

# Certificate of Analysis

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

**Agilent Part Number: 5188-6564**
**Lot Number: 17-150VY**

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 mg/L	10.0 mg/L	3110*	Ce(NO <sub>3</sub> ) <sub>6</sub> · 6H <sub>2</sub> O	99.99+	Tl	7440-28-0	10.0 mg/L	9.96 mg/L	3158*	TlNO <sub>3</sub>	99.99+
Co	7440-48-4	10.0 mg/L	9.92 mg/L	3113*	Co	99.99+	Y	7440-65-5	10.0 mg/L	9.96 mg/L	3167a*	Y <sub>2</sub> O <sub>3</sub>	99.99+
Li	7439-93-2	10.0 mg/L	9.93 mg/L	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. 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: 16-161VY, 15-214VY, 14-186VY.

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

Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.
Ag	<0.02	Cs	0.3	Ho	<0.01	Nd	<0.09	Ru	<0.3	Te	<0.6
Al	<2	Cu	<0.2	In	<0.06	Ni	<1	Sb	<0.2	Th	<0.3
As	<10	Dy	<0.03	Ir	<0.06	P	<200	Sc	<2	Tl	<0.9
Au	<1	Er	<0.03	K	<4	Pb	<0.2	Se	<2	Tm	<0.01
B	<4	Eu	<0.05	La	0.4	Pd	<0.6	Si	<200	U	0.03
Ba	<0.4	Fe	<1	Lu	<0.01	Pr	0.05	Sm	<0.2	V	<0.03
Be	<1	Ga	<0.7	Mg	<3	Pt	<0.3	Sn	<0.5	W	<0.1
Bi	0.02	Gd	0.8	Mn	<0.9	Rb	<0.2	Sr	<0.2	Yb	<0.05
Ca	3	Ge	<2	Mo	<0.1	Re	<0.06	Ta	<0.1	Zn	<2
Cd	0.05	Hf	<0.08	Na	<5	Rh	<0.05	Tb	1	Zr	<0.1
Cr	<0.1	Hg	<0.2	Nb	<0.2						

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. 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.

Date of release: April 15, 2011

Date of expiration: October 31, 2012

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