

Certificate of Analysis

Mercury - QC

Certified
Reference
Material

Product ID QC1129-20ML

Lot LRAB0450

Expiration Date December 31, 2019

Storage Conditions Store at room temperature

Analyte	Units	Certified ^{1,4} Value	k ⁵	Standard ² Deviation	Acceptance ³ Interval
Mercury, Hg	ug/L	17.6 ± 0.382	2.00	1.83	13.9 to 21.2

Sample Information

DESCRIPTION

This QC sample is packaged as a 20mL concentrate.

The solvent for this sample is 5% nitric acid by volume in DI water.

The QC sample has not been preserved.

SAMPLE PREPARATION

To prepare solution, partially fill a 1000mL volumetric flask with reagent-grade water (near 20°C) and add 1mL of trace-metal-grade nitric acid.

Shake ampule well prior to opening.

Open ampule 1129-20ML (be careful to avoid cuts on glass) and transfer 10.0 mL of concentrate to the volumetric flask.

Fill the flask to volume with reagent-grade water and mix well.

The sample is now ready for immediate digestion and analysis, as per laboratory SOPs.

A reagent-grade blank should be analyzed concurrently for background correction. The water blank should be made to match the acid matrix of the standards and samples.

Each analyte is reported in ug/L.

NOTE: The 0.15% v/v nitric acid specification is a minimum; the amount and type of acid may be altered to routine analytical procedures if needed.

1 Certified value - based on the robust mean of round robin, interlaboratory study 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 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. The mathematical representation of the Ucrm calculation is as follows:

$$u_{CRM} = \sqrt{u_{char}^2 + u_{homogeneity}^2 + u_{stability}^2}$$

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.

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).

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Certification Date January 13, 2016

Version 106-1132016

WP13-3A



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