Agilent Technologies

Certificate of Analysis

Environmental Calibration Standard

Agilent Part Number: 5183-4688 **Lot Number:** 3-47MKBY2

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
Ca	7440-70-2	1000 µg/mL	1013 µg/mL	3109a*	$CaCO_3$	99.99+	Cu	7440-50-8	10.0 µg/mL	9.96 µg/mL	3114*	Cu	99.99+
Fe	7439-89-6	1000 µg/mL	1010 µg/mL	3126a*	Fe	99.99+	Mn	7439-96-5	10.0 µg/mL	9.96 µg/mL	3132*	Mn	99.99+
K	7440-09-7	1000 µg/mL	1013 µg/mL	3141a*	KNO_3	99.99+	Mo	7439-98-7	10.0 µg/mL	10.0 µg/mL	3134*	MoO_3	99.99+
Mg	7439-95-4	1000 µg/mL	1002 µg/mL	3131a*	$Mg(NO_3)_2 \cdot 6H_2O$	99.99+	Ni	7440-02-0	10.0 µg/mL	9.96 µg/mL	3136*	Ni	99.99+
Na	7440-23-5	1000 µg/mL	1009 µg/mL	3152a*	$NaHCO_3$	99.99+	Pb	7439-92-1	10.0 µg/mL	9.84 µg/mL	3128*	PbO	99.99+
Ag	7440-22-4	10.0 µg/mL	9.98 µg/mL	3151*	$AgNO_3$	99.99+	Sb	7440-36-0	10.0 µg/mL	9.93 µg/mL	3102a*	Sb	99.99+
Al	7429-90-5	10.0 µg/mL	9.94 µg/mL	3101a*	Al	99.99+	Se	7782-49-2	10.0 µg/mL	9.93 µg/mL	3149*	Se	99.99+
As	7440-38-2	10.0 µg/mL	9.97 µg/mL	3103a*	As	99.99+	Th	7440-29-1	10.0 µg/mL	9.96 µg/mL	3159*	$Th(NO_3)_4 \cdot 4H_2O$	99.99+
Ba	7440-39-3	10.0 µg/mL	9.92 µg/mL	3104a*	$Ba(NO_3)_2$	99.99+	Tl	7440-28-0	10.0 µg/mL	9.96 µg/mL	3158*	$TlNO_3$	99.99+
Be	7440-41-7	10.0 µg/mL	10.1 µg/mL	3105a*	$Be_4O(CH_3COO)_6$	99.99+	U	7440-61-1	10.0 µg/mL	10.0 µg/mL	3164*	$UO_2(NO_3)_2 \cdot 6H_2O$	99.99+
Cd	7440-43-9	10.0 µg/mL	9.96 µg/mL	3108*	Cd	99.99+	V	7440-62-2	10.0 µg/mL	9.95 µg/mL	3165*	NH_4VO_3	99.99+
Co	7440-48-4	10.0 µg/mL	9.93 µg/mL	3113*	Co	99.99+	Zn	7440-66-6	10.0 µg/mL	10.0 µg/mL	3168a*	Zn	99.99+
Cr	7440-47-3	10.0 µg/mL	10.0 µg/mL	3112a*	$Cr(NO_3)_3 \cdot 9H_2O$	99.99+							

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

Purity grades:

Starting Materials:	Shown above
Matrix:	
Tr. Tart. Acid:	Tart. Acid (CAS No. 87-69-4) high purity grade
5% 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: 22-122VY,22-252VY.

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	0.06	Ga	<0.4	Ir	<0.1	Pd	<3	Sc	<0.4	Te	<0.4
B	2	Gd	<0.1	La	1	Pr	0.03	Si	<200	Ti	<3
Bi	0.2	Ge	<2	Li	<0.7	Pt	0.3	Sm	1	Tm	<0.01
Ce	1	Hf	<0.05	Lu	<0.01	Rb	40	Sn	<0.7	W	<0.4
Cs	0.2	Hg	<0.4	Nb	0.06	Re	<0.1	Sr	10	Y	0.2
Dy	<0.06	Ho	<0.01	Nd	<0.07	Rh	0.3	Ta	<0.4	Yb	<0.03
Er	<0.04	In	0.09	P	<400	Ru	<0.3	Tb	0.02	Zr	1
Eu	<0.1										

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.

Brijender S Tonk
QC Coordinator

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