ABSOLUTE STANDARDS, INC.

World Class Manufacturing & Internationally Recognized Quality

As Absolute Standards enters the latter half of our second decade of service, we continue to maintain our position as the industry leader. As the largest supplier of Analytical Reference Materials (ARM)® and Performance Evaluation samples, we ship our products to all fifty states, several territories, and over thirty countries.

Focusing on the needs of the global testing body, we strive to provide the highest quality and broadest range of analytical standards to an industry that relies on accuracy and precision. Moreover, Absolute Standards is the only company in the industry that has exceeded the international requirements of both ISO/IEC 17025 and ISO 9001:2000 for the manufacture and analytical verification of our entire product line.

As an analytical standards manufacturer, we recognize our role as an important link in the analytical testing community. Your analyses require the use of accurate, traceable, and defensible reference materials. It is this requirement that drives Absolute Standards to manufacture products that lead the industry in quality and value.

Our philosophy at Absolute Standards is one of compliance. High expectations backed by quality accreditations help us achieve our goals. Discover how Absolute's commitment can help satisfy your compliance needs.

Stephen J. Arpie, *M.S. Technical Director*

John P. Criscio, *President/CEO*

ORDERING & TECHNICAL INFORMATION

To Place an Order...
please have the following information available:

1. Account #
2. Purchase Order #/ Credit Card #
3. Part # and Quantity

We are available for orders & technical service from 9am-6pm (EST) by Phone, and 24 hrs. a day by Fax, Mail, & Internet.

...Phone...
800-368-1131

...Fax...
800-410-2577

...Mail...
Absolute Standards, Inc.
P.O. Box 5585
Hamden, CT 06518

...Email...
customerserv@absolutestandards.com

Order on-line at **www.AbsoluteStandards.com** using LabCart™
Secure, Simple,Searchable, & Speedy

We accept major credit cards: **MasterCard / VISA / AMEX**.

Orders that are placed before 5pm (EST) are shipped the same day by **FedEx** & **UPS.**

Prices are F.O.B. Hamden CT. Terms are Net 30 Days. Terms and conditions of all sales contracts will be governed by the laws of The State of Connecticut. Prices are subject to change without notice.

Warranty by Absolute Standards includes that our products are as described when shipped. No warranty as to fitness for any particular application is expressed or implied. Errant shipments and/or quality claims must be made within 30 days of receipt. No returns can be made without a Return Authorization Number and instructions of forwarding.

Liability by Absolute Standards is limited solely to the replacement of the product or refund of the purchase price. These products are intended for research use only. Owing to their hazardous nature, they should be handled only by qualified, trained personnel familiar with their use.

CERTIFICATES & ACCREDITATIONS

Please visit our website at
www.AbsoluteStandards.com
to download current copies of our ISO 9001, ISO 17025 and A2LA certificates.

NSF International Strategic Registrations

789 North Dixboro Road, Ann Arbor, Michigan 48105
(888) NSF-9000

Certificate of Registration

This certifies that the Quality Management System of

ABSOLUTE STANDARDS, INC.

44 Rossotto Drive
Hamden, Connecticut, 06514, United States

has been assessed by NSF-ISR and found to be in conformance to the following standard(s):

ISO 9001:2000

Scope of Registration:
Design, development, production and service of analytical reference materials (ARM), used as calibration and quality control standards.

Exclusions: None

Industrial Classification:
IAF - QMS: 12
SIC: 2899

Certificate Number: C0023640-IS1
Certificate Issue Date: 19-DEC-2008
Registration Date: 16-MAY-2008
Expiration Date *: 15-MAY-2011

Christian B. Lupo

Christian B. Lupo, General Manager
NSF-ISR, Ltd.

Authorized Registration and /or Accreditation Marks. This certificate is property of NSF-ISR and must be returned upon request. *Company is audited for conformance at regular intervals. To verify registrations call (888) NSF-9000 or visit our web site at www.nsf-isr.org

30% recycled post-consumer fiber.

Absolute Standards, Inc.

Custom Standard Quotation Request Form

Fax: (800) 410-2577, Technical Service Dept, Absolute Standards, Inc.

Email: customerserv@absolutestandards.com

Page_____ of _____ Date: ____/____/____

From:

Company Contact: _____

Company: _____ Account#:_____

Company Address: _____

Telephone: _____ Fax:_____

Email: _____

Product Description: _____

Solvent/ Matrix: _____

Volume Size: ☐ 1 x 100 mL Qty: _____ ☐ 1 x 500 mL Qty: _____ ☐ Other:_____ Qty: _____

Date Required: ____/____/____ Analysis requested? (additonal charge) ☐ Yes ☐ No

	Component	**CAS#** (optional)	**Concentration** (ug/mL)
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			

Comments: _____

AbsoluteGrade™ - Specifications

Absolute Standards is the ***only*** company in the industry that has exceeded the international requirements of both ISO/IEC 17025 and ISO 9001:2000 for the manufacture and analytical verification of our ***entire*** product line. Equipped with state of the art instrumentation, our quality products are backed by the analytical power of an ICP-MS and four LC's.
Included in this catalog are reference materials for calibration of the following instruments: AA, ICP, ICP-MS, IC, IE & several wet chemical methods. Method references are indicated wherever possible. In addition, the CLP section has been updated to include the latest revisions.
Our capabilities are diverse and expanding. As we strive for continuous improvement, we've added the following services to better accomodate your needs: bulk sealing, on-line ordering with *LabCart™*, and a fully searchable Products database available at www.AbsoluteStandards.com. We know that your requirements can be unique and varied therefore, if you would like a custom blend, please contact us with your specifications. Let our *experienced* chemists give you a feasibility assessment of *your* design and work with you to enhance the stability and robustness of your custom formulation.

AbsoluteGrade™ - Specifications

- Suitable for ICP AES, DCP AES, ICP MS, High-Accuracy AA Flame or Graphite Furnace work.
- Manufactured using the *Highest Purity* starting materials available (typically 99.999%).
- Digestion in acid-cleaned PTFE labware to prevent possible contamination.
- Class A volumetric glassware used for pipetting and diluting where applicable.
- Signed Certificate of Analysis included with *every* standard.
- Traceable to NIST **and other internationally recognized third party standards.**
- Formulation Uncertainty provided for every analyte
- Density measurement allows wt/wt use.
- Verification of impurities in both starting materials and final solutions.
- Immediate shipment from stock.
- Total U.S. "Right To-Know", and O.S.H.A. compliance.
- Cost-effective packaging.

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ABSOLUTE STANDARDS, INC.

ISO 9001 DLS ANSI-RAB ACCREDITED

Certificate of Analysis

Conformance: The "Certificate of Analysis" and the "Certified Weight Report" fulfill the requirements in the current versions of: ISO Guides (9001, 24, 31, 34, 17025) & NIST-NVLAP Handbook 150-19.

Health & Safety: See the attached MSDS & Certified Weight Report before use.

Intended Use: This Analytical Reference Material (ARM®) is intended primarily for use in the characterization of unknowns & the establishment of response factors by qualified personnel. Typical instrumental organic assays include: GC & LC, and inorganic assays include: ICP & AA. The product is for laboratory use only.

Certified Values: In production, gravimetric/volumetric readings are certified to be within +/- 0.5% of the stated value and are valid between 18˚C & 30˚C. The measured uncertainty can be found on the Certified Weight Report. All product weighings are performed on an analytical balance that is calibrated to **NIST Traceable** standard weights & certified by the manufacturer. The volumetric glassware used is Class "A" type & conforms to ASTM E-288 unless otherwise stated. The solvents & compounds used are of the highest practical purity & typically meet or exceed **ACS Reagent Grade** & **ACS Standards Grade** specifications.

Homogeneity & Stability: No heterogeneity was observed in the preparation, packaging & storage of this standard. Expiration dates can be found on the Certified Weight Report.

Purity & Identity: Purity determinations are performed using at least one analytical technique. Identity assays are typically performed using two dissimilar methods.

Organic solutions & neats are typically formulated from materials whose purity & identity have been characterized by GC-MSD & LC-PDA techniques with comparison to a **NIST Traceable** library of mass spectra when available. Additional characterization techniques may include but are not limited to: refractive index measurements of liquids, melting point measurements of solids, & GC-FID, ECD, PID, ELCD, NPD, LC-PDA measurements for purity.

Inorganic solutions & neats are typically formulated from materials whose purity & identity have been characterized by ICPMS with comparison to a **NIST Standard Reference Material** when available. Additional characterization techniques may include but are not limited to: titratiometry, and densitometry, AA or ICP.

Final solutions are subjected to instrumental analysis to support the gravimetric values when appropriate. The data for the quality assurance testing is published with the Certified Weight Report. Typical instrumental organic assays include GC and LC. Inorganic assays include ICPMS, titratiometry, and densitometry.

Storage: Sealed ampules and other containers should be stored in the dark at temperatures above the freezing point of the solution and not more than 30˚C. Certification by Absolute Standards, Inc. is typically valid for 5 years from the date of manufacture (Lot Number). Certified values are not applicable to opened ampules or to materials stored in re-sealable containers. See the "Certified Weight Report" for specific values.

Usage: Ampules & bottles should be brought to room temperature (18 to 30˚C) before opening. Sonication may be required for high concentration solutions. After opening, care should be exercised to avoid concentration changes owing to evaporation of the solvent or essential components. We recommend that a suitable re-sealable container be available before opening an ampule to decant the standard for short-term storage.

Legal Notice: Warranty of products are as described when shipped. No warranty as to fitness for any particular application is expressed or implied. Errant shipments and/or quality claims must be made within 10 days of receipt. Liability is limited solely to the replacement of the product or refund of purchase price.

Certifying Officer: Stephen J. Arpie, M.S. Director *Stephen J. Arpie*

Absolute Standards, Inc. • 44 Rossotto Drive • Hamden, CT 06514
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email: quality@absolutestandards.com • www: http://www.absolutestandards.com

Document Identification: Certificate of Analysis Rev 5, Date Issued: 01/01/2006

CERTIFIED WEIGHT REPORT

AbsoluteGrade ™ SPECIFICATIONS

All of our standards are accompanied by a *Certified Weight Report.*

ABSOLUTE STANDARDS,INC · **44 ROSSOTTO DRIVE · HAMDEN, CT 06514 · (800)-368-1131**

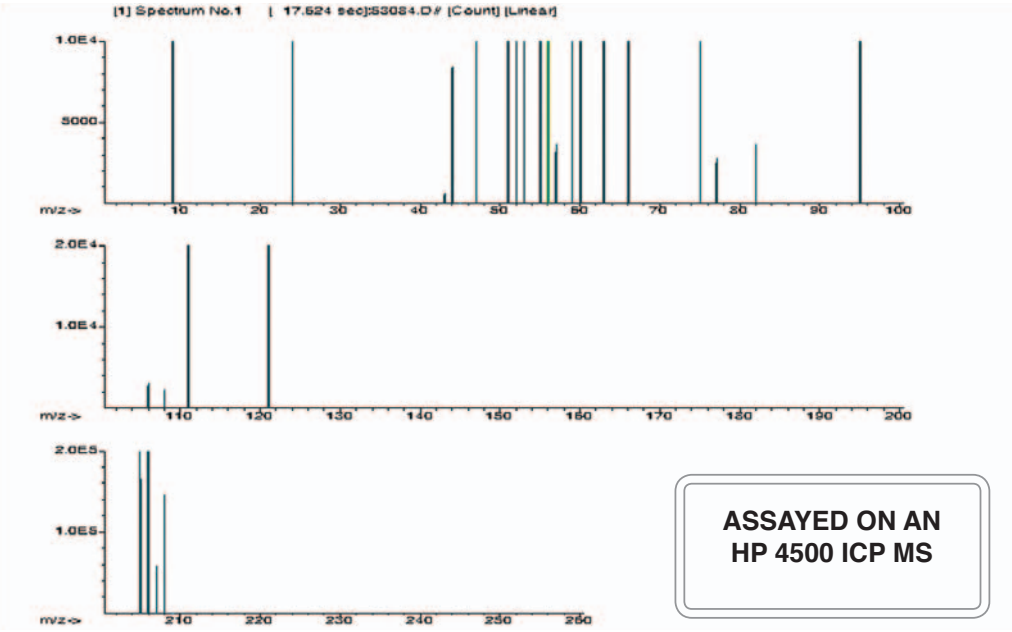
ISO 9001 Quality System registered
DLS ANSI/RAB Accredited

CERTIFIED WEIGHT REPORT:

		Lot #	Solvent(s):
Part Number:	53084	L135898	Nitric Acid
Lot Number:	070102	N37G05	Hydrofluoric acid
Description:	QC Standard 1		
		2.0%	20.0
Expiration Date:	070105	0.025%	0.25
			(mL)
Nominal Concentration (µg/mL):	100		
		5E-05	Balance Uncertainty
Weight(s) shown below were combined and diluted to :	999.88	0.025	Flask Uncertainty

Formulated By:	Lawrence Barry 070102
Reviewed By:	Pedro L. Rentas 070102

Compound	Part Number	Lot Number	Dilution Factor	Initial Volume	Uncertainty Pipette	Initial Conc.(ug/mL)	Final Conc (µg/mL)	Expanded Uncertainty (+/-) (µg/mL)	MSDS Information (Solvent Safety Info. On Attached pg.) CAS#	OSHA PEL (TWA)	LD50
1. Beryllium acetate (Be)	57104	051100	0.0100	10.00	0.006	10000.04	100.0	0.002334	19049-40-2	0.002 ug/m3	N/A
2. Calcium carbonate Ca)	58120	012202	0.0100	10.00	0.006	10000.82	100.0	0.002334	00471-34-1	7 mg/m3	N/A
3. Cadmium nitrate (Cd)	58148	091400	0.0100	10.00	0.006	10000.19	100.0	0.002002	10022-68-1	0.2 mg/m3	N/A
4. Chromium nitrate nonahydrate(Cr)	58124	040901	0.0100	10.00	0.006	10000.34	100.0	0.002002	07789-02-8	0.5 mg/m3	orl-rat 3250mg/kg
5. Cobalt nitrate (Co)	57127	020901	0.0100	10.00	0.006	10000.54	100.0	0.002002	10026-22-9	5 mg/m3	orl-rat 694 mg/kg
6. Copper nitrate (Cu)	58129	062001	0.0100	10.00	0.006	10003.59	100.0	0.002001	03251-23-8	N/A	orl-rat 940 mg/kg
7. Iron (III) Nitrate Nonahydrate	58126	061002	0.0100	10.00	0.006	10001.80	100.0	0.002003	07782-61-8	7 mg/m3	N/A
8. Lead nitrate (Pb)	57182	032900	0.0100	10.00	0.006	9999.67	100.0	0.002002	10099-74-8	0.05 mg/m3	500 mg/kg
9. Magnesium nitrate (Mg)	58112	110601	0.0100	10.00	0.006	10000.20	100.0	0.002002	10377-60-3	7 mg/m3	N/A
10. Manganese nitrate (Mn)	57125	060800	0.0100	10.00	0.006	10000.37	100.0	0.002002	15710-66-4	5 mg/m3	N/A
11. Ammonium molybdate (Mo)	58142	082901	0.0100	10.00	0.006	10000.17	100.0	0.002002	13106-76-8	N/A	orl-rat 333 mg/kg
12. Nickel nitrate (Ni)	58128	102600	0.0100	10.00	0.006	10000.03	100.0	0.002002	10377-66-9	5 mg/m3	N/A
13. Selenium oxide (Se)	58134	011900	0.0100	10.00	0.006	10001.32	100.0	0.002002	07746-08-4	0.2 mg/m3	N/A
14. Thallium nitrate (Tl)	57181	120700	0.0100	10.00	0.006	10000.34	100.0	0.002002	10102-45-1	5 mg/m3	N/A
15. Ammonium hexafluorotitanate (Ti)	57122	042400	0.0100	10.00	0.006	9999.90	100.0	0.002002	16962-40-6	N/A	N/A
16. Ammonium Metavanadate (V)	58123	110701	0.0100	10.00	0.006	10000.32	100.0	0.002002	07803-55-6	1.0 mg/m3	orl-rat 630 mg/kg
17. Zinc nitrate (Zn)	58130	041101	0.0100	10.00	0.006	10000.21	100.0	0.002002	10196-18-6	1 mg/m3	orl-rat 1190mg/kg
18. Antimony Oxide (Sb)	58151	071001	0.0100	10.00	0.006	10000.04	100.0	0.002002	07440-36-0	5.0 mg/m3	N/A
19. Arsenic (As)	58133	062000	0.0100	10.00	0.006	10000.48	100.0	0.002002	07440-38-2	0.2 mg/m3	N/A



ASSAYED ON AN HP 4500 ICP MS

AbsoluteGrade ™ SPECIFICATIONS

CERTIFIED WEIGHT REPORT

A Certified Weight Report is generated for each lot illustrating the formulation procedure, traceability, & actual analysis.

Absolute Standards, Inc.
44 Rossotto Drive • Hamden, CT • 06514 • (800) 368-1131

ISO 9001 Quality System Registered
DLS ANSI-RAB Accredited

AbsoluteGrade™ Solution **Part#** 53084

Lot# 070102

	(µg/mL)	(+,- µg/mL)
Certified Concentration (µg/mL)	100.0	0.002

The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise specified.

TRACEABILITY DOCUMENTATION:

A) Classical Chemical Analysis:

Method	Traceability	Concentration
EDTA Titration	NIST SRM 928 Lead Nitrate	N/A
Gravimetric Analysis	NIST Weights	N/A
Redox Titration	NIST SRM 136e Potassium Dichromate	N/A
Volhard Titration	NIST SRM 999 Potassium Chloride	N/A

B) Instrumental Analysis by Inductively Coupled Plasma Mass Spectroscopy (ICP-MS):

This analytical solution was tested against the appropriate NIST SRM's:

Trace Metals Verification by ICP-MS (µg/mL)

Al	<0.02	Cd	*	Dy	<0.02	Hf	<0.02	Li	<0.02	Ni	*	Pr	<0.02	Se	*	Tb	<0.02	W	<0.02
Sb	*	Ca	*	Er	<0.02	Ho	<0.02	Lu	<0.02	Nb	<0.02	Re	<0.02	Si	<0.02	Te	<0.02	U	<0.02
As	*	Ce	<0.02	Eu	<0.02	In	<0.02	Mg	*	Os	<0.02	Rh	<0.02	Ag	<0.02	Tl	*	V	*
Ba	<0.02	Cs	<0.02	Gd	<0.02	Ir	<0.02	Mn	*	Pd	<0.02	Rb	<0.02	Na	<0.2	Th	<0.02	Yb	<0.02
Be	*	Cr	*	Ga	<0.02	Fe	*	Hg	<0.2	P	<0.02	Ru	<0.02	Sr	<0.02	Tm	<0.02	Y	<0.02
Bi	<0.02	Co	*	Ge	<0.02	La	<0.02	Mo	*	Pt	<0.02	Sm	<0.02	S	<0.02	Sn	<0.02	Zn	*
B	<0.02	Cu	*	Au	<0.02	Pb	*	Nd	<0.02	K	<0.2	Sc	<0.02	Ta	<0.02	Ti	*	Zr	<0.02

(*) =Target Element

C) Physical Characterization:

Analyzed Density of Solution (g/mL): 1.018

Temperature (°C): 22.6

Homogeneity: No heterogeneity was observed in the preparation of this standard.

Certified by:

We use purified acids, 18 meg ohm double deionized water, calibrated Class A glassware and the highest purity raw materials available, (typically 99.999%). We meticulously clean our bottles by acid leaching and then triple rinsing with ASTM Type I water prior to use. Our standards are made gravimetrically using balances that are calibrated with weights traceable to NIST. **(NIST Test #: 732/245790).** We certify that all our standards are within the stated uncertainties unless otherwise stated, assuming that the bottle is kept tightly capped and stored under normal laboratory conditions.

Reference: Taylor, B.N. and Kuyatt, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Result," NIST Technical Note 1297, U.S. government Printing Office, Washington DC, (1994).

SINGLE COMPONENT SOLUTIONS

PLASMA EMISSION SPECTROSCOPY REFERENCE STANDARDS

1,000 ug/mL Single Components for ICP/AA

Element		Matrix	Part#	$/100mL	Part#	$/500mL
Aluminum	Al	$Al(NO_3)_3/HNO_3$	57013	30	58013	70
Antimony	Sb	Sb_2O_3/HNO_3 tr.Tartaric acid	57051	30	58051	70
Arsenic	As	As_2O_3/HNO_3	57033	30	58033	70
Barium	Ba	$Ba(NO_3)_2/HNO_3$	57056	30	58056	70
Beryllium	Be	$Be_4O(C_2H_3O_2)6/HNO_3$	57004	30	58004	70
Bismuth	Bi	$Bi(NO_3)_3/HNO_3$	57083	30	58083	70
Boron	B	H_3BO_3/H_20	57005	30	58005	70
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$	57048	30	58048	70
Calcium	Ca	$CaCO_3/HNO_3$	57020	30	58020	70
Carbon	C	$C(Citric\ Acid)/HNO_3$	57006	30	58006	70
Cerium	Ce	$Ce(NO_3)_3/HNO_3$	57058	30	58058	70
Cesium	Cs	$CsNO_3/HNO_3$	57055	30	58055	70
Chromium	Cr	$Cr(NO_3)_3/HNO_3$	57024	30	58024	70
Chromium-Cr^{6+}	Cr^{6+}	$(NH_4)_2Cr_2O_7/H_2O$	54161	30	54172	50
Cobalt	Co	$Co(NO_3)_2/HNO_3$	57027	30	58027	70
Copper	Cu	$Cu(NO_3)_2/HNO_3$	57029	30	58029	70
Dysprosium	Dy	Dy_2O_3/HNO_3	57066	30	58066	75
Erbium	Er	Er_2O_3/HNO_3	57068	30	58068	75
Europium	Eu	Eu_2O_3/HNO_3	57063	30	58063	75
Gadolinium	Gd	Gd_2O_3/HNO_3	57064	30	58064	75
Gallium	Ga	Ga_2O_3/HNO_3	57031	75	58031	150
Germanium	Ge	$(NH_4)_2GeF_6$/tr, HF	57032	30	58032	70
Gold	Au	NH_4AuCl_4/HCl	57079	75	58079	150
Hafnium	Hf	Hf_2O_3/HCl	57072	30	58072	75
Holmium	Ho	Ho_3O_3/HNO_3	57067	30	58067	75
Indium	In	In_2O_3/HNO_3	57049	30	58049	70
Iridium	Ir	$IrCl_3/HCl$	57077	75	58077	150
Iron	Fe	$Fe(NO_3)_3/HNO_3$	57026	30	58026	70
Iron-Ferrous	Fe^{2+}	$(NH_4)Fe^{2+}(SO_4)_2/H_2SO_4$	54141	30	54174	50
Iron-Total	Fe	$[Fe^{2+}]+[Fe^{3+}]/H_2SO4$	54140	30	54173	50
Lanthanum	La	$LaCl/HNO_3$	57057	30	58057	70
Lead	Pb	$Pb(NO_3)_2/HNO_3$	57082	30	58082	70
Lithium	Li	$LiNO_3/HNO_3$	57003	30	58003	70
Lithium 6^+		$Li^{6+}NO_3/HNO_3$	59021	200	59097	1000
Lutetium	Lu	Lu_2O_3/HNO_3	57071	30	58071	75
Magnesium	Mg	$Mg(NO_3)_2/HNO_3$	57012	30	58012	70
Manganese	Mn	$Mn(NO_3)_2/HNO_3$	57025	30	58025	70
Mercury	Hg	$Hg(NO_3)_2/HNO_3$	57080	30	58080	70
Mercury-Organic	Hg	$MeHgCl/HNO_3$	54170	30	54171	50
Mercury-Total	Hg	$Hg(NO_3)^{2+}MeHgCl/HNO_3$	54004	30	54168	50

1,000 ug/mL Single Components for ICP/AA

Element		Matrix	Part#	$/100mL	Part#	$/500mL
Molybdenum	Mo	$(NH_4)MoO_4/H_2O$	57042	30	58042	70
Neodymium	Nd	Nd_2O_3/HNO_3	57060	30	58060	75
Nickel	Ni	$Ni(NO_3)_2/HNO_3$	57028	30	58028	70
Niobium	Nb	$(NH_4)NbF_6$/tr.HF	57041	30	58041	70
Palladium	Pd	Pd/HNO_3	57046	125	58046	200
Phosphorus	P	$(NH_4)H_2PO_4/HNO_3$	57015	30	58015	70
Platinum	Pt	$[Pt(NH_3)_4](NO_3)_2$/HCL	57078	75	58078	150
Potassium	K	KNO_3/HNO_3	57019	30	58019	70
Praesodymium	Pr	Pr_6O_{11}/HNO_3	57059	30	58059	75
Rhenium	Re	Re/HNO_3	57075	125	58075	150
Rhodium	Rh	$RhCl_3$/HCl	57045	100	58045	400
Rubidium	Rb	$RbNO_3/HNO_3$	57037	30	58037	75
Ruthenium	Ru	$RuCl_3/HNO_3$	57044	75	58044	150
Samarium	Sm	Sm_2O_3/HNO_3	57062	30	58062	75
Scandium	Sc	$Sc(NO_3)_3/HNO_3$	57021	75	58021	150
Selenium	Se	SeO_2/HNO_3	57034	30	58034	70
Silica	SiO_2	SiO_2/NaOH	54159	30	54169	75
Silicon	Si	$(NH_4)_2SiF_6/HNO_3$	57014	30	58014	70
Silver	Ag	$AgNO_3/HNO_3$	57047	30	58047	70
Sodium	Na	$NaNO_3/HNO_3$	57011	30	58011	70
Strontium	Sr	$Sr(NO_3)_2/HNO_3$	57038	30	58038	70
Sulfur	S	$(NH_4)_2SO_4/H_2O$	57016	30	58016	70
Tantalum	Ta	NH_4TaF_6/tr.HF	57073	30	58073	75
Tellurium	Te	TeO_2/HCl	57052	50	58073	150
Terbium	Tb	Tb_4O_7/HNO_3	57065	30	58065	75
Thallium	Tl	$TlNO_3/HNO_3$	57081	30	58081	70
Thorium	Th	$Th(NO_3)_4/HNO_3$	57090	30	58090	70
Thulium	Tm	Tm_2O_3/HNO_3	57069	30	58069	75
Tin	Sn	$(NH_4)SnF_6/HNO_3$/HCL	57050	30	58050	70
Titanium	Ti	$(NH_4)_2TiF_6/HNO_3$/tr.HF	57022	30	58022	70
Tungsten	W	$(NH_4)_2WO_4/H_2O$	57074	30	58074	70
Uranium	U	U_3O_8/HNO_3	57092	30	58092	70
Vanadium	V	NH_4VO_3/HNO_3	57023	30	58023	70
Ytterbium	Yb	Yb_2O_3/HNO_3	57070	30	58070	75
Yttrium	Y	Y_2O_3/HNO_3	57039	30	58039	70
Zinc	Zn	$Zn(NO_3)_2/HNO_3$	57030	30	58030	70
Zirconium	Zr	ZrO_2/HNO_3	57040	30	58040	70

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10,000 ug/mL Single Components for ICP/AA

Element		Matrix	Part#	$/100mL	Part#	$/500mL
Aluminum	Al	$Al(NO_3)_3/HNO_3$	57113	85	58113	160
Antimony	Sb	Sb_2O_3/HNO_3 tr.Tartaric acid	57151	85	58151	160
Arsenic	As	As_2O_3/HNO_3	57133	85	58133	160
Barium	Ba	$Ba(NO_3)_2/HNO_3$	57156	85	58156	160
Beryllium	Be	$Be_4O(C_2H_3O_2)_6/HNO_3$	57104	85	58104	160
Bismuth	Bi	$Bi(NO_3)_3/HNO_3$	57183	85	58183	160
Boron	B	H_3BO_3/H_20	57105	85	58105	160
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$	57148	85	58148	160
Calcium	Ca	$CaCO_3/HNO_3$	57120	85	58120	160
Carbon	C	C(Citric Acid)/HNO_3	57106	85	58106	160
Cerium	Ce	$Ce(NO_3)_3/HNO_3$	NA	NA	NA	NA
Cesium	Cs	$CsNO_3/HNO_3$	NA	NA	NA	NA
Chromium	Cr	$Cr(NO_3)_3/HNO_3$	57124	85	58124	160
Chromium-Cr^{6+}	Cr^{6+}	$(NH_4)_2Cr_2O_7/H_2O$	54175	85	54176	160
Cobalt	Co	$Co(NO_3)_2/HNO_3$	57127	85	58127	160
Copper	Cu	$Cu(NO_3)_2/HNO_3$	57129	85	58129	160
Dysprosium	Dy	Dy_2O_3/HNO_3	NA	NA	NA	NA
Erbium	Er	Er_2O_3/HNO_3	NA	NA	NA	NA
Europium	Eu	Eu_2O_3/HNO_3	NA	NA	NA	NA
Gadolinium	Gd	Gd_2O_3/HNO_3	NA	NA	NA	NA
Gallium	Ga	Ga_2O_3/HNO_3	NA	NA	NA	NA
Germanium	Ge	$(NH_4)_2GeF_6$/tr, HF	NA	NA	NA	NA
Gold	Au	NH_4AuCl_4/HCl	57179	300	58179	600
Hafnium	Hf	Hf_2O_3/HCl	NA	NA	NA	NA
Holmium	Ho	Ho_3O_3/HNO_3	NA	NA	NA	NA
Indium	In	In_2O_3/HNO_3	NA	NA	NA	NA
Iridium	Ir	$IrCl_3/HCl$	NA	NA	NA	NA
Iron	Fe	$Fe(NO_3)_3/HNO_3$	57126	85	58126	160
Iron-Ferrous	Fe^{2+}	$(NH_4)Fe^{2+}(SO_4)_2/H_2SO_4$	NA	NA	NA	NA
Iron-Total	Fe	$[Fe^{2+}]+[Fe^{3+}]/H_2SO_4$	NA	NA	NA	NA
Lanthanum	La	$LaCl/HNO_3$	NA	NA	NA	NA
Lead	Pb	$Pb(NO_3)_2/HNO_3$	57182	85	58182	160
Lithium	Li	$LiNO_3/HNO_3$	57103	85	58103	160
Lithium 6^+	Li $^{6+}$	$Li^{6+}NO_3/HNO_3$	NA	NA	NA	NA
Lutetium	Lu	Lu_2O_3/HNO_3	NA	NA	NA	NA
Magnesium	Mg	$Mg(NO_3)_2/HNO_3$	57112	85	58112	160
Manganese	Mn	$Mn(NO_3)_2/HNO_3$	57125	85	58125	160
Mercury	Hg	$Hg(NO_3)_2/HNO_3$	57180	85	58180	160
Mercury-Organic	Hg	$MeHgCl/HNO_3$	NA	NA	NA	NA
Mercury-Total	Hg	$Hg(NO_3)^{2+}MeHgCl/HNO_3$	54178	100	NA	NA

10,000 ug/mL Single Components for ICP/AA

Element		Matrix	Part#	$/100mL	Part#	$/500mL
Molybdenum	Mo	$(NH_4)MoO_4/H_2O$	57142	85	58142	160
Neodymium	Nd	Nd_2O_3/HNO_3	NA	NA	NA	NA
Nickel	Ni	$Ni(NO_3)_2/HNO_3$	57128	85	58128	160
Niobium	Nb	$(NH_4)NbF_6$/tr.HF	NA	NA	NA	NA
Palladium	Pd	Pd/HNO_3	57146	500	58146	900
Phosphorus	P	$(NH_4)H_2PO_4/HNO_3$	57115	85	58115	160
Platinum	Pt	$[Pt(NH3)_4](NO_3)_2$/HCL	57178	300	58178	600
Potassium	K	KNO_3/HNO_3	57119	85	58119	160
Praesodymium	Pr	Pr_6O_{11}/HNO_3	NA	NA	NA	NA
Rhenium	Re	Re/HNO_3	NA	NA	NA	NA
Rhodium	Rh	$RhCl_3$/HCl	NA	NA	NA	NA
Rubidium	Rb	$RbNO_3/HNO_3$	NA	NA	NA	NA
Ruthenium	Ru	$RuCl_3/HNO_3$	NA	NA	NA	NA
Samarium	Sm	Sm_2O_3/HNO_3	NA	NA	NA	NA
Scandium	Sc	$Sc(NO_3)_3/HNO_3$	NA	NA	NA	NA
Selenium	Se	SeO_2/HNO_3	57134	85	58134	160
Silica	SiO_2	SiO_2/NaOH	NA	NA	NA	NA
Silicon	Si	$(NH_4)_2SiF_6/HNO_3$	57114	85	58114	160
Silver	Ag	$AgNO_3/HNO_3$	57147	85	58147	160
Sodium	Na	$NaNO_3/HNO_3$	57111	85	58111	160
Strontium	Sr	$Sr(NO_3)_2/HNO_3$	57138	85	58138	160
Sulfur	S	$(NH_4)_2SO_4/H_2O$	57116	85	58116	160
Tantalum	Ta	NH_4TaF_6/tr.HF	NA	NA	NA	NA
Tellurium	Te	TeO_2/HCl	NA	NA	NA	NA
Terbium	Tb	Tb_4O_7/HNO_3	NA	NA	NA	NA
Thallium	Tl	$TlNO_3/HNO_3$	57181	85	58181	160
Thorium	Th	$Th(NO_3)_4/HNO_3$	NA	NA	NA	NA
Thulium	Tm	Tm_2O_3/HNO_3	NA	NA	NA	NA
Tin	Sn	$(NH_4)SnF_6/HNO_3$/HCL	57150	85	58150	160
Titanium	Ti	$(NH_4)_2TiF_6/HNO_3$/tr.HF	57122	85	58122	160
Tungsten	W	$(NH_4)_2WO_4/H_2O$	57174	85	58174	160
Uranium	U	U_3O_8/HNO_3	NA	NA	NA	NA
Vanadium	V	NH_4VO_3/HNO_3	57123	85	58123	160
Ytterbium	Yb	Yb_2O_3/HNO_3	NA	NA	NA	NA
Yttrium	Y	Y_2O_3/HNO_3	57139	85	58139	160
Zinc	Zn	$Zn(NO_3)_2/HNO_3$	57130	85	58130	160
Zirconium	Zr	ZrO_2/HNO_3	57140	85	58140	160

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KITS

ELEMENTAL GROUP KITS

Group I Elements Starter Kit
(5 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Lithium	Li	$LiNO_3/HNO_3$
Sodium	Na	$NaNO_3/HNO_3$
Potassium	K	KNO_3/HNO_3
Rubidium	Rb	$RbNO_3/HNO_3$
Cesium	Cs	$CsNO_3/HNO_3$

Part # 52253 $80/ 5 x 100 mL

Group II Elements Starter Kit
(5 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Beryllium	Be	$Be_4O(C_2H_3O_2)_6/HNO_3$
Magnesium	Mg	$Mg(NO_3)_2/HNO_3$
Calcium	Ca	$CaCO_3/HNO_3$
Strontium	Sr	$Sr(NO_3)_2/HNO_3$
Barium	Ba	$Ba(NO_3)_2/HNO_3$

Part # 52255 $80/ 5 x 100 mL

Transition Metals Starter Kit
(9 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Titanium	Ti	$(NH_4)_2TiF_6/HNO_3$/tr.HF
Vanadium	V	NH_4VO_3/HNO_3
Chromium	Cr	$Cr(NO_3)_3/HNO_3$
Manganese	Mn	$Mn(NO_3)_2/HNO_3$
Iron	Fe	$Fe(NO_3)_3/HNO_3$
Cobalt	Co	$Co(NO_3)_2/HNO_3$
Nickel	Ni	$Ni(NO_3)_2/HNO_3$
Copper	Cu	$Cu(NO_3)_2/HNO_3$
Zinc	Zn	$Zn(NO_3)_2/HNO_3$

Part # 52256 $150/ 9 x 100 mL

Lanthanide Metals Starter Kit
(14 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Lanthanum	La	$LaCl/HNO_3$
Cerium	Ce	$Ce(NO_3)_3/HNO_3$
Praesodymium	Pr	Pr_6O_{11}/HNO_3
Neodymium	Nd	Nd_2O_3/HNO_3
Samarium	Sm	Sm_2O_3/HNO_3
Europium	Eu	Eu_2O_3/HNO_3
Gadolinium	Gd	Gd_2O_3/HNO_3
Terbium	Tb	Tb_4O_7/HNO_3
Dysprosium	Dy	Dy_2O_3/HNO_3
Holmium	Ho	Ho_3O_3/HNO_3
Erbium	Er	Er_2O_3/HNO_3
Thulium	Tm	Tm_2O_3/HNO_3
Ytterbium	Yb	Yb_2O_3/HNO_3
Lutetium	Lu	Lu_2O_3/HNO_3

Part # 52254 $240/ 14 x 100 mL

METHOD SPECIFIC SINGLE ELEMENT KITS

KITS

Method 200.7
Complete Single Element Kit
(32 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Aluminum	Al	$Al(NO_3)_3/HNO_3$
Antimony	Sb	Sb_2O_3/HNO_3 tr.Tartaric acid
Arsenic	As	As_2O_3/HNO_3
Barium	Ba	$Ba(NO_3)_2/HNO_3$
Beryllium	Be	$Be_4O(C_2H_3O_2)_6/HNO_3$
Boron	B	H_3BO_3/H_20
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$
Calcium	Ca	$CaCO_3/HNO_3$
Cerium	Ce	$Ce(NO_3)_3/HNO_3$
Chromium	Cr	$Cr(NO_3)_3/HNO_3$
Cobalt	Co	$Co(NO_3)_2/HNO_3$
Copper	Cu	$Cu(NO_3)_2/HNO_3$
Iron	Fe	$Fe(NO_3)_3/HNO_3$
Lead	Pb	$Pb(NO_3)_2/HNO_3$
Lithium	Li	$LiNO_3/HNO_3$
Magnesium	Mg	$Mg(NO_3)_2/HNO_3$
Manganese	Mn	$Mn(NO_3)_2/HNO_3$
Mercury	Hg	$Hg(NO_3)_2/HNO_3$
Molybdenum	Mo	$(NH_4)MoO_4/H_2O$
Nickel	Ni	$Ni(NO_3)_2/HNO_3$
Phosphorus	P	$(NH_4)H_2PO_4/HNO_3$
Potassium	K	KNO_3/HNO_3
Selenium	Se	SeO_2/HNO_3
Silica	SiO2	$SiO_2/NaOH$
Silver	Ag	$AgNO_3/HNO_3$
Sodium	Na	$NaNO_3/HNO_3$
Strontium	Sr	$Sr(NO_3)_2/HNO_3$
Thallium	Tl	$TlNO_3/HNO_3$
Tin	Sn	$(NH_4)SnF_6/HNO_3/HCl$
Titanium	Ti	$(NH_4)_2TiF_6/HNO_3$/tr.HF
Vanadium	V	NH_4VO_3/HNO_3
Zinc	Zn	$Zn(NO_3)_2/HNO_3$

Part # 52250 $600/ 32 x 100 mL

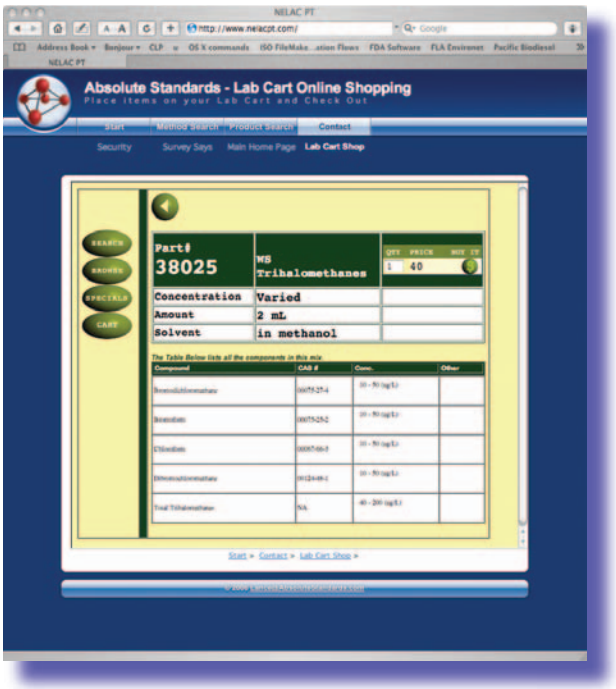
Method 200.8
Complete Single Element Kit
(21 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Aluminum	Al	$Al(NO_3)_3/HNO_3$
Antimony	Sb	Sb_2O_3/HNO_3 tr.Tartaric acid
Arsenic	As	As_2O_3/HNO_3
Barium	Ba	$Ba(NO_3)_2/HNO_3$
Beryllium	Be	$Be_4O(C_2H_3O_2)_6/HNO_3$
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$
Chromium	Cr	$Cr(NO_3)_3/HNO_3$
Cobalt	Co	$Co(NO_3)_2/HNO_3$
Copper	Cu	$Cu(NO_3)_2/HNO_3$
Lead	Pb	$Pb(NO_3)_2/HNO_3$
Manganese	Mn	$Mn(NO_3)_2/HNO_3$
Mercury	Hg	$Hg(NO_3)_2/HNO_3$
Molybdenum	Mo	$(NH_4)MoO_4/H_2O$
Nickel	Ni	$Ni(NO_3)_2/HNO_3$
Selenium	Se	SeO_2/HNO_3
Silver	Ag	$AgNO_3/HNO_3$
Thallium	Tl	$TlNO_3/HNO_3$
Thorium	Th	$Th(NO_3)_4/HNO_3$
Uranium	U	U_3O_8/HNO_3
Vanadium	V	NH_4VO_3/HNO_3
Zinc	Zn	$Zn(NO_3)_2/HNO_3$

Part # 52251 $380/ 21 x 100 mL

Search our complete Products Database on-line at www.AbsoluteStandards.com

Search by: Component # of Components Concentration EPA Method



CALIBRATION BLANKS AND MATRIX MODIFIERS

MATRIX BLANKS

Blank solutions are prepared with High-Purity Acids and ASTM Type I Water. Blanks can be used to dilute your multi-element standards to run directly to establish your baseline. An Aqua Regia Blank can be prepared by mixing one part Nitric Acid Blank with three parts HCl Acid Blank.

Water Blank
ASTM Type I H2O

Part # 52000 **$25/ 100mL**
Part # 53000 **$40/ 500mL**

Nitric Acid Blank
Matrix 5% HNO_3

Part # 52002 **$25/100mL**
Part # 53002 **$40/500mL**

HCl Acid Blank
Matrix 5% HCl

Part # 52001 **$25/ 100mL**
Part # 53001 **$40/ 500mL**

GRAPHITE FURNACE ATOMIC ABSORPTION MATRIX MODIFIERS

Matrix Modifiers suppress background interferences and help enhance sensitivity by changing the behavior of the element or the matrix in solution with respect to temperature. These modifiers help prevent the loss of certain elements during pyrolysis by converting the target to a less volatile form. This allows a more optimum graphite furnace program to be utilized.

Palladium and Magnesium Nitrate Modifier

Starting Material Pd & $Mg(NO_3)_2$

Matrix 0.3%(3 mg/mL) Pd & 0.2%(2 mg/mL) Mg in 5% HNO_3

Part # 52311 **$250/100mL**
Part # 53311 **$450/500mL**

Palladium Nitrate Modifier

Starting Material Pd

Matrix 1%(10 mg/mL) in 2% HNO_3

Part # 57146 **$500/100mL**
Part # 58146 **$900/500mL**

Magnesium Nitrate Modifier

Starting Material $Mg(NO_3)_2$

Matrix 2%(20 mg/mL) in 5% HNO_3

Part # 52004 **$125/100mL**
Part # 53004 **$200/500mL**

Nickel Nitrate Modifier

Starting Material $Ni(NO_3)_2$

Matrix 5%(50 mg/mL) in 5% HNO_3

Part # 52003 **$250/100mL**
Part # 53003 **$350/500mL**

Ammonium Nitrate Modifier

Starting Material NH_4NO_3

Matrix 2%(20 mg/mL) in H_2O

Part # 52309 **$250/100mL**
Part # 53309 **$350/500mL**

Ammonium Dihydrogen Phosphate Modifier

Starting Material $(NH_4)H_2PO_4$

Matrix 10%(100 mg/mL) in H_20

Part # 52005 **$350/100mL**
Part # 53005 **$500/500mL**

Calcium Nitrate Modifier

Starting Material $Ca(NO_3)_2 \cdot 4H_2O$

Matrix 2%(20 mg/mL) in 5% HNO_3

Part # 52310 **$250/100mL**
Part # 53310 **$350/500mL**

Lanthanum Nitrate Modifier

Starting Material $LaNO_3$

Matrix 5%(50 mg/mL) in 5% HNO_3

Part # 52312 **$250/100mL**
Part # 53312 **$350/500mL**

Lanthanum Chloride Modifier

Starting Material $LaCl_3$

Matrix 5%(50 mg/mL) in 5% HCl

Part # 52313 **$250/100mL**
Part # 53313 **$350/500mL**

GRAPHITE FURNACE AA CALIBRATION AND SPIKING

GFAA Calibration

6 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Sb	100
As	50
Cd	10
Pb	50
Se	100
Tl	50

Part # 52314 $85/100 mL
Part # 53314 $190/500 mL

GFAA Initial Calibration Verification (2nd Source)

6 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Sb	50
As	25
Cd	5
Pb	25
Se	50
Tl	25

Part # 52315 $85/100 mL
Part # 53315 $190/500 mL

GFAA Spike Standard

6 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Sb	100
As	40
Cd	5
Pb	20
Se	10
Tl	50

Part # 52316 $85/100 mL
Part # 53316 $190/500 mL

GFAA Mercury Standard

Matrix 2% HNO_3

Element	Conc.(ug/mL)
Hg	100

Part # 57280 $30/100 mL
Part # 58280 $60/500 mL

CLP

USEPA CONTRACT LABORATORY PROGRAM STATEMENT OF WORK FOR INORGANIC ANALYSIS

The following section illustrates the solutions appropriate for the inorganic analyitcal methods dervied from the USEPA Contract Laboratory Program. These methods are specifc for ICP-AES and ICP-MS technologies and are suitable for the detection of metals in various matrices. These methods are designed to not only isolate, but to both qualitatively and quantitatively detect specific target metals in water and soil/sediment.

ACRONYM	DESCRIPTION
Cal	Calibration Standards
CCV	Continuing Calibration Verification: To ensure calibration accuracy during each analysis, run a CCV standard for every wavelength/ mass used for each analyte.
CRQL	Contract Required Quantation Limit
CRI	Standard prepared at the CRQL level
ICB/CCB	Initial and Continuing Calibration Blank
ICS	Interference Check Sample: To verify inter-element and background correction factors, the Contractor shall analyze and report the results for the ICS, for all elements on the Target Analyte List (TAL), and for all interferents (target and non-target), at the beginning and end of each analysis run, but not before the ICV. In addition, the Contractor shall analyze and report the results for the ICS at a frequency of not less than once per 20 analytical samples per analysis run.
ICV	Initial Calibration/Verification: Immediately after each of system has been calibrated, the accuracy of the initial calibration shall be verified and documented for every analyte by the analysis of the ICV solution(s) at each wavelength/ mass used.

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

METHOD
CLP
ILM 05.2

ILM 05.2 INSTRUMENT CALIBRATION STANDARDS FOR INDUCTIVELY COUPLED PLASMA - ATOMIC EMISSION SPECTROSCOPY (ICP-AES)

Calibration Std. I
5 Components
100 ug/mL in 5% HNO_3

Be
Cd
Mn
Pb
Zn

Part # 52149 $65/100 mL
Part # 53149 $130/500 mL

Calibration Std. II
5 Components
100 ug/mL in 5% HNO_3

Ba
Co
Cu
Fe
V

Part # 52150 $65/100 mL
Part # 53150 $130/500 mL

Calibration Std. III
2 Components
100 ug/mL in 5% HNO_3

As
Se

Part # 52151 $40/100 mL
Part # 53151 $80/500 mL

Calibration Std. IV
6 Components
100 ug/mL in 5% HNO_3

Al
Ca
Cr
K
Na
Ni

Part # 52152 $65/100 mL
Part # 53152 $130/500 mL

Calibration Std. V
4 Components
100 ug/mL in 5% HNO_3

Ag
Mg
Sb
Tl

Part # 52153 $65/100 mL
Part # 53153 $130/500 mL

METHOD

CLP

ILM 05.2

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

ILM 05.2 INITIAL CALIBRATION VERIFICATION (ICV) SOLUTIONS & CONTINUING CALIBRATION VERIFICATION (CCV) SOLUTIONS FOR ICP-AES

ICP-AES
Initial Verification Std. 1

12 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ba	100
Be	40
Cd	50
Co	100
Cu	100
Fe	100
Pb	100
Mn	100
Ni	100
Ag	20
Tl	100
Zn	100

Part # 52017 $95/100 mL
Part # 53017 $190/500 mL

ICP-AES
Initial Verification Std. 2

10 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	100
Sb	100
As	100
Ca	1000
Cr	100
Mg	1000
K	1000
Se	100
Na	1000
V	100

Part # 52018 $95/100 mL
Part # 53018 $190/500 mL

ICP-AES
Continuing Calibration Verification Standard- CCV

22 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)	Element	Conc.(ug/mL)
Ca	2500	Zn	20
Mg	2500	Mn	15
K	2500	Cr	10
Na	2500	Ag	10
Al	200	Be	10
Ba	200	Cd	10
Fe	100	Pb	10
Co	50	As	10
V	50	Se	10
Ni	40	Tl	10
Cu	25	Sb	60

Part # 52154 $95/100 mL
Part # 53154 $190/500 mL

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

METHOD
CLP
ILM 05.2

ILM 05.2 CONTRACT REQUIRED QUANTITATION LIMITS (CRQL's) FOR ICP-AES

A standard must be run at double the Contract Required Quantation Limit (CRQL) or at two times the Instrument Detection Limits (IDL), whichever is greater. This standardization must be performed at the beginning and end of each batch of samples; or at least twice in an 8 hour shift. All elements to be analyzed must be verified except Al, Ba, Ca, Fe, Mg, Na, and K. The CRI Mix 1 contains all the required elements on the Target Analyte List (TAL) in their appropriate concentration ratios. The standard should be diluted by a factor of 1000 prior to use in the "two times CRI" run for ICP analysis. CRI Mix 2 is designed for ICPs equipped with ultrasonic nebulizers and offers all the elements of interest at two times the CRQL level.

CRI Mix 1

15 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	120
As	120
Be	10
Cd	10
Cr	20
Co	100
Cu	50
Pb	120
Mn	30
Ni	80
Se	120
Ag	20
Tl	120
V	100
Zn	40

Part # 52022 **$125/100 mL**
Part # 53022 **$250/500 mL**

CRI Mix 2

15 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	120
As	20
Be	10
Cd	10
Cr	20
Co	100
Cu	50
Pb	6
Mn	30
Ni	80
Se	10
Ag	20
Tl	20
V	100
Zn	40

Part # 52023 **$125/100 mL**
Part # 53023 **$250/500 mL**

METHOD
CLP
ILM 05.2

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

ILM 05.2 INTERFERENCE CHECKS FOR ICP-AES

Inter-element and background correction factors must be verified at the beginning and end of each analysis run, or at least twice in an 8 hour shift. Two solutions are required for the interference check: the interferent alone (solution "A^1"), and the combination of interferents and analytes (solution "AB^1"). "A^1" is prepared by diluting Interferents A by a factor of 5. Solution "AB^1" is prepared by producing a combined solution of Interferents A diluted by a factor of 5 and Analytes B diluted by a factor of 100. For example, combine 20 mL of Interferents A with 1.0 mL of analytes B and dilute the mixture to 100 mL with the calibration blank.

Interferents A
4 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	2500
Ca	2500
Fe	1000
Mg	2500

Part # 52024 $95/100 mL
Part # 53024 $190/500 mL

Interferents B
12 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ag	100
Ba	50
Be	50
Cd	100
Co	50
Cr	50
Cu	50
Mn	50
Ni	100
Pb	100
V	50
Zn	100

Part # 52025 $95/100 mL
Part # 53025 $190/500 mL

ILM 05.2 SPIKE SAMPLE FOR ICP-AES

In Spike Sample Analysis, a spike containing the required elements in their respective required amounts, is added to the sample prior to addition of any reagents, digestion, distillation, etc.

Spike Sample Standard 1
18 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	200
Sb	50
As	200
Ba	200
Be	5
Cd	5
Cr	20
Co	50
Cu	25
Fe	100
Pb	50
Mn	50
Ni	50
Se	200
Ag	5
Tl	200
V	50
Zn	50

Part # 52028 $280/100 mL
Part # 53028 $560/500 mL

Spike Sample Standard 3 (Soil)
16 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	100
As	400
Ba	400
Be	10
Cd	10
Cr	40
Co	100
Cu	50
Pb	100
Mn	100
Ni	100
Se	400
Ag	10
Tl	400
V	100
Zn	100

Part # 52031 $160/100 mL
Part # 53031 $320/500 mL

ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

METHOD
CLP
ILM 05.2

ILM 05.2 CALIBRATION, TUNING, & INTERNAL STANDARDS FOR INDUCTIVELY COUPLED PLASMA - MASS SPECTROSCOPY (ICP-MS)

Tuning Standard

5 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Be	100
Mg	100
Co	100
In	100
Pb	100

Part # 52156 $45/100 mL
Part # 53156 $90/500 mL

ICP-MS Calibration Standard

23 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)	Element	Conc.(ug/mL)
Al	100	Pb	100
Sb	100	Mg	100
As	100	Mn	100
Ba	100	Ni	100
Be	100	Sc	100
Bi	100	Se	100
Cd	100	Ag	100
Cr	100	Tb	100
Co	100	Tl	100
Cu	100	V	100
In	100	Y	100
		Zn	100

Part # 52155 $95/100 mL
Part # 53155 $190/500 mL

INTERNAL STANDARDS

Element		Matrix	Conc. (ug/mL)	Part#	$/100mL	Part#	$/500mL
Bismuth	Bi	$Bi(NO_3)_3/HNO_3$	1000	57083	25	58083	65
Indium	In	In_2O_3/HNO_3	1000	57049	25	58049	65
Holmium	Ho	Ho_3O_3/HNO_3	1000	57067	25	58067	75
Lithium	Li	$LiNO_3/HNO_3$	1000	57003	25	58003	65
Lutetium	Lu	Lu_2O_3/HNO_3	1000	57071	30	58071	75
Rhodium	Rh	$RhCl_3/HCl$	1000	57045	125	58045	400
Scandium	Sc	$Sc(NO_3)_3/HNO_3$	1000	57021	75	58021	150
Terbium	Tb	Tb_4O_7/HNO_3	1000	57065	25	58065	75
Yttrium	Y	Y_2O_3/HNO_3	1000	57039	25	58039	65

METHOD

CLP

ILM 05.2

ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

ILM 05.2 INITIAL CALIBRATION VERIFICATION (ICV) SOLUTIONS & CONTINUING CALIBRATION VERIFICATION (CCV) SOLUTIONS FOR ICP-MS

ICP-MS ICV Standard

23 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	50
Sb	50
As	50
Ba	50
Be	50
Bi	50
Cd	50
Cr	50
Co	50
Cu	50
In	50
Pb	50
Mg	50
Mn	50
Ni	50
Sc	50
Se	50
Ag	50
Tb	50
Tl	50
V	50
Y	50
Zn	50

Part # 52157 $95/100 mL
Part # 53157 $190/500 mL

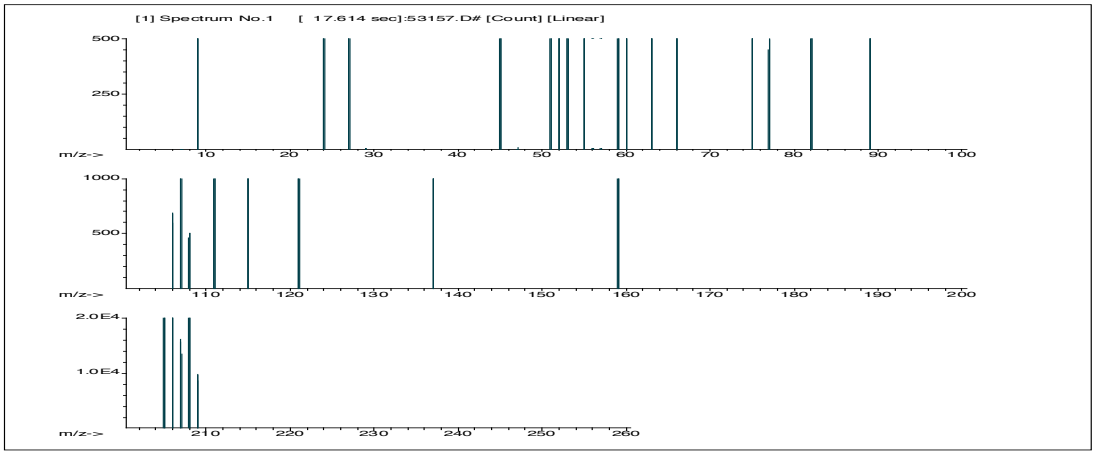
ICP-MS CCV Standard

23 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	10
Sb	10
As	10
Ba	10
Be	10
Bi	10
Cd	10
Cr	10
Co	10
Cu	10
In	10
Pb	10
Mg	10
Mn	10
Ni	10
Sc	10
Se	10
Ag	10
Tb	10
Tl	10
V	10
Y	10
Zn	10

Part # 52158 $95/100 mL
Part # 53158 $190/500 mL

P#52157-ICP-MS ICV Standard analyzed on HP 4500 ICP-MS



ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

METHOD
CLP
ILM 05.2

ILM 05.2 CONTRACT REQUIRED QUANTITATION LIMITS (CRQL's) & INTERFERENTS SOLUTIONS FOR ICP-MS

ICP-MS - CRI Standard

23 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)	Element	Conc.(ug/mL)
Al	0.1	Pb	0.1
Sb	0.1	Mg	0.1
As	0.1	Mn	0.1
Ba	0.1	Ni	0.1
Be	0.1	Sc	0.1
Bi	0.1	Se	0.1
Cd	0.1	Ag	0.1
Cr	0.1	Tb	0.1
Co	0.1	Tl	0.1
Cu	0.1	V	0.1
In	0.1	Y	0.1
		Zn	0.1

Part # 52159 $95/100 mL
Part # 53159 $190/500 mL

ICP-MS / Interferents A

12 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	100
Ca	100
Fe	100
Mg	100
K	100
Na	100
P	100
SO_4	100
C	200
Cl	1000
Mo	2
Ti	2

Part # 52160 $95/100 mL
Part # 53160 $190/500 mL

ICP-MS / Interferents B

20 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	20
As	20
Ba	20
Bi	20
Cd	20
Cr	20
Co	20
Cu	20
In	20
Pb	20
Mn	20
Ni	20
Sc	20
Se	20
Ag	20
Tb	20
Tl	20
V	20
Y	20
Zn	20

Part # 52161 $110/100 mL
Part # 53161 $220/500 mL

METHOD
CLP
ILM 05.2

ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

ILM 05.2 SPIKE SOLUTION FOR ICP-MS

In Spike Sample Analysis, a spike containing the required elements in their respective required amounts, is added to the sample prior to addition of any reagents, digestion, distillation, etc.

ICP-MS / Spike Sample

17 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	2000
Sb	100
As	40
Ba	2000
Be	50
Cd	50
Cr	200
Co	500
Cu	250
Pb	20
Mn	500
Ni	500
Se	10
Ag	50
Tl	50
V	500
Zn	500

Part # 52162 $110/100 mL
Part # 53162 $220/500 mL

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Cold Vapor Mercury Analysis

Element	Conc. (ug/mL)	Part#	$/100mL	Part#	$/500mL
Inorganic Mercury	10	57880	25	58880	50
Inorganic Mercury	20	52009	25	53009	50
Inorganic Mercury	100	57280	25	58280	50
Inorganic Mercury	200	57380	25	58380	50
Inorganic Mercury	1000	57080	25	58080	65
Inorganic Mercury	10000	57180	75	58180	150
Organic Mercury	100	54006	25	NA	NA
Organic Mercury	1000	54170	25	54171	50
Total Mercury	100	54005	25	NA	NA
Total Mercury	1000	54004	25	54168	50
Total Mercury	10000	54178	100	NA	NA

Total Cyanide Analysis

Analyte	Conc. (ug/mL)	Part#	$/100mL	Part#	$/500mL
Simple Cyanide	1000	59017	25	54012	90
Total Cyanide	1000	54150	25	NA	NA
Free & Complexed Cyanide	1000	54165	25	NA	NA

Simple Cyanide is formulated with Potassium Cyanide (KCN), no distillation is required.

Total Cyanide is formulated with Potassium Ferricyanide (III), distillation is required before analysis can be performed.

Free & Complexed Cyanide is formulated with both materials.

METHOD

CLP

ILM 05.3

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

WATER MATRIX

ILM 05.3 INITIAL CALIBRATION VERIFICATION (ICV) SOLUTIONS & CONTINUING CALIBRATION VERIFICATION (CCV) SOLUTIONS FOR ICP-AES/ WATER MATRIX

ICP-AES ICV
Water/Soil Matrix

22 Components

Matrix 5% HNO_3

Element	Conc.(ug/mL)
Al	200
Sb	60
As	10
Ba	200
Be	5
Cd	5
Ca	5000
Cr	10
Co	50
Cu	25
Fe	100
Pb	10
Mg	5000
Mn	15
Ni	40
K	5000
Se	35
Ag	10
Na	5000
Tl	25
V	50
Zn	60

Part # 52163 $150/100 mL
Part # 53163 $300/500 mL

ICP-AES CCV
Water/Soil Matrix

20 Components

Matrix 5% HNO_3

Element	Conc.(ug/mL)
Al	100
Sb	30
As	5
Ba	100
Ca	2500
Cr	5
Co	25
Cu	12.5
Fe	50
Pb	5
Mn	7.5
Mg	2500
Ni	20
K	2500
Se	17.5
Ag	5
Na	2500
Tl	12.5
V	25
Zn	30

Part # 52164 $150/100 mL
Part # 53164 $300/500 mL

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM
WATER MATRIX

METHOD
CLP
ILM 05.3

ILM 05.3 CONTRACT REQUIRED QUANTITATION LIMITS (CRQL's) & SPIKE SOLUTIONS FOR ICP-AES/ WATER MATRIX

ICP-AES CRI Mix
Water Matrix
15 Components
Matrix 5% $HNO_{3.}$

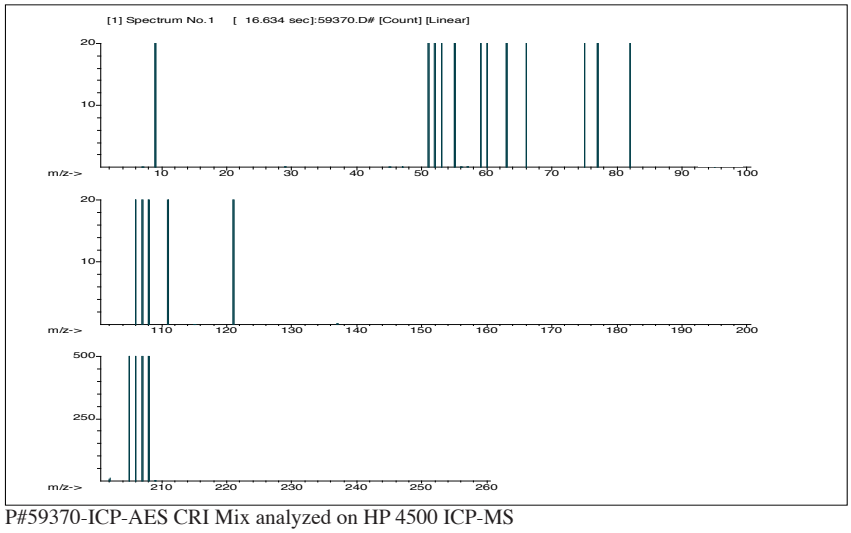
Element	Conc.(ug/mL)
Sb	60
As	10
Be	5
Cd	5
Cr	10
Co	50
Cu	25
Pb	10
Mn	15
Ni	40
Se	35
Ag	10
Tl	25
V	50
Zn	60

Part # 59370 $125/100 mL
Part # 53165 $250/500 mL

ICP-AES Spike Sample
Water Matrix
18 Components
Matrix 5% $HNO_{3.}$

Element	Conc.(ug/mL)
Al	200
Sb	10
As	4
Ba	200
Be	5
Cd	5
Cr	20
Co	50
Cu	25
Fe	100
Pb	2
Mn	50
Ni	50
Se	5
Ag	5
Tl	5
V	50
Zn	50

Part # 52166 $125/100 mL
Part # 53166 $250/500 mL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m/z->
m/z->
m/z->

METHOD
CLP
ILM 05.3

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM WATER MATRIX

ILM 05.3 INTERFERENTS SOLUTION FOR ICP-AES/ WATER MATRIX

ICP-AES Interferents A Water Matrix

4 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	2500
Ca	2500
Fe	1000
Mg	2500

Part # 52024 $95/100 mL
Part # 53024 $190/500 mL

Combine Interferents Mix A & B for ICSAB. Dilute Interferants A Mix into Interferants B Mix in a 1:10 ratio.

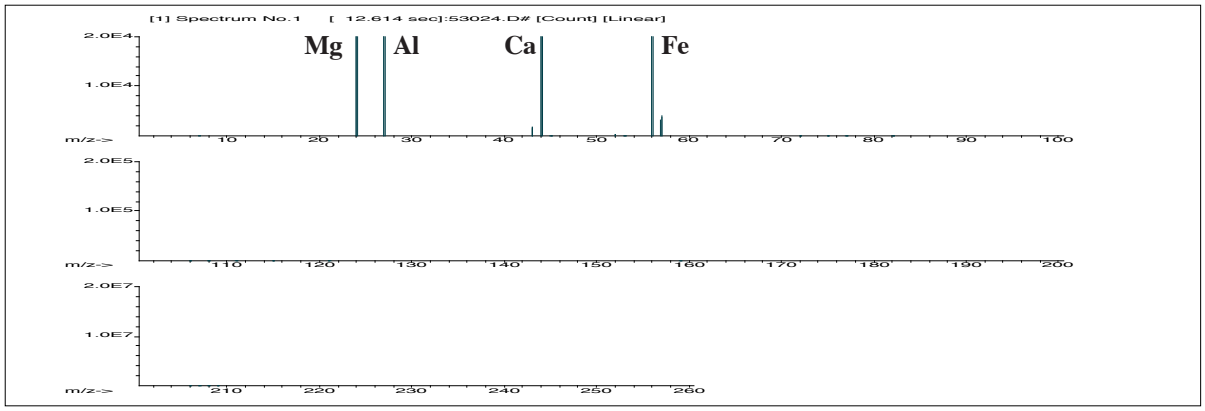
ICP-AES Interferents B Water Matrix

16 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ag	200
As	100
Ba	500
Be	500
Cd	1000
Co	500
Cr	500
Cu	500
Mn	500
Ni	1000
Pb	50
Sb	600
Se	50
Tl	100
V	500
Zn	1000

Part # 52167 $125/100 mL
Part # 53167 $250/500 mL

P#53024 analyzed on HP 4500/ ICP-MS



ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM SOIL MATRIX

METHOD
CLP
ILM 05.3

ILM 05.3 INITIAL CALIBRATION VERIFICATION (ICV) SOLUTIONS & CONTINUING CALIBRATION VERIFICATION (CCV) SOLUTIONS FOR ICP-AES/ SOIL MATRIX

ICP-AES ICV
Water/Soil Matrix

22 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	200
Sb	60
As	10
Ba	200
Be	5
Cd	5
Ca	5000
Cr	10
Co	50
Cu	25
Fe	100
Pb	10
Mg	5000
Mn	15
Ni	40
K	5000
Se	35
Ag	10
Na	5000
Tl	25
V	50
Zn	60

Part # 52163 $150/100 mL
Part # 53163 $300/500 mL

ICP-AES CCV
Water/Soil Matrix

20 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	100
Sb	30
As	5
Ba	100
Ca	2500
Cr	5
Co	25
Cu	12.5
Fe	50
Pb	5
Mn	7.5
Mg	2500
Ni	20
K	2500
Se	17.5
Ag	5
Na	2500
Tl	12.5
V	25
Zn	30

Part # 52164 $150/100 mL
Part # 53164 $300/500 mL

METHOD

CLP

ILM 05.3

ICP-AES SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM SOIL MATRIX

ILM 05.3 CONTRACT REQUIRED QUANTITATION LIMITS (CRQL's) & SPIKE SOLUTIONS FOR ICP-AES/ SOIL MATRIX

ICP-AES CRI Soil Matrix

16 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	600
As	100
Ba	500
Be	50
Cd	50
Cr	100
Co	500
Cu	250
Pb	100
Mn	150
Ni	400
Se	350
Ag	100
Tl	250
V	500
Zn	600

Part # 52168 **$125/100 mL**
Part # 53168 **$250/500 mL**

See page 30 for Interferents Mixes.

ICP-AES Spike Soil Matrix

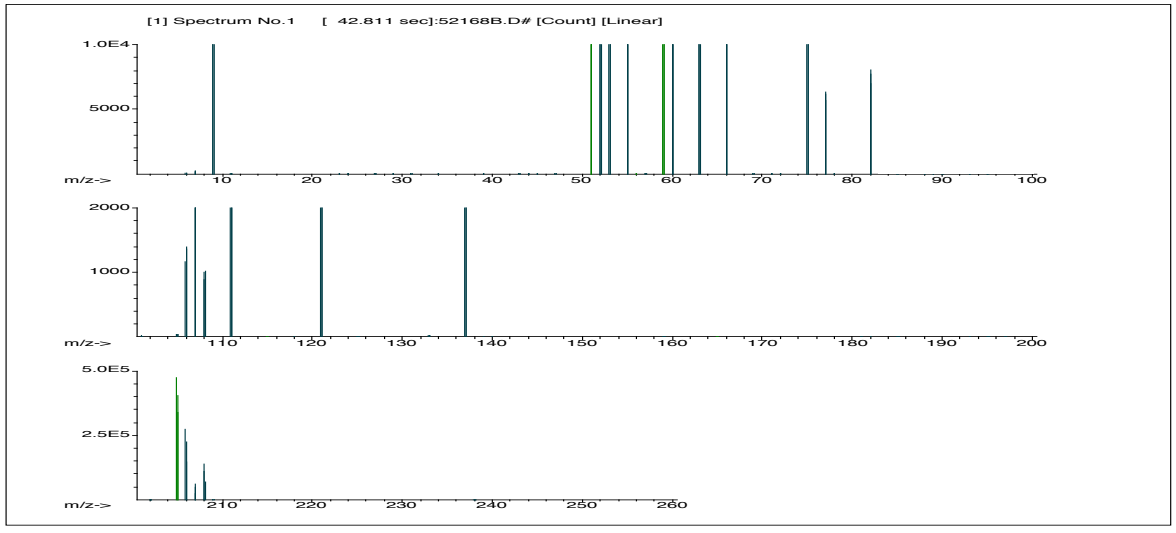
16 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	200
As	80
Ba	4000
Be	100
Cd	100
Cr	400
Co	1000
Cu	500
Pb	40
Mn	1000
Ni	1000
Se	100
Ag	100
Tl	100
V	1000
Zn	1000

Part # 52169 **$125/100 mL**
Part # 53169 **$250/500 mL**

P#52168 - ICP-AES CRI analyzed on HP 4500/ ICP-MS



ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

WATER MATRIX

METHOD

CLP

ILM 05.3

ILM 05.3 INITIAL CALIBRATION VERIFICATION (ICV) SOLUTIONS & CONTRACT REQUIRED QUANTITATION LIMITS (CRQL'S/CRI) SOLUTIONS FOR ICP-MS/ WATER MATRIX

ICP-MS
ICV
Water Matrix

16 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	20
As	10
Ba	100
Be	10
Cd	10
Cr	20
Co	10
Cu	20
Pb	10
Mn	10
Ni	10
Se	50
Ag	10
Tl	10
V	10
Zn	20

Part # 52170 $125/100 mL
Part # 53170 $250/500 mL

ICP-MS / CRQL
CHECK STANDARD-CRI
Water Matrix

16 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	20
As	10
Ba	100
Be	10
Cd	10
Cr	20
Co	10
Cu	20
Pb	10
Mn	10
Ni	10
Se	50
Ag	10
Tl	10
V	10
Zn	20

Part # 52171 $125/100 mL
Part # 53171 $250/500 mL

The CRI and ICV mixes are identical in element and concentration, but are prepared from separate source raw materials as specified by the method.

METHOD

CLP

ILM 05.3

ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

WATER MATRIX

ICP-MS / CCV Water Matrix

16 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	10.0
As	5.0
Ba	50
Be	5.0
Cd	5.0
Cr	10.0
Co	5.0
Cu	10.0
Pb	5.0
Mn	5.0
Ni	5.0
Se	25.0
Ag	5.0
Tl	5.0
V	5.0
Zn	10.0

Part # 52172 $125/100 mL
Part # 53172 $250/500 mL

See page 27 for Mercury & Cyanide Standards

ICP-MS / Spike Sample Water Matrix

16 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	100
As	40
Ba	2000
Be	50
Cd	50
Cr	200
Co	500
Cu	250
Pb	20
Mn	500
Ni	500
Se	10
Ag	50
Tl	50
V	500
Zn	500

Part # 52173 $125/100 mL
Part # 53173 $250/500 mL

ICP-MS / Interferents A Water Matrix

12 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	1000
Ca	1000
Fe	1000
Mg	1000
K	1000
Na	1000
P as PO_4^{3-}	1000
S as SO_4^{2-}	1000
C	2000
Cl	10000
Mo	20
Ti	20

Part # 52174 $125/100 mL
Part # 53174 $250/500 mL

Dilute and Combine Interferants Mix A & B for Mix ICSAB. Interferants A Mix is 10X the method specification & Interferants B Mix is 1000X.

ICP-MS / Interferents B Water Matrix

15 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	20
As	20
Ba	20
Cd	20
Cr	20
Co	20
Cu	20
Pb	20
Mn	20
Ni	20
Se	20
Ag	20
Tl	20
V	20
Zn	20

Part # 52175 $125/100 mL
Part # 53175 $250/500 mL

ICP-MS SOLUTION STANDARDS FOR THE SUPERFUND CONTRACT LABORATORY PROGRAM

SOIL MATRIX

METHOD

CLP

ILM 06.X

ILM 06.X has the same target analyte list as ILM 05.3, however specifications for ICP-MS in soil are given.

ICP-MS ICV Soil Matrix

16 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	100
As	50
Ba	500
Be	50
Cd	50
Cr	100
Co	50
Cu	100
Pb	50
Mn	50
Ni	50
Se	250
Ag	50
Tl	50
V	50
Zn	100

Part # 52176 $125/100 mL
Part # 53176 $250/500 mL

The CRI and ICV mixes are identical in element & concentration, but are prepared from separate source raw materials as

ICP-MS CRI Soil Matrix

16 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	100
As	50
Ba	500
Be	50
Cd	50
Cr	100
Co	50
Cu	100
Pb	50
Mn	50
Ni	50
Se	250
Ag	50
Tl	50
V	50
Zn	100

Part # 52177 $125/100 mL
Part # 53177 $250/500 mL

ICP-MS CCV Soil Matrix

16 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	50
As	25
Ba	250
Be	25
Cd	25
Cr	50
Co	25
Cu	50
Pb	25
Mn	25
Ni	25
Se	125
Ag	25
Tl	25
V	25
Zn	50

Part # 52178 $125/100 mL
Part # 53178 $250/500 mL

Method
TCLP (1311)

TOXICITY CHARACTERISTIC LEACHATE PROCEDURE (TCLP)

For use in accordance with the "Toxicity Characteristic Rule Regulatory Levels" issued in the Federal Register 55, 1.1846 March 1990: Method 1311.

(TCLP) Standard

7 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
As	25
Ba	500
Cd	5
Cr	25
Pb	25
Se	5
Ag	25
Hg*	20

*Hg is a separate solution.

Part # 52006 $95/100 mL
Part # 53006 $190/500 mL

(TCLP) GFAA Standard

3 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
As	25
Pb	25
Se	5

Part # 52008 $50/100 mL
Part # 53008 $100/500 mL

(TCLP) Standard for ICP

4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Ba	500
Cd	5
Cr	25
Ag	25

Part # 52007 $65/100 mL
Part # 53007 $130/500 mL

(TCLP) Cold Vapor Standard

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Hg	20

Part # 52009 $30/100 mL
Part # 53009 $50/500 mL

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Search by: Component
# of Components
Concentration
EPA Method

SYNTHETIC PRECIPITATION LEACHING PROCEDURE

Method **TCLP (1312)**

Element		Matrix	Part#	Conc. (mg/mL)	$/100mL	Part#	$/500mL
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$	57048	1.0	25	58048	65
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$	57148	10.0	75	58148	150
Lead	Pb	$Pb(NO_3)_2/HNO_3$	57082	1.0	25	58082	65
Lead	Pb	$Pb(NO_3)_2/HNO_3$	57182	10.0	75	58182	150

TCLP 1312 METALS

2 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
Cd	1000
Pb	5000

Part # 52148 $40/100 mL
Part # 53148 $80/500 mL

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

MULTI-ELEMENT CALIBRATION STANDARDS FOR 6010A & 6010B

Calibration Std. 1

6 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Be	50
Cd	150
Pb	500
Mn	100
Se	200
Zn	150

Part # 52043 $80/100 mL
Part # 53043 $160/500 mL

Calibration Std. 2

5 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Ba	100
Co	100
Cu	100
Fe	1000
V	100

Part # 52044 $80/100 mL
Part # 53044 $160/500 mL

Calibration Std. 3

2 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
As	500
Mo	100

Part # 52045 $60/100 mL
Part # 53045 $120/500 mL

Calibration Std. 4

8 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Al	200
Ca	1000
Cr	20
Li	100
Ni	20
K	400
Na	200
Sr	10

Part # 52046 $90/100 mL
Part # 53046 $180/500 mL

Calibration Std. 5

4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Sb	200
Mg	1000
Ag	50
Tl	200

Part # 52047 $80/100 mL
Part # 53047 $160/500 mL

Calibration Std. 6

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
P	200

Part # 57315 $30/100 mL
Part # 58315 $60/500 mL

Calibration Standards Set 1-6
Part # 52042 $310/100 mL
Part # 53042 $620/500 mL

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

6010A
REV-1,7/92
6010B
REV-2,12/96

INTERFERENCE STANDARDS FOR 6010A & 6010B

Interference Standards are used to set or confirm that the appropriate background correction intervals have been set for sequential ICP spectrometers & that the proper inter-element correction factors are set for simultaneous ICP spectrometer systems.

Interference Standards Set

Includes one each of
Interference Standards 1,2,3,4,5

Part # 52038 **$320/100 mL**
Part # 53038 **$640/ 500mL**

Interference Std. 1

17 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
As	100
Ba	30
Be	10
Cd	30
Cr	30
Co	30
Cu	30
Pb	100
Mn	20
Hg	5
Ni	30
K	3000
Se	50
Ag	30
Tl	100
V	30
Zn	30

Part # 52039 **$230/100 mL**
Part # 53039 **$460/500 mL**

Interference Std. 2

Matrix 2% HNO_3. tr Tartaric acid

Element	Conc.(ug/mL)
Sb	1000

Part # 57051 **$30/100 mL**
Part # 58051 **$70/500 mL**

Interference Std. 3

5 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Li	300
Mo	300
P	1000
Sr	200
Ti	1000

Part # 52050 **$80/100 mL**
Part # 53050 **$160/500 mL**

Interference Std. 4

4 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Al	400
Ca	2000
Fe	2000
Mg	1000

Part # 52041 **$50/100 mL**
Part # 53041 **$100/500 mL**

Interference Std. 5

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Na	5000

Part # 57911 **$50/100 mL**
Part # 58911 **$100/500 mL**

6020/ 6020A

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-MS

MIXED CALIBRATION STANDARDS FOR 6020 & 6020A

Method 6020/ 6020A is applicable to the determination of metals in low concentrations (sub-ppb) in water and watse extracts using ICP-MS.

EPA Method 6020/ 6020A
MIX A

12 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
C	1000
Cl	10000
Al	500
Ca	1500
Fe	1250
Mg	500
Na	1250
P	500
K	500
S	500
Mo	10
Ti	10

Part # 59219 $175/100 mL
Part # 59249 $525/500 mL

EPA Method 6020/ 6020A
MIX B

11 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
As	1.0
Cd	1.0
Cr	2.0
Co	2.0
Cu	2.0
Mn	2.0
Ni	2.0
Se	1.0
Ag	0.5
V	2.0
Zn	1.0

Part # 52331 $125/100 mL
Part # 53331 $250/500 mL

ICP-MS InternalStandards

Element		Matrix	Part#	(ug/mL)	$/100mL	Part#	$/500mL
Bismuth	Bi	$Bi(NO_3)_3/HNO_3$	57083	1000	25	58083	65
Indium	In	In_2O_3/HNO_3	57049	1000	25	58049	65
Holmium	Ho	Ho_3O_3/HNO_3	57067	1000	25	58067	75
Lithium	Li^{6+}	$Li^{6+}NO_3/HNO_3$	59021	1000	200	59097	1000
Rhodium	Rh	$RhCl_3/HCl$	57045	1000	120	58045	400
Scandium	Sc	$Sc(NO_3)_3/HNO_3$	57021	1000	75	58021	150
Terbium	Tb	Tb_4O_7/HNO_3	57065	1000	25	58065	75
Yttrium	Y	Y_2O_3/HNO_3	57039	1000	25	58039	65

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS- ICP-AES

METHOD
200.7
Rev 5.0

MIXED CALIBRATION STANDARDS FOR 200.7

EPA Method 200.7 covers the Determination of Metals and Trace Elements in Water and Wastes by ICP Atomic Emission Spectroscopy.

Mixed Calibration Std. 1

10 Components
Matrix 5% HNO_3 / tr.HF

Element	Conc.(ug/mL)
Ag	50
As	1000
B	100
Ba	100
Ca	1000
Cd	200
Cu	200
Mn	200
Sb	500
Se	500

Part # 52335 $80/100 mL
Part # 53335 $160/500 mL

Mixed Calibration Std. 2

6 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
K	2000
Li	500
Mo	1000
Na	1000
Sr	100
Ti	1000

Part # 52336 $75/100 mL
Part # 53336 $150/500 mL

Mixed Calibration Std. 3

4 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ce	200
Co	200
V	200
P	1000

Part # 52337 $75/100 mL
Part # 53337 $150/500 mL

Mixed Calibration Std. 4

6 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	1000
Cr	500
Hg	200
Si	1000
Sn	400
Zn	500

Part # 52056 $80/ 100 mL
Part # 53056 $160/ 500 mL

Mixed Calibration Std. 5

6 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Be	100
Fe	1000
Pb	1000
Mg	1000
Ni	200
Tl	500

Part # 52057 $110/100 mL
Part # 53057 $220/500 mL

METHOD
200.7
Various Revisions

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

The **Plasma Solution** is used to determine the optimum height above the load coil for viewing the plasma in EPA Method 200.7, Section 7.6.

Plasma Solution

4 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
As	100
Pb	100
Se	200
Tl	200

Part # 52058 $50/100 mL
Part # 53058 $100/500 mL

The **Tuning Solution** is used to determine the optimum height above the load coil for viewing the plasma in EPA Method 200.7, Section 7.7.

Tuning Solution

2 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Cu	100
Pb	100

Part # 52059 $40/100 mL
Part # 53059 $80/500 mL

The **Laboratory Performance Check Solution Set** is used to evaluate the performance of the instrument system in EPA Method 200.7, Section 7.8.

LPC Solution Set

Matrix 5% HNO_3. Dilution : 1 to 100

P#52306 LPC-1

Element	Conc. (ug/mL).
Ag	50
Al	200
As	200
B	200
Ba	200
Be	200
Ca	200
Cd	200
Co	200
Cr	200

P#52307 LPC-2

Element	Conc. (ug/mL).
Cu	200
Fe	200
Hg	200
K	1000
Li	200
Mg	200
Mn	200
Mo	200
Na	200
Ni	200

P#52308 LPC-3

Element	Conc. (ug/mL).
P	1000
Pb	200
Sb	200
Se	1000
Si	200
Sn*	200
Sr	200
Tl	200
V	200
Zn	200

* (supplied as a separate solution)

Part # 52060 $400/100 mL
Part # 53060 $800/500 mL

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

METHOD
200.7
Various Revisions

The **Spectral Interference Check** Solutions consist of higher-level, concentrated, selected method analytes and are used to evaluate the laboratory's procedure for correcting known inter-element spectral interferences.

SIC 1 is used to evaluate the Mo inter-element spectral correction factors on the analytes Al, Sb, Se, Sn, and V.

SIC 1

Matrix H_2O.
Dilution : 1 to 10

Element	Conc.(ug/mL)
Mo	500

Part # 57642 $30/100 mL
Part # 58642 $60/500 mL

SIC 2 is used to evaluate the Co, Cr, Mn, V, Cu, inter-element spectral correction factors on the analytes Pb, Sb, Mo, As, V, and Zn.

SIC 2

5 Components
Matrix 2% HNO_3.
Dilution : 1 to 10

Element	Conc. (ug/mL)	Corresponding Interference
Co	100	Pb
Cr	200	Sb
Mn	200	Mo
V	200	As, Be
Cu	400	Zn

Part # 52061 $50/100 mL
Part # 53061 $100/500 mL

SIC 3 is used to evaluate the Ni, Al, Fe, inter-element spectral correction factors on the analytes Sb, Zn, As, Ag, Mn, V, Cr.

SIC 3

3 Components
Matrix 2% HNO_3.
Dilution : 1 to 10

Element	Conc. (ug/mL)	Corresponding Interference
Ni	200	Sb, Zn
Al	300	As
Fe	1500	Ag, Cr, Mn, V

Part # 52062 $40/100 mL
Part # 53062 $80/500 mL

METHOD
200.7
Various Revisions

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

LABORATORY FORTIFYING SOLUTION (LFS) FOR 200.7

The **L**aboratory **F**ortifying **S**olution is used in the preparation of the laboratory-fortified blank and the laboratory-fortified sample matrix solutions. The **L**aboratory-**F**ortified **B**lank (**LFB**) is an aliquot of reagent grade water to which known quantities of the method analytes are added in the laboratory. The **LFB** is analyzed exactly like a sample to determine whether method performance is within acceptable control limits. The **L**aboratory-**F**ortified Sample **M**atrix (**LFM**) is an aliquot of an environmental sample to which known quantities of the method analytes are added in the laboratory. The **LFM** is analyzed exactly like a sample to determine whether the sample matrix contributes bias to the analytical result.

Note:

- The analytes Ca, Mg, and Na are not included in the Fortifying Solution due to their widely varying concentrations in environmental samples
- The analytes B & Si should be disregarded if the samples are processed and diluted in borosilicate labware due to contamination from borosilicate glass.

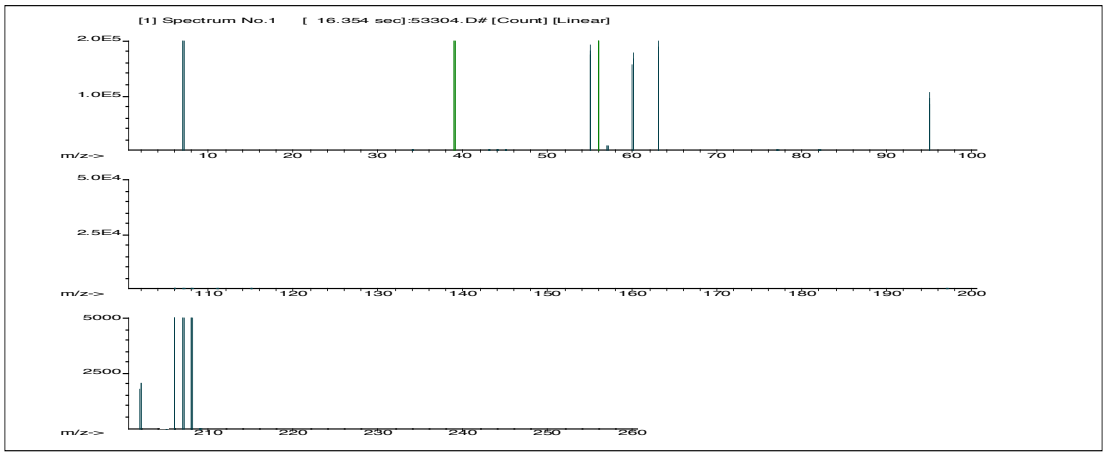
LFS Solution Set

Matrix 5% HNO_3 • Dilution : 1 to 100

P# 52303 LFS-1		P# 52304 LFS-2		P# 52305 LFS-3	
Element	Conc.(ug/mL)	Element	Conc. (ug/mL)	Element	Conc.(ug/mL)
Ag	25	Cu	250	Sb	250
Al	250	Fe	250	Se	250
As	250	Hg	50	Si	250
B	250	K	250	Sn*	100
Ba	250	Li	250	Sr	250
Be	50	Mn	100	Tl	250
Cd	100	Mo	250	V	100
Co	100	Ni	500	Zn	250
Cr	250	Pb	250		

* (supplied as a separate solution)

Part # 52063 $180/100 mL
Part # 53063 $360/500 mL



P#52304 - LFS Solution #2 analyzed on HP 4500/ ICP-MS

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

METHOD
200.7
Various Revisions

SPIKING STANDARDS FOR 200.7

Spiking Standard 1
3 Components
Matrix H_2O

Element	Conc.(ug/mL)
B	500
Mo	500
Si	2000

Part # 52064 **$80/100 mL**
Part # 53064 **$160/500 mL**

Spiking Standard 2
4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Ca	1000
Mg	2000
K	10,000
Na	3000

Part # 52065 **$90/100 mL**
Part # 53065 **$180/500 mL**

Spiking Standard 3
12 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	2000
Ba	2000
Be	50
Cr	200
Co	500
Cu	250
Fe	1000
Mn	500
Ni	500
Ag	50
V	500
Zn	500

Part # 52066 **$180/100 mL**
Part # 53066 **$360/500 mL**

Spiking Standard 4
Matrix 2% HNO_3 tr Tartaric Acid

Element	Conc.(ug/mL)
Sb	500

Part # 57651 **$30/100 mL**
Part # 58651 **$60/500 mL**

Spiking Standard 5
5 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
As	2000
Cd	50
Pb	500
Se	2000
Tl	2000

Part # 52067 **$100/100 mL**
Part # 53067 **$200/500 mL**

Spiking Standards Set
Includes one each of
Spiking Standards 1,2,3,4,5

Part # 52068 **$400/100 mL**
Part # 53068 **$800/ 500mL**

Mercury Standard
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Hg	200

Part # 57380 **$30/100 mL**
Part # 58380 **$60/500 mL**

METHOD
200.7
Various Revisions

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS - ICP-AES

Spiking Standard 1

4 Components
Matrix H_2O

Element	Conc.(ug/mL)
B	400
Mo	200
Si	2000
P	400

Part # 52069 **$90/100 mL**
Part # 53069 **$180/500 mL**

Spiking Standard 2

4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Ca	10,000
Mg	10,000
K	10,000
Na	10,000

Part # 52070 **$120/100 mL**
Part # 53070 **$240/500 mL**

Spiking Standard 4

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Sb	200

Part # 57351 **$30/100 mL**
Part # 58351 **$60/500 mL**

Spiking Standard 5

5 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
As	200
Cd	100
Pb	200
Se	400
Tl	400

Part # 52071 **$100/100 mL**
Part # 53071 **$200/500 mL**

Spiking Standard 3

15 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	200
Ba	200
Be	100
Cr	100
Co	200
Cu	200
Fe	400
Li	200
Mn	100
Ni	200
Ag	200
Sr	400
Sn	200
V	200
Zn	200

Part # 52072 **$180/100 mL**
Part # 53072 **$360/500 mL**

Mercury Standard

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Hg	200

Part # 57380 **$30/100 mL**
Part # 58380 **$60/500 mL**

Spiking Standards Set

Includes one each of
Spiking Standards 1,2,3,4,5 &
Hg @ 200 ug/mL

Part # 52073 **$400/100 mL**
Part # 53073 **$800/ 500mL**

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846-200.7 & SDWA 1310, NPDWR

METHOD
200.7
Various Revisions

DRINKING WATER STANDARDS

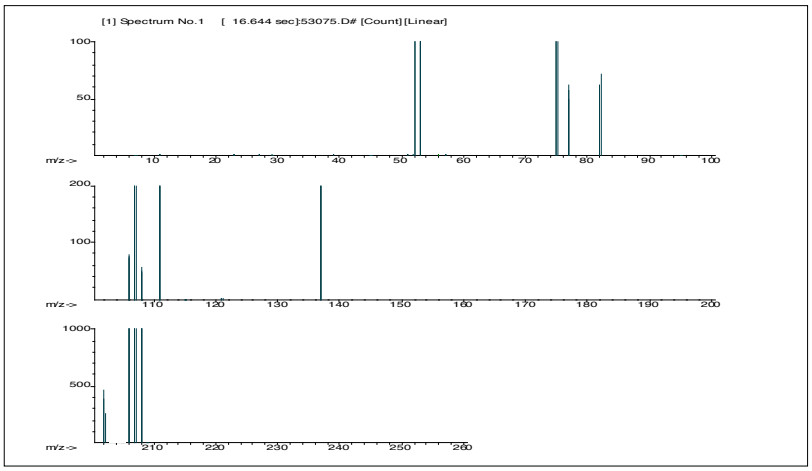
These standards are for use in drinking water compliance monitoring and for the analysis of ground and surface water requiring determination at drinking water contaminant levels. Refer to the US EPA SW-846, Method 1310 and US National Primary Drinking Water Regulations 40 CFR Part 141. The Second Drinking Water Metals Standard includes all metals required for US Appendix 200.7 for analysis by ICP Spectroscopy.

Primary Drinking Water Metals

8 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
As	10
Ba	100
Cd	5
Cr	10
Pb	10
Se	5
Ag	10
Hg	10

Part # 52075 $80/100 mL
Part # 53075 $160/500 mL



P#53075 - Primary Drinking Water Metals verified on HP 4500 ICP-MS

Secondary Drinking Water Metals

4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Cu	100
Fe	30
Mn	5
Zn	500

Part # 52076 $65/100 mL
Part # 53076 $130/500 mL

Drinking Water Standards Set

Includes one each of
Primary and Secondary Standards

Part # 52074 $140/100 mL
Part # 53074 $280/500 mL

Our quality products are inspected by analytical chemists who have experience using a wide variety of instrumentation. Absolute maintains diverse technologies to ensure your calibration standards are accurate, reliable, & traceable. We use a ICP-MS, HPLC, and many wet methods.

Cations Tested Here

Anions Tested Here

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS 200.7 & 6010

METHODS
200.7
6010

INSTRUMENT WAVELENGTH STANDARDS

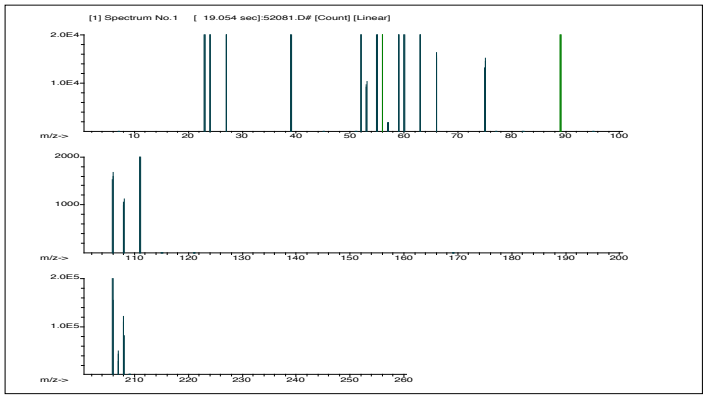
For calibration and verification of wavelength accuracy and stability in sequential and simultaneous ICP Spectrometers. Also for use in US EPA SW-846, Method 6010 section 5.6 and Method 200.7 section 7.6.1.

Instrument Wavelength Standard

15 Components
Matrix 2% HNO_3.

Al	100	Mg	100
As	100	Mn	100
Cd	100	Ni	100
Cr	100	K	100
Co	100	Na	100
Cu	100	Zn	100
Fe	100	Y	600
Pb	100		

Part # 52081 **$110/100 mL**
Part # 53081 **$220/500 mL**



P#52081 - 200.7 Instrument Wavelength Standard analyzed on HP 4500/ ICP-MS

Wavelength Calibration Solution 3

11 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
As	20
La	20
Li	20
Cr	20
Mn	20
Mo	20
Ni	20
P	100
K	100
Sc	20
Na	20

Part # 52079 **$90/100 mL**
Part # 53079 **$180/500 mL**

Wavelength Calibration Solution 3B

11Components
Matrix 2% HCl.

Element	Conc.(ug/mL)
As	20
La	20
Li	20
Mn	20
Mo	20
Ni	20
P	100
K	100
Sc	20
Na	20
S	100

Part # 59030 **$75/100 mL**

METHODS
200.7
6010

MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS 200.7 & 6010

QUALITY CONTROL STANDARDS

Quality control standards are used to check standard curves, perform inter-element correction and other spectral interference checks. Also used in US EPA Method 200.7 and 600/482-055 " Technical Additions to Methods for Chemical Analysis of Water and Wastes." Available both individually and as a complete set.

QC Standard 1

19 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Sb	100
As	100
Be	100
Ca	100
Cd	100
Cr	100
Co	100
Cu	100
Fe	100
Pb	100
Mg	100
Mn	100
Mo	100
Ni	100
Se	100
Tl	100
Ti	100
V	100
Zn	100

Part # 52084 $175/100 mL
Part # 53084 $350/500 mL

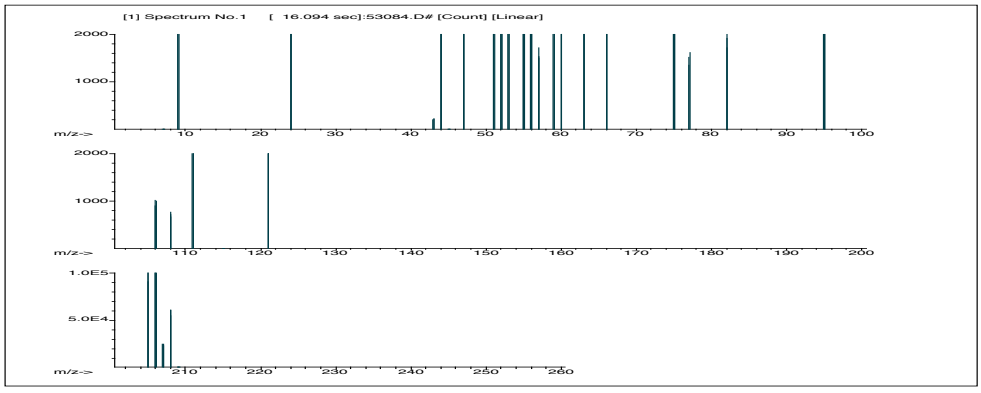
QC Standard 2

21 Components
Matrix 5% HNO_3

Element	Conc.(ug/mL)
Sb	100
As	100
Be	100
Ca	100
Cd	100
Cr	100
Co	100
Cu	100
Fe	100
Pb	100
Li	100
Mg	100
Mn	100
Mo	100
Ni	100
Se	100
Sr	100
Tl	100
Ti	100
V	100
Zn	100

Part # 52085 $190/100 mL
Part # 53085 $380/500 mL

P#52084 - 200.7 QC Standard 1 analyzed on HP 4500/ ICP-MS



MULTI-ELEMENT SOLUTION STANDARDS FOR SW-846 METHODS 200.7 & 6010

METHODS
200.7
6010

QUALITY CONTROL STANDARDS CONT'D

QC Standard 3

15 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	100
Ba	100
Ca	100
Cd	100
Cr	100
Co	100
Cu	100
Fe	100
Pb	100
Mg	100
Mn	100
Ni	100
Na	100
Ti	100
Zn	100

Part # 52086 $170/100 mL
Part # 53086 $340/500 mL

QC Standard 5

7 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	100
Ba	100
B	100
K	1000
Si	500
Ag	50
Na	100

Part # 52088 $80/100 mL
Part # 53088 $160/500 mL

QC Standard 4

7 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Al	100
Ba	100
B	100
K	1000
Si	50
Ag	100
Na	100

Part # 52087 $80/100 mL
Part # 53087 $160/500 mL

Calibration Standards Set

Includes one each of Quality Control Standard 1, 3, 5.

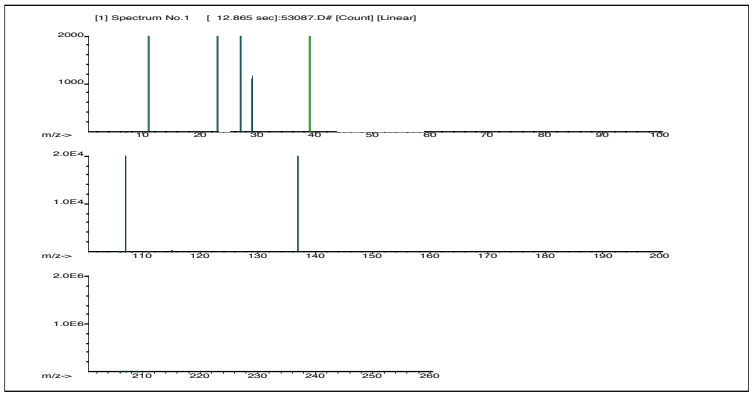
Part # 52089 $310/100 mL
Part # 53089 $620/500 mL

Calibration Standards Set

Includes one each of Quality Control Standard 2, 3, 4.

Part # 52090 $310/100 mL
Part # 53090 $620/500 mL

P#52087 - 200.7 QC Standard 4 analyzed on HP 4500/ ICP-MS



METHOD

200.8

MULTI-ELEMENT SOLUTION STANDARDS FOR METHOD 200.8

ICP-MS MULTI-ELEMENT TUNING STANDARDS REV 5.5

These multi-element standards are designed to assist the operator in calibration of the instrument or verification of the mass range.

ICP-MS Tuning Standard 1

5 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Be	10
Co	10
In	10
Pb	10
Mg	10

Part # 52122 $50/100 mL
Part # 53122 $200/500 mL

ICP-MS Tuning Standard 2

4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Li	10
Y	10
Ce	10
Tl	10

Part # 52123 $50/100 mL
Part # 53123 $200/500 mL

ICP-MS INTERNAL STANDARDS

These internal standard stock solutions are used for: addition to blanks; calibration standards; as samples for internal standardization; and for use in US EPA SW-846 Method 200.8. Dilute 10 mL to 100 mL before using.

Element		Matrix	(ug/mL)	Part#	$/100mL	Part#	$/500mL
Bismuth	Bi	$Bi(NO_3)_3/HNO_3$	100	57283	25	58283	50
Indium	In	In_2O_3/HNO_3	100	57249	25	58249	50
Holmium	Ho	Ho_3O_3/HNO_3	1000	57067	25	58067	75
Lithium	Li^{6+}	$Li^{6+}NO_3/HNO_3$	100	59036	100	59037	300
Rhodium	Rh	$RhCl_3/HCl$	100	57245	100	58245	300
Scandium	Sc	$Sc(NO_3)_3/HNO_3$	100	57221	25	58221	50
Terbium	Tb	Tb_4O_7/HNO_3	100	57265	25	58265	50
Yttrium	Y	Y_2O_3/HNO_3	100	57239	25	58239	50

Method 200.8 Rev 5.5 ICP-MS Internal Standard

5 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Sc	10
Y	10
In	10
Tb	10
Bi	10

Part # 52332 $50/100 mL
Part # 53332 $200/500 mL

Multi-Element Internal Standard

7 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Bi	10
Ho	10
In	10
Li	10
Sc	10
Tb	10
Y	10

Part # 52319 $65/100 mL
Part # 53319 $200/500 mL

MULTI-ELEMENT SOLUTION STANDARDS FOR METHOD 200.8

METHOD

200.8

ICP-MS CALIBRATION STANDARDS REV 5.5

These multi-element standards are designed to assist the ICP-MS operator in performing concentration verification

Method 200.8 ICP-MS CalibrationStandard 1

19 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	10
Sb	10
As	10
Be	10
Cd	10
Cr	10
Co	10
Cu	10
Pb	10
Mn	10
Hg	5
Mo	10
Ni	10
Se	50
Tl	10
Th	10
U	10
V	10
Zn	10

Part # 52333 $150/100 mL
Part # 53333 $300/500 mL

Method 200.8 ICP-MS CalibrationStandard 3

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Hg	5

Part # 59388 $30/100 mL

Method 200.8 ICP-MS CalibrationStandard 2

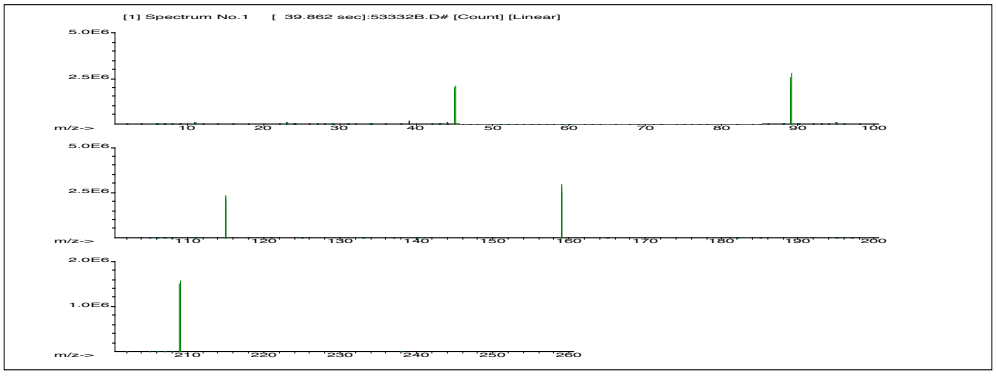
2 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ba	10
Ag	10

Part # 52334 $40/100 mL
Part # 53334 $80/500 mL

P#53332 - 200.8 Internal Standard analyzed on HP 4500/ ICP-MS



METHOD

200.8

MULTI-ELEMENT SOLUTION STANDARDS FOR METHOD 200.8

ICP-MS VERIFICATION STANDARD

ICP-MS Verification Standard 1

26 Components
Matrix 5% HNO_3.

Element	(ug/mL)	Element	(ug/mL)
Al	10	Li	10
As	10	Mg	10
Ba	10	Mn	10
Be	10	Hg	10*Separate solution
Bi	10	Ni	10
Ca	10	K	10
Cd	10	Se	10
Cr	10	Na	10
Co	10	Ag	10
Cu	10	Sr	10
Fe	10	Tl	10
Ga	10	V	10
Pb	10	Zn	10

Part # 52100 $180/100 mL
Part # 53100 $380/500 mL
*Part# 57880 is included (Hg @ 10 ug/mL)

ICP-MS Verification Standard 2

6 Components
Matrix H2O

Element	Conc.(ug/mL)
B	10
Mo	10
S	10
Si	10
Ti	10
W	10

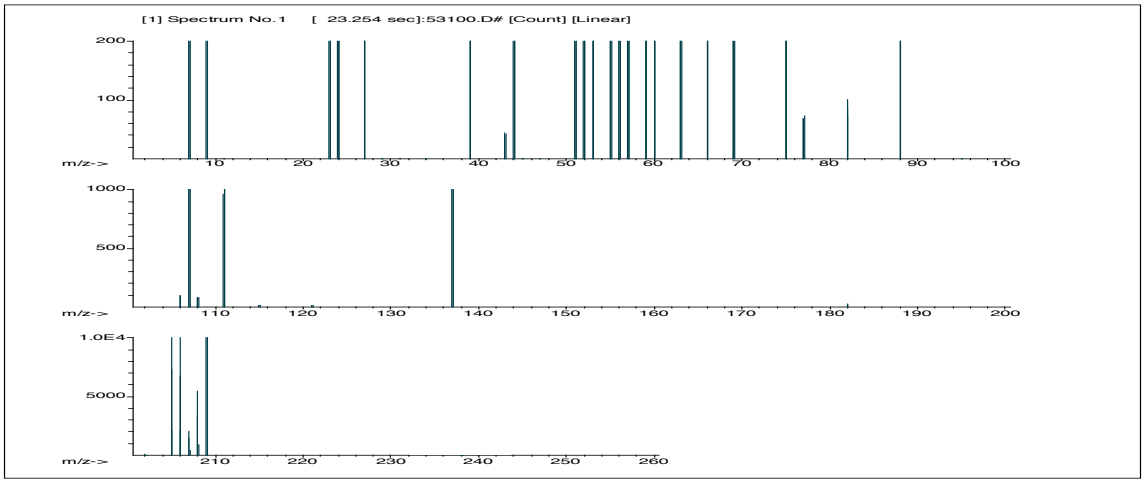
Part # 52101 $60/100 mL
Part # 53101 $120/500 mL

ICP-MS Verification Set

Includes one each of ICP-MS Verification 1 and 2.

Part # 52102 $220/100 mL
Part # 52302 $440/500 mL

P#52100- 200.8 Verification Standard 1 analyzed on HP 4500/ ICP-MS



MULTI-ELEMENT SOLUTION STANDARDS FOR METHOD 200.8

METHOD **200.8**

ICP-MS INTERFERENCE CHECK SOLUTIONS

ICP-MS Interference Check Solution A

12 Components
Matrix in 2%-HNO3/ tr. HF

Element	Conc.(ug/mL)
Al	500
Ca	500
Fe	500
Mg	500
Na	500
P	500
K	500
S	500
C	1000
Cl	3600
Mo	10
Ti	10

Part # 52114 $100/100 mL
Part # 53114 $450/500 mL

ICP-MS Interference Check Solution B

11 Components
Matrix in 2%-HNO3/ tr. HF

Element	Conc.(ug/mL)
As	0.100
Cd	0.050
Cr	0.100
Co	0.200
Cu	0.100
Ni	0.200
Mn	0.100
Se	0.100
Ag	0.100
V	0.200
Zn	0.100

Part # 52115 $100/100 mL
Part # 53115 $450/500 mL

ICP-MS MEMORY CHECK SOLUTIONS

Combine mixes A and B in equal ratios.
This test will determine any memory problems that will affect the quality of the data.

ICP-MS Memory Check Solution A

14 Components
Matrix in 2%-HNO3/ tr. HF

Element	Conc.(ug/mL)
Al	1000
Mg	1000
Na	1000
C	2000
Cl	7200
S	1000
Ti	20
Sb	20
Be	20
Cr	20
Mn	20
Ni	20
V	20
Zn	20

Part # 52116 $100/100 mL
Part # 53116 $450/500 mL

ICP-MS Memory Check Solution B

14 Components
Matrix in 2%-HNO3

Element	Conc.(ug/mL)
Ca	1000
Fe	1000
K	1000
P	1000
Mo	20
As	20
Ba	20
Cd	20
Co	20
Cu	20
Pb	20
Se	20
Ag	20
Tl	20

Part # 52117 $100/100 mL
Part # 53117 $450/500 mL

ICP-MS

MULTI-ELEMENT SOLUTION STANDARDS FOR ICP-MS

Multi-Element Solution 1

29 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ag	10
Al	10
As	10
Ba	10
Be	10
Bi	10
Ca	10
Cd	10
Co	10
Cr	10
Cs	10
Cu	10
Fe	10
Ga	10
In	10
K	10
Li	10
Mg	10
Mn	10
Na	10
Ni	10
Pb	10
Rb	10
Se	10
Sr	10
Tl	10
U	10
V	10
Zn	10

Part # 52133 **$180/100 mL**
Part # 53133 **$360/500 mL**

ICP-MS Solution Kit

Includes one each of
Multi-Element 1, 2, 3, 4, & 5.

Part # 52137 **5X100 mL** **$650**
Part # 53137 **5X500 mL** **$1300**

Multi-Element Solution 2

17 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ce	10
Dy	10
Er	10
Eu	10
Gd	10
Ho	10
La	10
Lu	10
Nd	10
Pr	10
Sc	10
Sm	10
Tb	10
Th	10
Tm	10
Y	10
Yb	10

Part # 52134 **$200/100 mL**
Part # 53134 **$400/500 mL**

Multi-Element Solution 3

10 Components
Matrix 10% HCL / 1% HNO_3.

Element	Conc.(ug/mL)
Au	10
Hf	10
Ir	10
Pd	10
Pt	10
Rh	10
Ru	10
Sb	10
Sn	10
Te	10

Part # 52135 **$250/100 mL**
Part # 53135 **$500/500 mL**

Multi-Element Solution 4

12 Components
Matrix H_2O tr. HF

Element	Conc.(ug/mL)
B	10
Ge	10
Mo	10
Nb	10
P	10
Re	10
S	10
Si	10
Ta	10
Ti	10
W	10
Zr	10

Part # 52136 **$150/100 mL**
Part # 53136 **$300/500 mL**

Multi-Element Solution 5

Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Hg	10

Part # 57880 **$30/100 mL**
Part # 58880 **$60/500 mL**

DETERMINATION OF TRACE ELEMENTS BY STABILIZED TEMPERATURE GRAPHITE FURNACE AA

METHOD
200.9

Method 200.9
Complete Single Elememt Kit
(16 x 100ml bottles @ 1000ug/mL Each)

Element		Matrix
Aluminum	Al	$Al(NO_3)_3/HNO_3$
Antimony	Sb	Sb_2O_3/HNO_3 tr.Tartaric acid
Arsenic	As	As_2O_3/HNO_3
Beryllium	Be	$Be_4O(C_2H_3O_2)6/HNO_3$
Cadmium	Cd	$Cd(NO_3)_2/HNO_3$
Chromium	Cr	$Cr(NO_3)_3/HNO_3$
Cobalt	Co	$Co(NO_3)_2/HNO_3$
Copper	Cu	$Cu(NO_3)_2/HNO_3$
Iron	Fe	$Fe(NO_3)_3/HNO_3$
Lead	Pb	$Pb(NO_3)_2/HNO_3$
Manganese	Mn	$Mn(NO_3)_2/HNO_3$
Nickel	Ni	$Ni(NO_3)_2/HNO_3$
Selenium	Se	SeO_2/HNO_3
Silver	Ag	$AgNO_3/HNO_3$
Thallium	Tl	$TlNO_3/HNO_3$
Tin	Sn	$(NH_4)SnF_6/HNO_3/HCl$

Part # 52252 $280/ 16 x 100 mL

Palladium and Magnesium Nitrate Modifier
Starting Material Pd & $Mg(NO_3)_2$

Matrix 0.3%(3 mg/mL) Pd & 0.2%(2 mg/mL) Mg in 5% HNO_3

Part # 52311 $250/100mL
Part # 53311 $450/500mL

PT Study Schedule:

January 15- March 1
April 15- May 30
***July 15- August 29 (DMR-QA)**
October 15- November 29

Offering our complete line of water & soil PT's EVERY study!

METHOD

1620

METALS BY INDUCTIVELY COUPLED PLASMA ATOMIC EMISSION SPECTROSCOPY & ATOMIC ABSORPTION SPECTROSCOPY

The method is a consolidation of US EPA Methods 200.7 (ICP for trace elements), 204.2 (Sb), 206.2 (As), 239.2 (Pb), 270.2 (Se), 279.2 (Tl), 245.5 (Hg), 245.1 (Hg), and 245.2(Hg). The method is used for analysis of trace elements by ICP atomic emission spectroscopy and GFAA spectroscopy, for analysis of mercury by CVAA spectroscopy,and as a semi-quantitative ICP screen for specified elements.

EPA 1620 Standard 1

5 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Mn	100
Be	100
Cd	100
Pb	100
Zn	100

Part # 52139 $60/100 mL
Part # 53139 $120/500 mL

EPA 1620 Standard 2

6 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ba	100
Cu	100
Fe	100
V	100
Y	100
Co	100

Part # 52140 $60/100 mL
Part # 53140 $120/500 mL

EPA 1620 Standard 3

3 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Mo	100
As	100
Se	100

Part # 52141 $50/100 mL
Part # 53141 $100/500 mL

EPA 1620 Standard 4

5 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Ca	100
Na	100
Al	100
Cr	100
Ni	100

Part # 52142 $60/100 mL
Part # 53142 $120/500 mL

EPA 1620 Standard 5

6 Components

Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	100
B	100
Mg	100
Ag	100
Tl	100
Ti	100

Part # 52143 $60/100 mL
Part # 53143 $120/500 mL

EPA 1620 Standard 6 Tin

Matrix 2% HNO_3/ 6% HCL

Element	Conc.(ug/mL)
Sn	100

Part # 57250 $30/100 mL
Part # 58250 $60/500 mL

DETERMINATION OF HEXAVALENT CHROMIUM BY ION CHROMATOGRAPHY

METHOD

1636

This method is for the determination of dissolved hexavalent chromium (as CrO) in ambient waters at EPA water quality criteria (WQC) levels using ion chromatography (IC). This method was developed by integrating the analytical procedures in EPA Method 218.6 with the quality control (QC) and sample handling procedures necessary to avoid contamination and ensure the validity of analytical results during sampling and analysis for metals at EPA WQC levels.

Hexavalent Chromium (Cr^{6+})
1000 ug/mL in Water

Part # 54161	**$30/100 mL**
Part # 54172	**$50/500 mL**

Hexavalent Chromium (Cr^{6+})
10 mg/mL in Water

Part # 54175	**$75/100 mL**
Part # 54176	**$150/500 mL**

METHODS

1638
1640

DETERMINATION OF TRACE ELEMENTS IN AMBIENT WATERS BYINDUCTIVELY COUPLED PLASMA - MASS SPECTROMETRY

Method 1638 & 1640 are for the determination of dissolved elements in ambient waters at EPA water quality criteria (WQC) levels using inductively coupled plasma-mass spectrometry (ICP-MS). In addition, Method 1640 employs on-line chelation preconcentration. These methods may also be used for determination of total recoverable element concentrations in these waters.

Method 1638 Mix A

8 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
Sb	10
Cd	10
Cu	10
Pb	10
Ni	10
Se	10
Tl	10
Zn	10

Part # 52144 $60/100 mL
Part # 53144 $120/500 mL

Method 1640 Mix A

6 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
As	10
Cd	10
Cu	10
Pb	10
Ni	10
Zn	10

Part # 52146 $50/100 mL
Part # 53146 $100/500 mL

Method 1638/1640 Mix B

Silver (Ag)
Matrix 2% HNO_3

Element	Conc.(ug/mL)
Ag	20

Part # 57847 $30/100 mL
Part # 58847 $60/500 mL

Internal Standard

5 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
Sc	10
Y	10
In	10
Tb	10
Bi	10

Part # 52145 $60/100 mL
Part # 53145 $120/500 mL

Method 1638 Tuning Standard

5 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
Be	10
Co	10
In	10
Pb	10
Mg	10

Part # 52122 $50/100 mL
Part # 53122 $200/500 mL

Method 1640 Tuning Standard

5 Components
Matrix 2% HNO_3

Element	Conc.(ug/mL)
Ni	10
Y	10
In	10
Tb	10
Pb	10

Part # 52147 $50/100 mL
Part # 53147 $100/500 mL

N-HEXANE EXTRACTABLE MATERIAL (HEM; OIL & GREASE) & SILICA GEL TREATED N-HEXANE EXTRACTABLE MATERIAL BY EXTRACTION & GRAVIMETRY

METHOD

1664

As a party to the Montreal Protocol on Substances that Deplete the Ozone Layer and as required by law under the Clean Air Act Amendments of 1990 (CAAA), the United States is committed to controlling and eventually phasing out the use of chlorofluorocarbons (CFCs). In support of these efforts, Method 1664 was developed by the United States Environmental Protection Agency Office of Science and Technology to replace previously used gravimetric procedures that employed Freon-113, a Class I CFC, as the extraction solvent for the determination of oil and grease and non-polar material.

This method is for determination of n-hexane extractable material (HEM; oil and grease) and n-hexane extractable material that is not adsorbed by silica gel (SGT-HEM; non-polar material) in surface and saline waters and industrial and domestic aqueous wastes. Extractable materials that may be determined are relatively non-volatile hydrocarbons, vegetable oils, animal fats, waxes, soaps, greases, and related materials. The method is based on prior Environmental Protection Agency (EPA) methods for determination of "oil and grease" and "total petroleum hydrocarbons"

EPA Method 1664
Oil & Grease
8000 (ug/mL) in Acetone

(1) n-Hexadecane
(2) Stearic acid

Part # 91958 $65/100mL

Also Available

EPA Method 413
Oil & Grease
1000 ug/mL in n-Propanol/Glycerol.

(1) Cooking Oil
(2) Paraffin

Part # 54135 $25/100 mL

METHOD

600/4-79-020

MULTI-ELEMENT SOLUTION STANDARDS FOR GROUNDWATER AND WASTEWATER

GROUNDWATER AND WASTEWATER STANDARDS

These may be used either as standards or as a means of checking an individual analyst's accuracy and precision. Refer to the US EPA Methods Manual, 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes" for the appropriate Trace Metals I, II, III procedures.

Trace Metals 1

15 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Al	500
As	100
Be	100
Cd	25
Cr	100
Co	100
Cu	100
Fe	100
Pb	100
Mn	100
Hg	5
Ni	100
Se	25
V	250
Zn	100

Part # 52092 $130/100 mL
Part # 53092 $260/500 mL

Trace Metals 2

3 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Sb	20
Ag	10
Tl	20

Part # 52093 $50/100 mL
Part # 53093 $100/500 mL

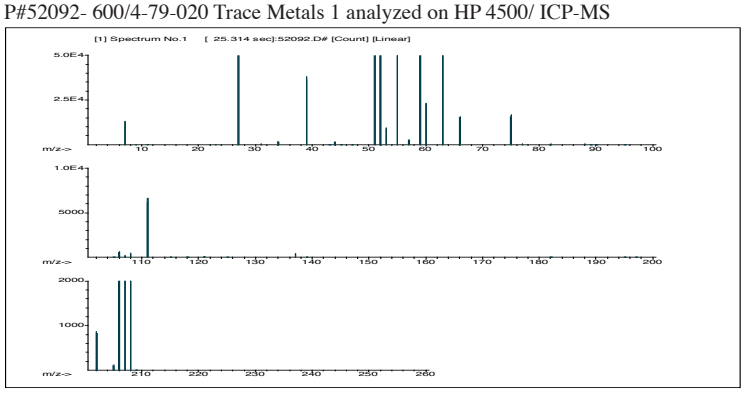
Trace Metals 3

6 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Ba	500
Ca	500
Mg	100
Mo	500
K	100
Na	500

Part # 52094 $75/100 mL
Part # 53094 $150/500 mL

P#52092- 600/4-79-020 Trace Metals 1 analyzed on HP 4500/ ICP-MS



Trace Metals Set

Includes one each of
Trace Metals 1, 2, and 3.

Part # 52091 $240/100 mL
Part # 53091 $480/500 mL

MULTI-ELEMENT SOLUTION STANDARDS FOR TOXIC METALS IN FISH

METHOD
600/4-79-020

ALTERNATE WATER & WASTEWATER STANDARDS

Alternate Metals Set
Includes one each of Alternate Metals 1 and 2.

Part # 52095 $120/100 mL
Part # 53095 $240/500 mL

Alternate Metals 2
4 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Ca	500
Mg	100
K	100
Na	500

Part # 52097 $90/100 mL
Part # 53097 $180/500 mL

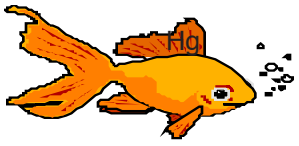
Alternate Metals 1
11 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)
Al	20
Sb	5
Be	5
Co	10
Cu	10
Fe	20
Mn	10
Ni	10
Tl	5
V	20
Zn	10

Part # 52096 $60/100 mL
Part # 53096 $120/500 mL

TRACE METALS IN FISH

For use in methods for the sampling and analysis of priority pollutants in sediments and fish tissue. Refer to the US EPA Methods Manuals, 600/4-79-020 and 600/4-81-055 for the appropriate procedures.



Trace Metals in Fish
9 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
As	100
Cd	5
Cr	20
Cu	50
Pb	10
Hg	100
Ni	2
Se	10
Zn	1000

Part # 52098 $90/100 mL
Part # 53098 $180/500 mL

MISC.

MISCELLANEOUS METAL STANDARDS

Misc. Spike Solution #1

11 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
Co	1000
Sr	1000
Al	1000
Ba	1000
Cd	1000
Cr	1000
Cu	1000
Se	1000
V	1000
Be	1000
As	1000

Part # 59045 $250/100 mL

Spike Solution Set

Includes one each of Solution #1 & #2.

Part # 52259 $400/ 2x100 mL

Misc. Spike Solution #2

10 Components
Matrix 5% HNO_3.

Element	Conc.(ug/mL)
B	1000
Fe	1000
Pb	1000
Mn	1000
Mo	1000
Ni	1000
Tl	1000
Zn	1000
Ag	200
Sb	1000

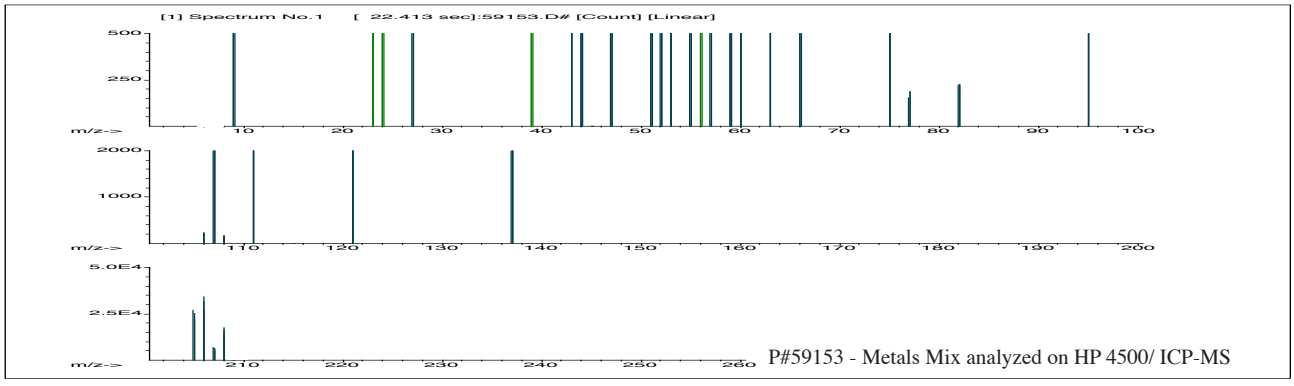
Part # 59046 $250/100 mL

Metals Mix

24 Components
Matrix 2% HNO_3.

Element	Conc.(ug/mL)	Element	Conc.(ug/mL)
Fe	1000	Cr	10
K	1000	Cu	10
Ca	1000	Mn	10
Na	1000	Mo	10
Mg	1000	Ni	10
Ag	10	Pb	10
Al	10	Sb	10
As	10	Se	10
Ba	10	Tl	10
Be	10	V	10
Cd	10	Zn	10
Co	10	Ti	10

Part # 59110 $195/100 mL
Part # 59153 $500/500 mL



DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY

METHOD **300.0**

EPA Method 300.0 Anions
Single Components

1000 ug/mL in Water.

Calibration Mixes	Part#	100 mL	Part#	500mL
Chloride	54101	$25	54501	$90
Fluoride	54102	$25	54502	$90
Nitrate as N	54103	$25	54503	$50
Nitrite as N	54104	$25	54504	$50
Ortho-phosphate as P	54105	$25	54505	$90
Sulfate	54106	$25	54506	$90
Bromide	54107	$25	54507	$90
Bromate	54108	$25	54508	$90
Chlorite	54109	$25	54509	$90
Chlorate	54110	$25	54510	$90

Complete set of all 10 solutions
Part # 54000 $150/100 mL
Part # 54500 $750/500 mL

Sodium Carbonate
Eluent 100 x Concentrate

0.5 M in Water.

Part # 54127 $65/100 mL
Part # 54527 $100/500 mL

Sulfide
1000 ug/mL in Water.

Part # 54139 $40/100 mL

Sodium Bicarbonate
Eluent 100 x Concentrate

0.5 M in Water.

Part # 54128 $25/100 mL
Part # 54528 $100/500 mL

Chloride (Cl^-) From $CaCl_2$
1000 ug/mL in Water.

Part # 54155 $25/100 mL

EPA Method 300.0 Eluent 100 x Concentrate
Varied Molarity in Water. 100 mL

(1) Sodium carbonate 0.18 M
(2) Sodium bicarbonate 0.17 M

Part # 54129 $25/100 mL
Part # 54529 $100/500 mL

METHOD

300.0

DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY

A small volume of sample, typically 2 to 3 mL, is introduced into an ion chromatograph. The anions of interest are separated and measured, using a system comprised of a guard column, separator column, suppressor device, and conductivity detector. The main differences between Method A and B are the separator columns, guard columns and eluents. In order to use this method for solids, an extraction procedure must be performed. Stability of the solutions must be closely monitored. Store the materials at 4˚C.

EPA Method 300.0 Anions Mix A

1000 ug/mL in Water.

(1) Bromide
(2) Chloride
(3) Fluoride
(4) Nitrate as N
(5) Nitrite as N
(6) Ortho-phosphate as P
(7) Sulfate

Part # 52118 $50/100 mL
Part # 53118 $200/500 mL

EPA Method 300.0 Anions Mix A Alternate

1000 ug/mL in Water.

(1) Bromide
(2) Chloride
(3) Fluoride
(4) Nitrate as N
(5) Ortho-phosphate as P
(6) Sulfate

Part # 52320 $50/100 mL
Part # 53320 $200/500 mL

EPA Method 300.0 Anions Mix B

1000 ug/mL in Water.

(1) Chlorite
(2) Chlorate
(3) Bromate

Part # 52119 $25/100 mL
Part # 53119 $100/500 mL

Anions

100 ug/mL in Water.

(1) Nitrate (NO_3^-)-as N
(2) Nitrite (NO_2^-)-as N
(3) Fluoride (F^-)
(4) Orthophosphate (PO_4^{3-})-as P
(5) Nitrate & Nitrite as N

Part # 52107 $50/100 mL
Part # 53107 $150/500 mL

*Ohio Monthly QC Calibration Check

Varied ug/mL in Water.

Fluoride

Part # 59076 $25/100 mL
Part # 59176 $60/500 mL

*Meets the Ohio concentration requirement of 0.5 -1.5 mg/L.

DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY

METHOD

300.0

EPA Method 300.0 Anions Mix

Varied ug/mL in Water.

(1)	Bromide	20
(2)	Chloride	20
(3)	Fluoride	10
(4)	Nitrate as N	20
(5)	Nitrite as N	20
(6)	Ortho-phosphate as P	30
(7)	Sulfate	30

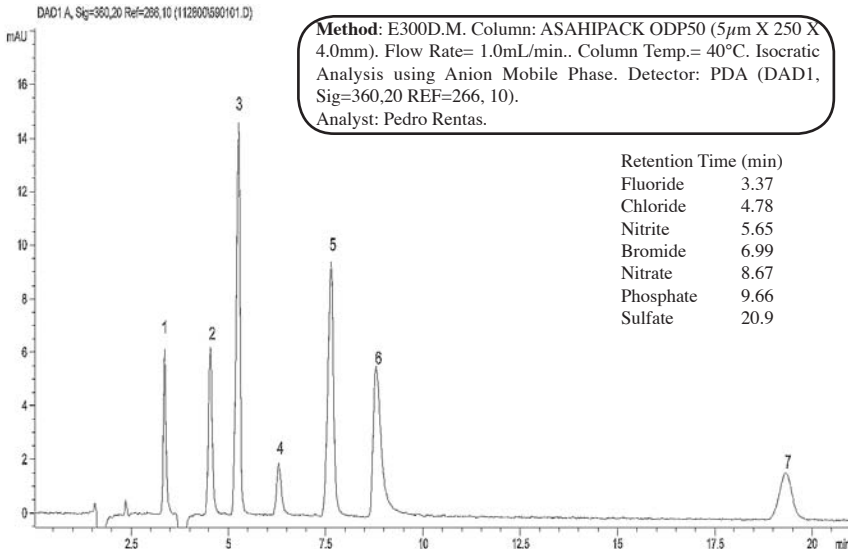
Part # 59010 $50/100 mL
Part # 59095 $200/500 mL

EPA Method 300.0 Anions

Varied ug/mL in Water.

(1)	Bromide	200
(2)	Chloride	200
(3)	Fluoride	100
(4)	Nitrate as N	200
(5)	Nitrite as N	200
(6)	Ortho-phosphate as P	300
(7)	Sulfate	300

Part # 59011 $100/100 mL
Part # 59096 $200/500 mL



Method: E300D.M. Column: ASAHIPACK ODP50 (5μm X 250 X 4.0mm). Flow Rate= 1.0mL/min.. Column Temp.= 40°C. Isocratic Analysis using Anion Mobile Phase. Detector: PDA (DAD1, Sig=360,20 REF=266, 10).
Analyst: Pedro Rentas.

Retention Time (min)	
Fluoride	3.37
Chloride	4.78
Nitrite	5.65
Bromide	6.99
Nitrate	8.67
Phosphate	9.66
Sulfate	20.9

METHOD

300.0

DETERMINATION OF INORGANIC ANIONS BY ION CHROMATOGRAPHY

INORGANIC DISINFECTION BY-PRODUCTS

Inorganic Chlorinated Disinfection By-Products

1000 ug/mL in Water.

(1) Chlorate (ClO_3^-)
(2) Chlorite (ClO_2^-)

Part # 52105 $35/100 mL
Part # 53105 $95/500 mL

Inorganic Brominated Disinfection By-Products

1000 ug/mL in Water.

(1) Bromate (BrO_3^-)
(2) Bromide (Br^-)

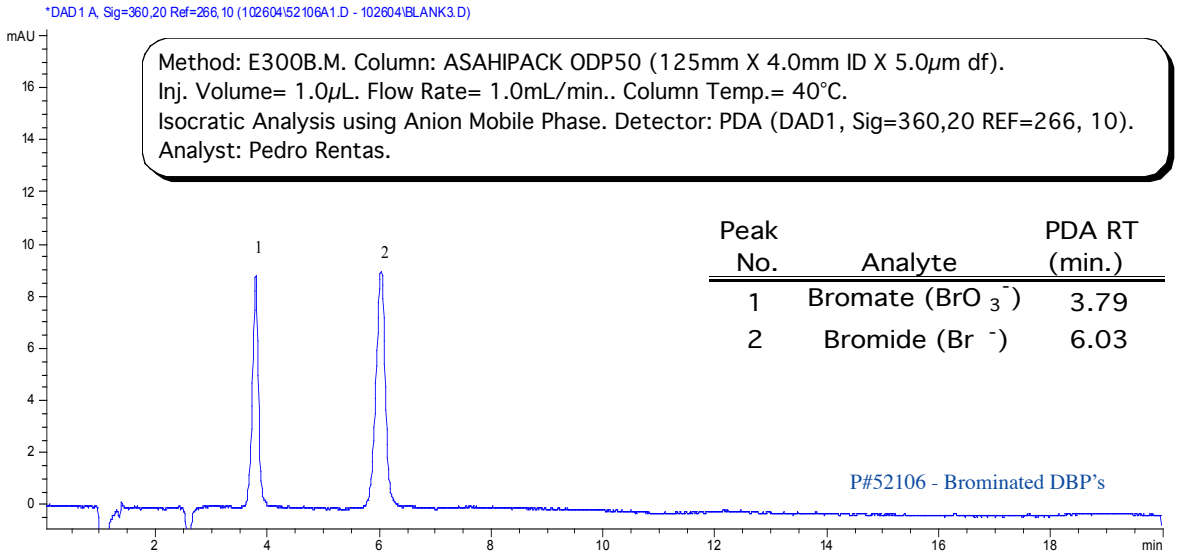
Part # 52106 $35/100 mL
Part # 53106 $95/500 mL

EPA Method 300.0 Anions Mix B

1000 ug/mL in Water.

(1) Chlorite
(2) Chlorate
(3) Bromate

Part # 52119 $25/100 mL
Part # 53119 $100/500 mL



Peak No.	Analyte	PDA RT (min.)
1	Bromate (BrO_3^-)	3.79
2	Bromide (Br^-)	6.03

DETERMINATION OF INORGANIC CATIONS BY ION CHROMATOGRAPHY

INORGANIC CATIONS ION CHROMATOGRAPHY

Single Components
1000 ug/mL - 100 mL Volume

54112	Ammonium, NH_4^+	in Water.	$25
54113	Ammonium as N	in Water.	$25
57056	Barium, Ba^{2+}	in 2% HNO3.	$30
57020	Calcium, Ca^{2+}	in 2% HNO3.	$30
57003	Lithium, Li^+	in 2% HNO3.	$30
57012	Magnesium, Mg^{2+}	in 2% HNO3.	$30
57019	Postassium, K^+	in 2% HNO3.	$30
57011	Sodium, Na^+	in 2% HNO3.	$30
57038	Strontium, Sr^{2+}	in 2% HNO3.	$30

Complete set of all 9 solutions,
use Part # 54001 $150

Additional Inorganic Cations Ion Chromatography

Single Components
1000 ug/mL - $25/ 100 mL

54154	Calcium (Ca^{2+})	in Water.
54157	Magnesium (Mg^{2+})	in Water.
54158	Potassium (K^+)	in Water.
54149	Sodium (Na^+)	in Water.

Cations Mix #1
4 Components in Water.

(1)	Calcium (Ca^{2+})	1000
(2)	Magnesium, (Mg^{2+})	1000
(3)	Potassium, (K^+)	1000
(4)	Sodium (Na^+)	1000

Part # 59322 $50/100 mL

Cations Mix #2
6 Components in Water.

(1)	Calcium (Ca^{2+})	100
(2)	Magnesium, (Mg^{2+})	100
(3)	Potassium, (K^+)	100
(4)	Sodium (Na^+)	100
(5)	Ammonium (NH^{4+})	100
(6)	Lithium (Li^+)	50

Part # 59203 $85/100 mL

METHOD
314-332.0

DETERMINATION OF PERCHLORATE BY ION CHROMATOGRAPHY

Method 314.0 was developed for the determination of perchlorate in drinking water by **ion chromatography coupled with suppressed conductivity detection**.

Method 314.1 employs the use of **inline column concentration/matrix elimination ion chromatography coupled with suppressed conductivity detection** for the determination of perchlorate in drinking water.

Method 332.0 was developed for the determination of low level perchlorate in drinking water by **ion chromatography coupled with suppressed conductivity and electrospray ionization mass spectroscopy**. To improve the accuracy and performance of this method, **^{18}-Oxygen enriched perchlorate is utilized as an internal standard.**

Method 314 Calibration

1000 ug/mL in Water

Sodium Perchlorate ($NaClO_4^-$)

Part # 57001 $35/100 mL
Part # 54164 $150/500 mL

100 ug/mL in Water

Sodium Perchlorate ($NaClO_4^-$)

Part # 59344 $35/100 mL

Method 332.0 Calibration

1000 ug/mL in Water

Sodium Perchlorate ($NaClO_4^-$)

Part # 57001 $35/100 mL
Part # 54164 $150/500 mL

100 ug/mL in Water.

Sodium Perchlorate ($NaClO_4^-$)

Part # 59344 $35/100 mL

Laboratory Synthetic Sample Matrix Blank (pH 8.6)

1000 ug/mL in Water

(1) Bicarbonate (HCO_3^-)
(2) Chloride (Cl^-)
(3) Sulfate (SO_4^{2-})

Part # 54205 $50/100 mL

Method 332.0 Calibration Internal Standard

1 ug/mL in Water

Sodium Perchlorate(^{18}O) -($NaCl\ ^{18}O_4^-$)

Part # 54022 $30/ 1 mL

Laboratory Synthetic Sample Matrix Blank (pH 10)

25 mg/mL in Water

(1) Carbonate (CO_3^{2-})
(2) Chloride (Cl^-)
(3) Sulfate (SO_4^{2-})

Part # 59206 $60/100 mL

Laboratory Synthetic Sample Matrix Blank (pH 10)

25 mg/mL in Water

(1) Carbonate (CO_3^{2-})
(2) Chloride (Cl^-)
(3) Sulfate (SO_4^{2-})

Part # 59206 $60/100 mL

DETERMINATION OF NITRATE-NITRITE NITROGEN BY AUTOMATED COLORIMETRY

METHOD

353.2

This method covers the determination of nitrite singly, or nitrite and nitrate combined in drinking, ground, and surface waters, and domestic and industrial wastes. Stability of the solution must be closely monitored. Detection is by colorimetry. Typical stability is only 1 month. Store the materials at 4°C.

EPA Method 353.2 Anions Mix

1000 ug/mL in Water.

(1) Nitrate as N
(2) Nitrite as N

Part # 52120 $25/100 mL
Part # 53120 $100/500 mL

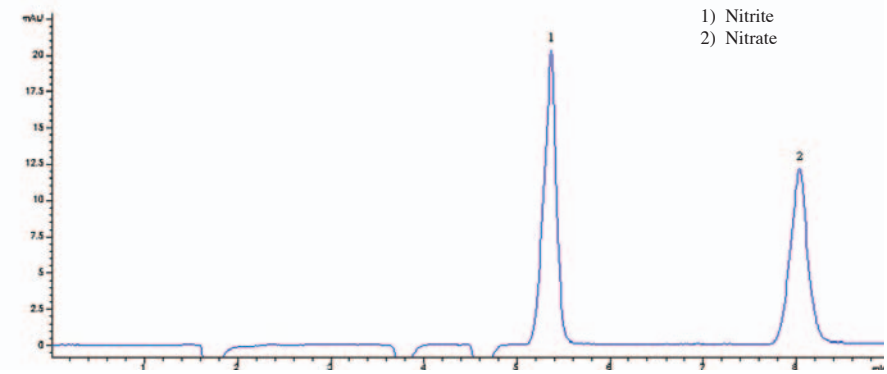
EPA Method 353.2 Anions Mix

Varied ug/mL in Water.

(1)	Nitrate as N	1000
(2)	Nitrite as N	500

Part # 54162 $25/100 mL
Part # 54521 $100/500 mL

Method: E300D.M. Column: ASAHIPACK ODP50 (5μm X 250 X 4.0mm). Flow Rate= 1.0mL/min.. Column Temp.= 40°C. Isocratic Analysis using Anion Mobile Phase. Detector: PDA (DAD1, Sig=360,20 REF=266, 10).
Analyst: Pedro Rentas.



1) Nitrite
2) Nitrate

METHOD

Misc.

MISCELLANEOUS ORGANIC ACIDS / WET CHEMICAL CALIBRATION STANDARDS

Acetic Acid (Acetate)

1000 ug/mL in Water.

Part # 54116 $35/100 mL
Part # 54516 $150/500 mL

Formic Acid (Formate)

1000 ug/mL in Water.

Part # 54117 $35/100 mL
Part # 54517 $150/500 mL

Oxalic Acid (Oxalate)

1000 ug/mL in Water.

Part # 54196 $35/100 mL
Part # 54596 $150/500 mL

Organic Acids Mix

1000 ug/mL in Water.

(1) Acetic acid
(2) Formic acid
(3) Methoxyacetic acid
(4) Oxalic acid

Part # 59294 $350/500 mL

Tetramethyl Ammonium Hydroxide

1000 ug/mL in Water.

Part # 54118 $35/100 mL
Part # 54518 $150/500 mL

Phenolics (Total) 4AAP

1000 ug/mL in Water

Part # 54136 $30/100 mL

Total Organic Halides (TOX)

as 2,4,6-Trichlorophenol

Cl @ 100 ug/mL

Part # 54194 in Water $25/ 20 mL
Part # 54243 in Methanol $25/ 20 mL

Total Solids

100 mg Neat

Part # 54167 $25/ 100 mg

Non-Filterable Solids (TSS)

100 mg Neat

Part # 54134 $25/ 100 mg

Total Dissolved Solids (TDS)

1000 ug/mL in Water.

Part # 54125 $25/100 mL

WET CHEMICAL CALIBRATION
MISCELLANEOUS EPA & STANDARD METHODS

METHOD

Misc.

The following section contains several Wet Chemical Reference Materials that can be used as quality control checks or to generate calibration curves. A few popular EPA/SW-846 and Standard Methods are depicted for easy reference. Absolute Standards, Inc. has also generated a completely searchable web-based index of EPA analytes and methods. Please see our web site: **www.AbsoluteStandards.com**

Organic Nutrients
TKN as N, Total Phosphorus as P

1000 ug/mL in Water

Part # 54152 $25/100 mL

Total Kjeldahl Nitrogen
from Glycine

1000 ug/mL in Water

Part # 54132 $25/100 mL

Total Phosphorus as P
1000 ug/mL in Water

Part # 54133 $25/100 mL

Inorganic Nutrients
NH4 as N, NO3 as N, PO4 as P

1000 ug/mL in Water

Part # 54153 $25/100 mL

Calcium Hardness
1000 ug/mL in 1% HCl

Part # 54143 $25/100 mL

Total Hardness
1000 ug/mL in Water

Part # 54156 $25/100 mL
Part # 54597 $90/500 mL

Total Organic Carbon (TOC) & Sulphate
1000 ug/mL in Watzr

Part # 54148 $25/100 mL

Total Organic Carbon (TOC) from KHP
1000 ug/mL in Water

Part # 59179 $25/100 mL

Total Organic Carbon (TOC) from Sucrose
1000 ug/mL in 1% HCl/Water.

Part # 54126 $25/100 mL

UV 254 Absorbance/ Dissolved Organic Carbon (DOC) as KHP
100 ug/mL as DOC in Water
14.4 cm^{-1} as Absorbance at 254 nm in Water

Part # 54166 $25/100 mL

Alkalinity as $CaCO_3$
1000 ug/mL in Water

Part # 54142 $25/100 mL
Part # 54242 $75/500 mL

METHOD

Misc.

WET CHEMICAL CALIBRATION
MISCELLANEOUS EPA & STANDARD METHODS

Conductance @ 25 ˚C
1000 uMHOS/cm in Water

Part # 54131 $25/100 mL

Turbidity
400 NTU in Water

Part # 54122 $25/20 mL

pH of 6
in Water

Part # 54119 $25/100 mL

MBAS
1000 ug/mL in Water

Part # 54160 $25/20 mL

Residual Free Chlorine
1000 ug/mL in Water

Part # 54124 $25/100 mL

Color
500 Color Units in 10% HCl/H_2O

Potassium Chloroplatinate
Cobaltous Chloride hexahydrate

Part # 54255 $75/100 mL

Silica (SiO_2)
1000 ug/mL in Water / tr. NaOH

Part # 54159 $25/100 mL
Part # 54169 $75/500 mL

Simple Cyanide as Potassium Cyanide
1000 ug/mL in Water/NaOH

Part # 59017 $25/100 mL

Total Cyanide as Potassium Ferricyanide
1000 ug/mL in Water/NaOH

Part # 54150 $25/100 mL

Simple & Total Cyanide
1000 ug/mL in Water/NaOH

Part # 54165 $25/100 mL

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NOTES

NOTES