

# Certificate of Analysis

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

**Agilent Part Number: 5188-6564**
**Lot Number: 49-150CRY2**

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	10.2 µg/mL	3110*	Ce <sub>2</sub> (CO <sub>3</sub> ) <sub>3</sub> ·x(H <sub>2</sub> O)	99.99+	Tl	7440-28-0	10.0 µg/mL	10.1 µg/mL	3158*	TlNO <sub>3</sub>	99.99+
Co	7440-48-4	10.0 µg/mL	10.1 µg/mL	3113*	Co	99.99+	Y	7440-65-5	10.0 µg/mL	10.0 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	10.1 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: 5-180MKB, 5-179MKB, 1-138YJ, 1-137YJ.

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

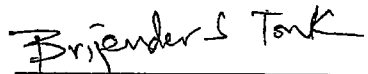
Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.
Ag	<0.1	Cs	<0.07	Ho	0.06	Nd	0.03	Ru	<0.02	Te	<0.1
Al	<0.4	Cu	<0.06	In	<0.01	Ni	0.1	Sb	<0.08	Th	<0.01
As	<0.9	Dy	0.1	Ir	<0.02	P	<100	Sc	<0.06	Ti	<1
Au	<0.02	Er	0.01	K	<100	Pb	<0.1	Se	<1	Tm	<0.01
B	<0.2	Eu	<0.01	La	0.08	Pd	0.04	Si	<100	U	<0.03
Ba	<0.1	Fe	0.5	Lu	<0.01	Pr	0.2	Sm	0.02	V	<0.1
Be	<0.06	Ga	0.4	Mg	0.1	Pt	<0.1	Sn	<0.03	W	<0.01
Bi	<0.01	Gd	<0.3	Mn	<0.06	Rb	0.05	Sr	<0.04	Yb	0.01
Ca	<10	Ge	<0.09	Mo	<0.03	Re	<0.01	Ta	<0.01	Zn	0.6
Cd	<0.06	Hf	<0.01	Na	<5	Rh	<0.04	Tb	1	Zr	<0.1
Cr	0.4	Hg	<0.05	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 Guide 34 regulations.

**Date of release:** November 15, 2018

**Date of expiration:** May 31, 2020


  
 QC Coordinator