

Certificate of Analysis

Environmental Spike Mix

Agilent Part Number: 5183-4687
Lot Number: 41-154CRY2

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
Ca	7440-70-2	1000 µg/mL	988 µg/mL	3109a*	CaCO ₃	99.99+	Cr	7440-47-3	100 µg/mL	99.0 µg/mL	3112a*	Cr(NO ₃) ₃ ·9H ₂ O	99.99+
Fe	7439-89-6	1000 µg/mL	987 µg/mL	3126a*	Fe	99.99+	Cu	7440-60-8	100 µg/mL	99.5 µg/mL	3114*	Cu	99.99+
K	7440-09-7	1000 µg/mL	989 µg/mL	3141a*	KNO ₃	99.99+	Mn	7439-96-5	100 µg/mL	100 µg/mL	3132*	Mn	99.99+
Mg	7439-95-4	1000 µg/mL	993 µg/mL	3131a*	Mg	99.99+	Mo	7439-98-7	100 µg/mL	98.6 µg/mL	3134*	MoO ₃	99.99+
Na	7440-23-5	1000 µg/mL	989 µg/mL	3152a*	NaHCO ₃	99.99+	Ni	7440-02-0	100 µg/mL	98.6 µg/mL	3138*	Ni	99.99+
Ag	7440-22-4	100 µg/mL	98.8 µg/mL	3151*	AgNO ₃	99.99+	Pb	7439-92-1	100 µg/mL	99.2 µg/mL	3128*	PbO	99.99+
Al	7429-90-5	100 µg/mL	99.8 µg/mL	3101a*	Al	99.99+	Sb	7440-36-0	100 µg/mL	99.1 µg/mL	3102a*	Sb	99.99+
As	7440-38-2	100 µg/mL	99.1 µg/mL	3103a*	As	99.99+	Se	7782-49-2	100 µg/mL	99.8 µg/mL	3148*	Se	99.99+
Ba	7440-39-3	100 µg/mL	99.2 µg/mL	3104a*	BaCO ₃	99.99+	Tl	7440-28-0	100 µg/mL	98.7 µg/mL	3158*	TlNO ₃	99.99+
Be	7440-41-7	100 µg/mL	99.4 µg/mL	3105a*	Be ₂ O(CH ₃ COO) ₂	99.99+	U	7440-61-1	100 µg/mL	99.0 µg/mL	3164*	UO ₂ (NO ₃) ₂ ·6H ₂ O	99.99+
Cd	7440-43-9	100 µg/mL	99.4 µg/mL	3108*	Cd	99.99+	V	7440-62-2	100 µg/mL	99.0 µg/mL	3165*	NH ₄ VO ₃	99.99+
Co	7440-48-4	100 µg/mL	100 µg/mL	3113*	Co	99.99+	Zn	7440-66-8	100 µg/mL	99.4 µg/mL	3168a*	Zn	99.99+

* - Indicates NIST SRM

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

Purity grades:

Starting Materials: Shown above

Matrix:

 5% HNO₃: HNO₃ (CAS No. 7697-37-2) high purity grade

Tr. Tart. Acid: Tart. Acid (CAS No. 87-89-4) high purity grade

Tr. HF: HF (CAS No. 7664-39-3) 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: 32-155CR, 21-158CR.

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

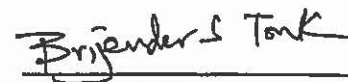
Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.	Element	Conc.
Au	<0.09	Ga	0.8	La	4	Fr	0.2	Si	<500	Th	0.3
B	<3	Gd	0.4	Li	2	Pt	<0.1	Sm	10	Tl	30
Bi	2	Ge	<20	Lu	<0.01	Pb	30	Sn	<0.2	Tm	<0.01
Ce	2	Hf	<0.4	Nb	1	Re	1	Sr	10	W	8
Ca	0.06	Hg	<0.1	Nd	<0.4	Rh	3	Ta	4	Y	1
Dy	0.4	Ho	0.01	P	<500	Ru	<0.4	Tb	0.01	Yb	<0.01
Er	<0.03	In	0.3	Pd	<10	Sc	<0.9	Te	<1	Zr	<20
Eu	<0.1	Ir	<0.7								

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: February 28, 2017

Date of expiration: August 31, 2018



 QC Coordinator