



Certificate of Analysis

ICP-MS Stock Tuning Solution (100mL)

Agilent Part Number: 5188-6564

Lot Number: 21-13VYY2

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	10.2 mg/L	3110*	Ce(NO ₃) ₂ ·6H ₂ O	99.99+	Tl	7440-28-0	10.0 mg/L	10.0 mg/L	3158*	TlNO ₃	99.99+
Co	7440-48-4	10.0 mg/L	10.0 mg/L	3113*	Co	99.99+	Y	7440-65-5	10.0 mg/L	10.0 mg/L	3167a*	Y ₂ O ₃	99.99+
Li	7439-93-2	10.0 mg/L	9.97 mg/L	3129a*	Li ₂ CO ₃	99.99+							

* - indicates NIST SRM

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

Purity grades:

Starting Materials: Shown above

Matrix:

2% HNO₃: HNO₃ (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: 19-246VY,20-123VY.

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	0.3	Cs	<0.06	Ho	<0.01	Nd	<0.02	Ru	<0.07	Te	<0.5
Al	1	Cu	<0.1	In	<0.02	Ni	<0.3	Sb	<0.03	Th	<0.02
As	1	Dy	<0.03	Ir	<0.1	P	<70	Sc	<0.2	Tl	<0.8
Au	<0.2	Er	<0.4	K	<100	Pb	<0.07	Se	<2	Tm	<0.01
B	<0.3	Eu	<0.01	La	0.09	Pd	<0.3	Si	<40	U	<0.01
Ba	<0.05	Fe	<5	Lu	<0.01	Pr	0.2	Sm	<0.03	V	<0.9
Be	<0.04	Ga	0.3	Mg	<0.4	Pt	<0.1	Sn	<0.1	W	<0.6
Bi	<0.02	Gd	0.1	Mn	<0.2	Rb	<0.07	Sr	<0.08	Yb	<0.01
Ca	<9	Ge	<0.1	Mo	<0.09	Re	<0.08	Ta	<0.02	Zn	<0.6
Cd	<0.02	Hf	<0.01	Na	5	Rh	<0.02	Tb	1	Zr	<0.1
Cr	<0.3	Hg	<0.1	Nb	<0.04						

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: May 15, 2014

Date of expiration: November 30, 2015

Brijender S Tonk
 QC Coordinator