



# Certificate of Analysis

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

Agilent Part Number: 5188-6564

Lot Number: 7-221MFY2

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	10.1 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	10.1 µg/mL	3167a*	Y <sub>2</sub> O <sub>3</sub>	99.99+
Li	7439-93-2	10.0 µg/mL	10.0 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: 51-237CR, 17-080AB, 3-210SG.

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	0.2	Cs	<0.01	Ho	0.04	Nd	<0.07	Ru	<0.06	Te	<0.5
Al	0.7	Cu	<0.5	In	<0.01	Ni	<0.01	Sb	0.1	Th	<0.03
As	<1	Dy	<0.04	Ir	<0.1	P	<100	Sc	<0.01	Tl	<0.01
Au	<0.4	Er	<0.2	K	<10	Pb	<0.1	Se	<0.3	Tm	<0.01
B	0.4	Eu	<0.01	La	0.8	Pd	0.3	Si	<100	U	<0.01
Ba	0.07	Fe	7	Lu	0.02	Pr	0.1	Sm	<0.01	V	<0.3
Be	<0.5	Ga	0.4	Mg	<0.3	Pt	<0.07	Sn	<0.01	W	<0.09
Bi	0.06	Gd	0.4	Mn	<0.3	Rb	<0.2	Sr	<0.2	Yb	<0.04
Ca	4	Ge	<0.4	Mo	<0.2	Re	<0.02	Ta	<0.03	Zn	<0.8
Cd	<0.06	Hf	<0.02	Na	<9	Rh	<0.07	Tb	1	Zr	0.1
Cr	<0.3	Hg	<0.2	Nb	<0.02						

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: May 15, 2022

Date of expiration: November 30, 2023

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