

# Certificate of Analysis

## Certified Reference Material

### Dissolved Oxygen - WP (Whole Volume)

Part Number QC3077-500ML

Lot LRAA8532

Solvent (Matrix) Water

Hazard Irritant

Storage & Handling Store at 4°C

Expiration Date December 31, 2019

Certification Date June 30, 2015

Certified By



Christopher Rucinski - QA Director

Analyte	Units	Certified <sup>1,4</sup> Value	k <sup>5</sup>	Standard <sup>2</sup> Deviation	Acceptance Limits <sup>3</sup>
Oxygen, dissolved 1880	mg/L	8.23 ± 0.474	2.23	1.23	4.53 to 11.9

### Additional Information

#### Description

This QC sample is packaged as a 500mL whole-volume.

The solvent for this sample is water.

This QC sample must be stored at 4°C.

#### Sample Preparation

No additional sample preparation is necessary.

Analyze immediately upon opening.

1 Certified value - based on a prepared to value and analytically verified by RTC with associated uncertainties from the preparation and analytical procedures.

2 The standard deviation is the robust statistical standard deviation from the round robin interlaboratory study.

3 Acceptance limits are based on US EPA RCRA, WS, and WP Interlaboratory Study Results. These ranges are recommendations only.

4 Ucrm - Uncertainty values in this document are expressed as Expanded Uncertainty (Ucrm) corresponding to the 95% confidence interval. Ucrm is derived from the combined standard uncertainty multiplied by the coverage factor k, which is obtained from a t-distribution and degrees of freedom. The components of combined standard uncertainty include the uncertainties due to characterization, homogeneity, long term stability, and short term stability (transport). The components due to stability are generally considered to be negligible unless otherwise indicated by stability studies.

5 k: Coverage factor derived from a t-distribution table, based on the degrees of freedom of the data set. **Confidence interval = 95%**

Traceability: The standard was manufactured under an ISO/IEC 17025:2005 certified quality system. The balance used to weigh raw materials is accurate to +/- 0.0001g and calibrated regularly using mass standards traceable to NIST. All dilutions were performed gravimetrically. Additionally, individual analytes are traceable to NIST SRMs where available and specified above.

Homogeneity: Homogeneity was assessed in accordance with ISO Guide 35. Completed units were sampled using a random stratified sampling protocol. The results of chemical analysis were then compared using a one-way analysis of variance approach as described by TNI EL-V3-2009 Appendix A.2. See Instructions for minimum sub-sample size.

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THIS PRODUCT WAS DESIGNED, PRODUCED AND VERIFIED FOR ACCURACY AND STABILITY IN ACCORDANCE WITH ISO/IEC 17025:2005 (AClass Cert AT-1467) and ISO GUIDE 34:2009 (AClass Cert AR-1470).

MSDS reports for components comprising greater than 1.0% of the solution or 0.1% for components known to be carcinogens are available upon request.



REFERENCE MATERIAL PRODUCER



TESTING

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