Agilent Technologies

Certificate of Analysis

ICP-MS Tuning Solution 10 ppm 100mL

Agilent Part Number: 5190-0465 **Lot Number:** 23-115VYY2

Analyte	CAS#	Labeled Conc.	Measured Conc.	SRM	Start Matl Formula	Start Matl Purity	Analyte	CAS#	Labeled Conc.	Measured Conc.	SRM	Start Matl Formula	Start Matl Purity
Ce	7440-45-1	10.0 µg/mL	10.0 µg/mL	3110*	$Ce_2(CO_3)_3.x(H_2O)$	99.99+	Mg	7439-95-4	10.0 µg/mL	10.0 µg/mL	3131a*	Mg	99.99+
Co	7440-48-4	10.0 µg/mL	10.1 µg/mL	3113*	Co	99.99+	Tl	7440-28-0	10.0 µg/mL	10.1 µg/mL	3158*	$TlNO_3$	99.99+
U	7439-93-2	10.0 µg/mL	9.95 µg/mL	3129a*	Li_2CO_3	99.99+	Y	7440-65-5	10.0 µg/mL	10.1 µg/mL	3167a*	Y_2O_3	99.99+

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

Purity grades:

Starting Materials: Shown above

Matrix:

2% HNO_3: HNO_3 (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: 22-121VY,20-11VY.

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	0.01	Cs	<0.01	Ho	<0.01	Nd	<0.01	Ru	<0.01	Te	<0.05
Al	4	Cu	<0.3	In	<0.01	Ni	<0.1	Sb	0.02	Th	<0.01
As	<0.3	Dy	<0.01	Ir	<0.01	P	<100	Sc	<0.02	Ti	<0.5
Au	<0.01	Er	<0.01	K	<3	Pb	0.05	Se	<0.8	Tm	<0.01
B	<0.2	Eu	<0.01	La	0.01	Pd	0.1	Si	<50	U	<0.01
Ba	0.1	Fe	2	Lu	<0.01	Pr	0.2	Sm	<0.01	V	<0.02
Be	<0.03	Ga	0.4	Mn	0.4	Pt	<0.01	Sn	<0.01	W	<0.01
Bi	<0.01	Gd	0.2	Mo	<0.02	Rb	<0.01	Sr	<0.02	Yb	<0.01
Ca	<10	Ge	<0.01	Na	3	Re	<0.01	Ta	<0.01	Zn	0.4
Cd	<0.01	Hf	<0.01	Nb	<0.01	Rh	0.02	Tb	1	Zr	<0.1
Cr	<0.2	Hg	<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: June 30, 2016

Date of expiration: December 31, 2017

Brijender S Tonk

QC Coordinator

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