

# Certificate of Analysis

## ICP-MS Stock Tuning Solution (100 mL)

**Agilent Part Number: 5188-6564**
**Lot Number: 2-193MJY2**

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
Ce	7440-45-1	10.0 µg/mL	9.93 µg/mL	3110*	Ce <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> ·x(H <sub>2</sub> O)	99.99+	Ti	7440-28-0	10.0 µg/mL	9.93 µg/mL	3158*	TiNO <sub>3</sub>	99.99+
Co	7440-48-4	10.0 µg/mL	9.96 µg/mL	3113*	Co	99.99+	Y	7440-65-5	10.0 µg/mL	9.98 µg/mL	3167a*	Y(NO <sub>3</sub> ) <sub>3</sub> ·6H <sub>2</sub> O	99.99+
Li	7439-93-2	10.0 µg/mL	9.85 µg/mL	3129a*	Li <sub>2</sub> CO <sub>3</sub>	99.99+							

\* - indicates NIST SRM

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

**Purity grades:**

Starting Materials: Shown above

Matrix:

 2% 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: 2-62YJ, 2-54MJ, 2-194MJ.

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

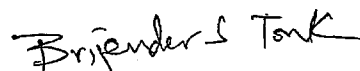
Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.
Ag	<0.08	Cs	0.02	Ho	0.04	Nd	0.08	Ru	<0.2	Te	0.08
Al	0.9	Cu	0.1	In	0.01	Ni	0.2	Sb	<0.04	Th	<0.01
As	0.7	Dy	0.08	Ir	<0.03	P	<100	Sc	<0.2	Ti	0.6
Au	<0.2	Er	0.01	K	<100	Pb	<0.01	Se	<0.8	Tm	<0.01
B	1	Eu	<0.01	La	<2	Pd	0.04	Si	<100	U	<0.01
Ba	0.1	Fe	0.7	Lu	<0.01	Pr	5	Sm	0.03	V	<0.02
Be	0.1	Ga	<0.4	Mg	0.3	Pt	<0.01	Sn	<0.03	W	<0.02
Bi	<0.01	Gd	<0.4	Mn	0.09	Rb	0.02	Sr	0.1	Yb	0.01
Ca	4	Ge	<0.01	Mo	0.05	Re	<0.01	Ta	<0.01	Zn	0.9
Cd	<0.01	Hf	<0.01	Na	<10	Rh	0.01	Tb	0.9	Zr	0.02
Cr	0.3	Hg	<0.07	Nb	<0.01						

Balances are calibrated regularly with weight sets traceable to NIST.

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 17034 regulations.

**Date of release:** March 15, 2020

**Date of expiration:** September 30, 2021


  
 QC Coordinator