data points reported by laboratories in our Proficiency Testing study compared to the Certified Values. In the event this lot was not used in a proficiency testing scheme, the data displayed was generated internally by ERA.
6. Where NIST Standard Reference Materials (SRMs) are available, each analyte has been analytically traced to the NIST SRM listed. **Analytical Traceability Recovery (%)** =  $[(\% \text{ recovery ERA certified reference material})/(\% \text{ recovery NIST SRM})]*100$   
The traceability data shown were compiled by analyzing this ERA certified reference material and/or it's associated stock solution(s) against the applicable NIST SRMs.
7. **Metrological Traceability.** This certified reference material is metrologically traceable to NIST mass reference materials through an unbroken chain of comparisons.
8. For additional information on this product such as intended use, storage information, instructions for use, minimum sample size, and safety information, please refer to the Product Use Instructions provided.

**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](mailto:info@eraqc.com).**

**Certifying Officer**

**Brian Miller**



**Quality Officer**

**Matthew Seebeck**



ISO/IEC 17025:2017

ISO/IEC 17034:2016

