

PerkinElmer Pure

Atomic Spectroscopy Standard



Certificate of Analysis

PerkinElmer Number: N9300180 **Lot No.** 14-51AS
Element and Matrix: 1000 ug/mL Arsenic in HNO₃
Starting Material: Arsenic Acid
Starting Material Lot No: M0108AS
Certification Date: SEP 2008 **Expiration Date:** MAR 15 2010
Density(g/mL): 1.012 @ 21.4 Degrees Celsius

Trace Metallic Impurities in the Actual Solution via ICP / ICPMS Analysis:

<u>Element</u>	<u>ug/mL</u>	<u>Element</u>	<u>ug/mL</u>	<u>Element</u>	<u>ug/mL</u>
Al	0.05	Cu	<0.001	Pb	0.03
Ag	<0.001	Fe	0.007	Re	<0.001
B	<0.003	Ga	<0.001	Rb	<0.001
Be	<0.002	In	0.001	Sb	0.001
Ba	<0.001	K	0.01	Si	0.18
Bi	<0.001	Li	<0.002	Sr	<0.001
Ca	0.01	Mn	<0.001	Tl	0.06
Cr	<0.003	Mg	<0.001	Ti	<0.001
Co	<0.001	Mo	<0.001	V	<0.001
Cd	<0.001	Ni	<0.001	Zr	0.20
		Na	0.02	Zn	0.80

Traceability Documentation for Solution Standard:

Certified Value: 1000 ug/mL +/- 3.0 ug/mL (refer to side 2)

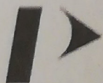
Certified Value is Traceable to: NIST SRM #3103a

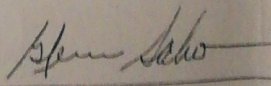
*** Classical Wet Assay:** 1000 ug/mL

Method: Precipitation using Silver Nitrate. Filter, dry, and weigh as Ag₃AsO₄.

*** Instrumentation Analysis by Optima 3300 DV ICP spectrometer:** 999 ug/mL
via NIST SRM #3103a

We guarantee that our PerkinElmer Pure Atomic Spectroscopy Standards are stable and accurate to ± 0.5% of certified concentration until the expiration date, provided the standards are kept tightly capped and stored under normal laboratory conditions. This value is the sum of cumulative errors associated with the analytical determinations, pipetting, and diluting to final volume. For these solutions we use high purity acids, ASTM Type I water (18 megohm double deionized), and leached, triple-rinsed bottles. All glassware used is class A.



Certifying Officer: 

PerkinElmer
precisely.

PerkinElmer Life and Analytical Sciences

U.S.A. Tel: 1-203-925-4600
U.S.A. Toll Free: 1-800-762-4000

Details of Certification

This Certified Reference Material (CRM) has been prepared and certified under an ISO 9001 system consistent with the following guides:

Guide To The Expression Of Uncertainty In Measurement 1997

EURACHEM/CITAC Guide: Quantifying Uncertainty in Analytical Measurement – Second Edition

ASTM D6362-98 Standard Practices for Certificates of Reference Materials for Water Analysis

ISO Guide 34: General requirements for the competence of reference materials producers

ISO Guide 17025: General requirements for the competence of testing and calibration laboratories

ISO Guide 31: Contents of certificates of reference materials

NIST Technical Note 1297: Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results

ILAC-G12-2000: Guidelines for the requirements for the competence of reference materials producers

Instructions for Use:

Primary usage of this CRM is in neat form or by serial dilution with a matrix of purity at or greater than the purity of the original matrix solution. If dilution is required the diluent must be compatible with all present certified analytes and contain stabilizers appropriate for the period of intended use. The CRM can also be used as a spike or with a spike, again with appropriate compatibility considerations. All solutions should be thoroughly mixed, by shaking, prior to use and never pipetted directly from the bottle. All surfaces that come in contact with the solution must be thoroughly cleaned and leached prior to use. Dilutions should be performed only with Class A volumetric glassware.

Method of Preparation:

Clean laboratory practices and techniques have been used throughout the preparation. All materials, equipment, analytical instrumentation and personnel have been qualified prior to use. The highest purity acids applicable, 18 megohm double deionized water, acid-leached triple-rinsed bottles, and Class A glassware have been used in all preparations.

Homogeneity:

Random, replicate samples of the final packaged material have been analyzed to prove the homogeneity in accordance with our internal procedures. This is consistent with the intended use of the Certified Reference Material.

Statistical Estimator and Confidence Limits:

The certified value 'x' listed on the reverse of this document is at the 95% level of confidence and can be expressed as:

$X = x \pm U$, where X = True value (Labeled Value), U = Expanded uncertainty

$U = k u_c$, where $k=2$ is the coverage factor at the 95% confidence level

u_c is obtained by combining the individual element standard uncertainty components u_i and $u_c = \sqrt{\sum u_i^2}$