

# Certificate of Analysis

## Multi-element Calibration Standard 2A

**Agilent Part Number: 8500-6940**
**Lot Number: 2-196MKBY2**

Analyte	CAS#	Labeled Conc.	Measured Conc.	SRM	Start Mat'l Formula	Start Mat'l Purity	Analyte	CAS#	Labeled Conc.	Measured Conc.	SRM	Start Mat'l Formula	Start Mat'l Purity
Ag	7440-22-4	10.0 µg/mL	10.1 µg/mL	3151*	AgNO <sub>3</sub>	99.99+	Li	7439-93-2	10.0 µg/mL	10.1 µg/mL	3129a*	Li <sub>2</sub> CO <sub>3</sub>	99.99+
Al	7429-90-5	10.0 µg/mL	10.1 µg/mL	3101a*	Al	99.99+	Mg	7439-95-4	10.0 µg/mL	10.0 µg/mL	3131a*	Mg(NO <sub>3</sub> ) <sub>2</sub> · 6H <sub>2</sub> O	99.99+
As	7440-38-2	10.0 µg/mL	10.1 µg/mL	3103a*	As	99.99+	Mn	7439-96-5	10.0 µg/mL	10.0 µg/mL	3132*	Mn	99.99+
Ba	7440-39-3	10.0 µg/mL	10.1 µg/mL	3104a*	BaCO <sub>3</sub>	99.99+	Na	7440-23-5	10.0 µg/mL	9.93 µg/mL	3152a*	NaHCO <sub>3</sub>	99.99+
Be	7440-41-7	10.0 µg/mL	10.2 µg/mL	3105a*	Be <sub>2</sub> O(CH <sub>3</sub> COO) <sub>2</sub>	99.99+	Ni	7440-02-0	10.0 µg/mL	10.0 µg/mL	3136*	Ni	99.99+
Cd	7440-43-9	10.0 µg/mL	10.0 µg/mL	3108*	Cd	99.99+	Pb	7439-92-1	10.0 µg/mL	10.0 µg/mL	3128*	PbO	99.99+
Co	7440-48-4	10.0 µg/mL	10.1 µg/mL	3113*	Co	99.99+	Rb	7440-17-7	10.0 µg/mL	9.86 µg/mL	3145a*	RbNO <sub>3</sub>	99.99+
Cr	7440-47-3	10.0 µg/mL	10.1 µg/mL	3112a*	Cr(NO <sub>3</sub> ) <sub>3</sub> · 9H <sub>2</sub> O	99.99+	Se	7782-49-2	10.0 µg/mL	9.98 µg/mL	3149*	Se	99.99+
Ce	7440-46-2	10.0 µg/mL	10.0 µg/mL	3111a*	CeNO <sub>3</sub>	99.99+	Sr	7440-24-6	10.0 µg/mL	9.93 µg/mL	3153a*	SrCO <sub>3</sub>	99.99+
Cu	7440-50-8	10.0 µg/mL	10.1 µg/mL	3114*	Cu	99.99+	Ti	7440-28-0	10.0 µg/mL	10.0 µg/mL	3158*	TiNO <sub>3</sub>	99.99+
Fe	7439-89-6	10.0 µg/mL	10.0 µg/mL	3126a*	Fe	99.99+	U	7440-61-1	10.0 µg/mL	10.1 µg/mL	3164*	UO <sub>2</sub> (NO <sub>3</sub> ) <sub>2</sub> · 6H <sub>2</sub> O	99.99+
Ga	7440-55-3	10.0 µg/mL	10.0 µg/mL	3119a*	Ga	99.99+	V	7440-62-2	10.0 µg/mL	10.1 µg/mL	3185*	NH <sub>4</sub> VO <sub>3</sub>	99.99+
K	7440-09-7	10.0 µg/mL	10.1 µg/mL	3141a*	KNO <sub>3</sub>	99.99+	Zn	7440-65-5	10.0 µg/mL	9.98 µg/mL	3168a*	Zn	99.99+

\* - Indicates NIST SRM

† - Indicates CRM (when NIST SRM is not available)

**Purity grades:**

Starting Materials: Shown above

Matrix:

 5% HNO<sub>3</sub>: HNO<sub>3</sub> (CAS No. 7697-37-2) high purity grade

**Traceability:**

This standard has been produced gravimetrically and volumetrically using ISO 9001 quality procedures. Agilent ICP / ICP-MS Spectrometer was used to determine the concentration of the main elements via NIST SRMs shown above, as well as the impurities. Other reference standards used: CL13-05YP, CL1-78MKB.

**Trace Metallic Impurities in the Actual Solution, in µg/L, via Agilent ICP-MS Analysis, results are accurate to ±10%:**

Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.
Au	<0.5	Gd	<0.06	La	0.1	Pr	<0.01	Si	<100	Ti	<6
B	<0.8	Ge	<2	Lu	<0.01	Pt	<0.06	Sm	2	Tm	0.06
Bi	0.3	Hf	<0.01	Mo	<0.2	Re	<0.08	Sn	<0.07	W	<0.8
Ca	0.03	Hg	<2	Nb	<0.1	Rh	<0.6	Ta	<0.3	Y	0.2
Dy	0.1	Ho	<0.01	Nd	<0.02	Ru	<0.2	Tb	<0.01	Yb	<0.01
Er	<0.01	In	0.2	P	<100	Sb	0.8	Te	<0.7	Zr	<0.09
Eu	<0.07	Ir	<0.05	Pd	<3	Sc	<0.3	Th	<0.01		

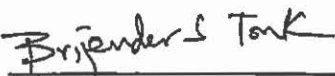
Balances are calibrated regularly with weight sets traceable to NIST.

Density: 1.025 g/mL @ 20°C

Agilent reference standards are guaranteed stable and accurate to ±0.5% of measured analyte concentration. This uncertainty is at 95% confidence interval, a coverage factor of 2. For these solutions we use the highest purity acids applicable, 18 megohm double deionized water and acid-leached, triple rinsed bottles. All glassware used is class A. This standard was manufactured following the guidelines set forth under ISO 17025 and ISO Guide 34 regulations.

Date of release: November 15, 2016

Date of expiration: May 31, 2018

  
 QC Coordinator