



Reference Materials Producer
Cert# 2495.01



Chemical Testing
Cert#2495.02

SPEXertificate®

Certificate of Reference Material

Catalog Number: SPEC-DUAL-AS

Lot No. sample

Description: 20 µg/mL Dual Inorganic Arsenic (III, V) Speciation Standard

Matrix: H₂O/Tr. HCl

This certified reference material, CRM, is intended primarily for use as a quality control standard for inorganic spectroscopic instrumentation such as LC-ICPMS. It can be employed in validating analytical methods for the determination of relevant species.

Certified Value [As (total)]: 19.9 ± 0.4 µg/mL

Certified Value is Traceable to: 3103a*

*-indicates NIST SRM

† – indicates SPEX CertiPrep CRM (when NIST SRM is not available)

The CRM is prepared gravimetrically using high purity Arsenic (III) oxide (As₂O₃, Lot# 08831RAS) and Arsenic (V) oxide (As₂O₅, Lot# 10111D). The certified value for overall Arsenic is obtained by ICP measurement. The value of As (III) and As (V) in this speciation standard is obtained by LC-ICP-MS.

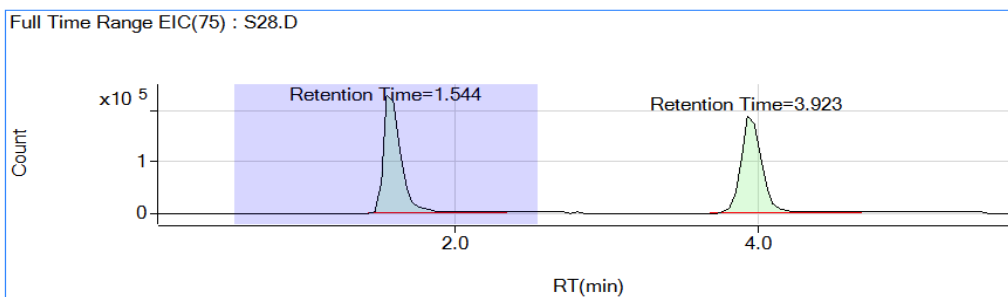
Refer to side 2 for details of measurement uncertainties.

Uncertified Properties: Density: 0.998 g/mL @ 20°C

Instrumental Analysis by LC-ICP-MS Spectrometer [As (III)]: 9.8 ± 0.5 µg/mL

[As (V)]: 10.0 ± 0.5 µg/mL

Chromatogram



Retention Time
As (III) =1.544 min
As (V) =3.923 min

Note: The above chromatograph was obtained by analyzing a diluted standard at a concentration of 25µg/L of each species. An injection volume of 25µl was used. The final result of each species was determined against a calibration curve of each individual species using peak area.



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Trace Metallic Impurities in the Actual Solution via ICP-MS Analysis:

Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL	Element	µg/mL
Ag	<0.001	Dy	<0.001	Li	<0.001	Pt	<0.001	Tb	<0.001
Al	0.003	Er	<0.001	Lu	<0.001	Rb	<0.001	Te	<0.001
Au	<0.001	Eu	<0.001	Mg	<0.001	Re	<0.001	Th	<0.001
B	<0.002	Fe	0.003	Mn	<0.001	Rh	<0.001	Ti	<0.001
Ba	<0.001	Ga	<0.001	Mo	<0.001	Ru	<0.001	Tl	<0.001
Be	<0.001	Gd	<0.001	Na	0.002	Sb	<0.001	Tm	<0.001
Bi	<0.001	Ge	<0.001	Nb	<0.001	Sc	<0.001	U	<0.001
Ca	<0.01	Hf	<0.001	Nd	<0.001	Se	<0.005	V	<0.001
Cd	<0.001	Hg	<0.001	Ni	<0.001	Si	<0.1	W	<0.001
Ce	<0.001	Ho	<0.001	P	<0.2	Sm	<0.001	Y	<0.001
Co	<0.001	In	<0.001	Pb	<0.001	Sn	<0.002	Yb	<0.001
Cr	<0.001	Ir	<0.001	Pd	<0.001	Sr	<0.001	Zn	<0.001
Cs	<0.001	K	0.003	Pr	<0.001	Ta	<0.001	Zr	<0.001
Cu	<0.001	La	<0.001						

Balances are calibrated regularly with weight sets traceable to NIST #32856, #32867, and others. This CRM is guaranteed stable and accurate to $\pm 2\%$ of the labeled value for total arsenic content and to $\pm 5\%$ of the labeled values for As (III) and As (V) content. Uncertainties include the uncertainty components due to preparation, homogeneity by the most precise method, and short-term and long-term stability. This guarantee is valid for a period of one year from the date of certification only when the material is unopened and stored under ambient laboratory conditions.

Date of Certification: _____ Certifying Officer: Kathleen Cull