



# Certificate of Analysis

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

Agilent Part Number: 5188-6564

Lot Number: 54-164CRY2

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	10.0 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	10.0 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	9.98 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: 2-193MJ, 10-224AB, 10-223AB, 54-165CR.

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	<0.09	Cs	<0.01	Ho	0.04	Nd	<0.02	Ru	<0.02	Te	<0.04
Al	0.9	Cu	<0.08	In	<0.02	Ni	0.2	Sb	<0.02	Th	<0.01
As	<0.6	Dy	0.08	Ir	<0.05	P	<100	Sc	<0.07	Ti	<0.01
Au	<0.04	Er	<0.02	K	<100	Pb	<0.03	Se	<0.5	Tm	<0.02
B	1	Eu	<0.02	La	0.05	Pd	<0.05	Si	<100	U	<0.01
Ba	0.05	Fe	0.7	Lu	<0.01	Pr	0.2	Sm	<0.03	V	<0.04
Be	0.08	Ga	<0.4	Mg	0.3	Pt	<0.01	Sn	<0.04	W	<0.01
Bi	<0.01	Gd	<0.3	Mn	<0.04	Rb	<0.05	Sr	<0.05	Yb	<0.03
Ca	5	Ge	<0.01	Mo	<0.03	Re	<0.01	Ta	<0.01	Zn	0.4
Cd	<0.01	Hf	<0.01	Na	<10	Rh	<0.02	Tb	1	Zr	<0.06
Cr	<0.2	Hg	<0.04	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: August 15, 2020

Date of expiration: February 28, 2022

*Brijender S Tank*  
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