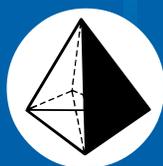
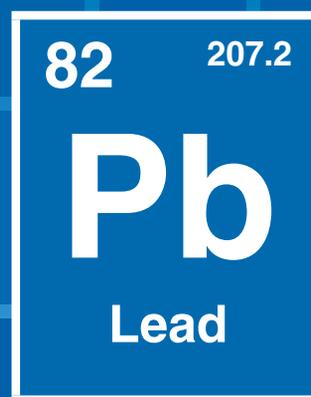
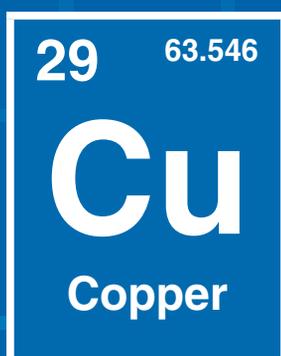
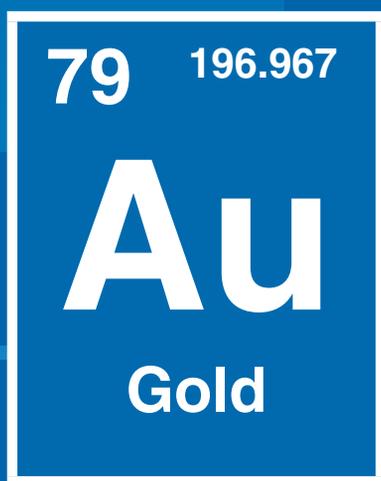


# Inorganic Standards



**AccuStandard®**

# Custom Formulations

Custom standards are made with the same attention to detail and high quality materials as the standards found in this catalog. The same manufacturing process is followed and custom standards are traceable to NIST SRMs wherever possible. You can be confident that you are not sacrificing quality when ordering a custom standard produced under the guidelines of our ISO 17034 accredited quality system.

- Fast turnaround time
- Order exactly what you need
- 18 month shelf life on most products
- Packaging options and bulk discounts available
- Committed technical support to answer your questions
- Verified by ICP, ICP-MS, or IC
- Traceable to NIST SRMs wherever possible

Custom formulations may be requested by contacting Inorganic Technical Service at [inotech@accustandard.com](mailto:inotech@accustandard.com) or by visiting our website <https://www.accustandard.com/custom-quote-request>

## Quality

At AccuStandard we strive to meet or exceed our customer's expectations from the initial contact with our Customer Service Department to the end use of our products.

AccuStandard is accredited to ISO 17034:2016, ISO/IEC 17025:2017, and certified to ISO 9001:2015. Management and employees take pride in our Quality System and fully support the implementation, monitoring and continuous improvement of our processes.

- ICP
- ICP-MS
- Ion Chromatography



ISO 17034 • 17025 • 9001

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Inorganic products containing acid generally require a hazardous fee for air shipments. Inorganic products in water generally do not.

Packaging, Shipping and Custom Formulations see back of catalog



# Certificate of Analysis

## Single Element ICP

125 Market Street  
New Haven, CT 06513  
USA



Tel (203) 786-5390  
Fax (203) 786-5287  
www.AccuStandard.com

### CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: ICP-15N-10X-1  
Description: Copper ICP Standard  
Element: Copper (Cu)  
SRM: 3114  
Lot: 222015122  
Matrix: 2% Nitric acid  
Hazards: Refer to SDS for complete safety information

Date Certified: Jan 31, 2022  
Expiration: Jan 31, 2027  
Density: 1.027 g/mL  
Sample Size: 100 mL  
Components: 1  
Storage Condition: Ambient (>5 °C)

Most Single element standards have a minimum 3 Year expiration period

Directly traceable to NIST SRMs - where available

Density included for conversion to weight/weight applications

GHS safety information



Signal Word: Danger



Impurity Scan for 68 elements in final solution

Certified Concentration: 10000 µg/mL

Trace Elements in µg/mL

Ag	N/A	Ce	nd<0.2	Gd	nd<0.02	Lu	nd<0.02	Pb	N/A	Sc	nd<0.02	Ti	nd<0.02
Al	nd<0.02	Co	nd<0.02	Ge	N/A	Mg	nd<0.02	Pd	nd<0.2	Se	nd<0.2	Tl	nd<0.2
As	nd<0.2	Cr	nd<0.02	Hf	nd<0.02	Mn	nd<0.02	Pr	nd<0.2	Si	N/A	Tm	nd<0.02
Au	nd<0.02	Cs	N/A	Hg	N/A	Mo	nd<0.02	Pt	nd<0.2	Sm	nd<0.2	U	nd<0.2
B	nd<0.2	Cu	*	Ho	nd<0.02	Na	0.06	Rb	N/A	Sn	nd<0.02	V	nd<0.02
Ba	nd<0.02	Dy	nd<0.02	In	nd<0.2	Nb	nd<0.2	Re	nd<0.2	Sr	nd<0.02	W	nd<0.2
Be	nd<0.02	Er	nd<0.02	Ir	nd<0.2	Nd	nd<0.02	Rh	nd<0.2	Ta	nd<0.2	Y	nd<0.02
Bi	N/A	Eu	nd<0.02	K	nd<0.2	Ni	nd<0.02	Ru	nd<0.02	Tb	nd<0.02	Yb	nd<0.02
Ca	0.04	Fe	nd<0.02	La	nd<0.02	Os	N/A	S	N/A	Te	N/A	Zn	N/A
Cd	nd<0.02	Ga	nd<0.02	Li	nd<0.02	P	N/A	Sb	nd<0.2	Th	nd<0.02	Zr	nd<0.02

Concentration verified by two independent methods for added assurance

Uncertainty reported for statistical confidence

Highest purity starting materials & matrices used

QC management approval

This Certified Reference Material was verified in accordance with ISO/IEC 17025  
This solution was assayed titrimetrically, using EDTA which was standardized against NIST SRM #915a (calcium carbonate).  
A product with a suffix (-1A, -2B, etc. or -01, -02, etc.) on its lot number has had its expiration date extended and is identical to the same lot number without the suffix.  
The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±2.4%.  
In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).  
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type 1 18 megohm deionized water.  
All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.  
All weights are traceable through NIST, Test No. 684/289871-17  
All glassware used in preparation is Class A.  
All bottles are acid leached and triple rinsed with deionized water prior to use.  
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware. Keep bottle tightly capped.

Certified By: *Meigan O'Leary*  
Meigan O'Leary, Inorganic QC Manager  
For use in routine laboratory analysis.



# ICP

## Single Element

- Traceable to NIST reference materials
- Ultra high purity starting materials and acids
- Specially prepared acid leached bottles

- 18 Megohm deionized water
- Minimum 3 year shelf life

- Concentration verified by wet chemical and instrumental analysis

### Single Element ICP

Starting Material Matrix	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.	Unit	Starting Material Matrix	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.	Unit
<b>Al Aluminum</b>		ICP-01N-10X-0.5	50 mL	<b>Ge Germanium</b>		ICP-21W-10X-0.5	50 mL
Al(NO <sub>3</sub> ) <sub>3</sub> • 9H <sub>2</sub> O	ICP-01N-1	ICP-01N-10X-1	100 mL	(NH <sub>4</sub> ) <sub>2</sub> GeF <sub>6</sub>	ICP-21W-1	ICP-21W-10X-1	100 mL
2-5% Nitric acid	ICP-01N-5	ICP-01N-10X-5	500 mL	Water tr. HF	ICP-21W-5	ICP-21W-10X-5	500 mL
<b>Sb Antimony</b>		ICP-02N-10X-0.5	50 mL	<b>Au Gold</b>		contact us	50 mL
2-5% Nitric acid tr.	ICP-02N-1	ICP-02N-10X-1	100 mL	Au	ICP-22H-1	contact us	100 mL
Tartaric acid	ICP-02N-5	ICP-02N-10X-5	500 mL	10% HCl	ICP-22H-5	contact us	500 mL
<b>As Arsenic</b>		ICP-03N-10X-0.5	50 mL	<b>Hf Hafnium</b>		ICP-23N-10X-0.5	50 mL
As	ICP-03N-1	ICP-03N-10X-1	100 mL	HfO <sub>2</sub>	ICP-23N-1	ICP-23N-10X-1	100 mL
2-5% Nitric acid	ICP-03N-5	ICP-03N-10X-5	500 mL	2-5% Nitric acid tr. HF	ICP-23N-5	contact us	
<b>Ba Barium</b>		ICP-04N-10X-0.5	50 mL	<b>Ho Holmium</b>		ICP-24N-10X-0.5	50 mL
Ba(NO <sub>3</sub> ) <sub>2</sub>	ICP-04N-1	ICP-04N-10X-1	100 mL	Ho <sub>2</sub> O <sub>3</sub>	ICP-24N-1	ICP-24N-10X-1	100 mL
2-5% Nitric acid	ICP-04N-5	ICP-04N-10X-5	500 mL	2-5% Nitric acid	ICP-24N-5	ICP-24N-10X-5	500 mL
<b>Be Beryllium</b>		contact us	50 mL	<b>In Indium</b>		ICP-25N-10X-0.5	50 mL
BeO(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub>	ICP-05N-1	contact us	100 mL	In	ICP-25N-1	ICP-25N-10X-1	100 mL
2-5% Nitric acid	contact us	contact us	500 mL	2-5% Nitric acid	ICP-25N-5	ICP-25N-10X-5	500 mL
<b>Bi Bismuth</b>		ICP-06N-10X-0.5	50 mL	<b>Ir Iridium</b>		contact us	50 mL
Bi	ICP-06N-1	ICP-06N-10X-1	100 mL	IrCl <sub>3</sub> • 3H <sub>2</sub> O	ICP-26H-1	contact us	100 mL
2-10% Nitric acid	ICP-06N-5	ICP-06N-10X-5	500 mL	10% HCl	ICP-26H-5	contact us	500 mL
<b>B Boron</b>		ICP-07W-10X-0.5	50 mL	<b>Fe Iron</b>		ICP-27N-10X-0.5	50 mL
H <sub>3</sub> BO <sub>3</sub>	ICP-07W-1	ICP-07W-10X-1	100 mL	Fe(NO <sub>3</sub> ) <sub>3</sub> •9H <sub>2</sub> O	ICP-27N-1	ICP-27N-10X-1	100 mL
Water tr. NH <sub>4</sub> OH	ICP-07W-5	ICP-07W-10X-5	500 mL	2-5% Nitric acid	ICP-27N-5	ICP-27N-10X-5	500 mL
<b>Cd Cadmium</b>		ICP-08N-10X-0.5	50 mL	<b>La Lanthanum</b>		ICP-28N-10X-0.5	50 mL
Cd	ICP-08N-1	ICP-08N-10X-1	100 mL	La <sub>2</sub> O <sub>3</sub>	ICP-28N-1	ICP-28N-10X-1	100 mL
2-5% Nitric acid	ICP-08N-5	ICP-08N-10X-5	500 mL	2-5% Nitric acid	ICP-28N-5	ICP-28N-10X-5	500 mL
<b>Ca Calcium</b>		ICP-09N-10X-0.5	50 mL	<b>Pb Lead</b>		ICP-29N-10X-0.5	50 mL
CaCO <sub>3</sub>	ICP-09N-1	ICP-09N-10X-1	100 mL	Pb(NO <sub>3</sub> ) <sub>2</sub>	ICP-29N-1	ICP-29N-10X-1	100 mL
2-5% Nitric acid	ICP-09N-5	ICP-09N-10X-5	500 mL	2-5% Nitric acid	ICP-29N-5	ICP-29N-10X-5	500 mL
<b>Ce Cerium</b>		ICP-11N-10X-0.5	50 mL	<b>Li Lithium</b>		ICP-30N-10X-0.5	50 mL
Ce(NO <sub>3</sub> ) <sub>3</sub>	ICP-11N-1	ICP-11N-10X-1	100 mL	Li <sub>2</sub> CO <sub>3</sub>	ICP-30N-1	ICP-30N-10X-1	100 mL
2-5% Nitric acid	ICP-11N-5	ICP-11N-10X-5	500 mL	2-5% Nitric acid	ICP-30N-5	ICP-30N-10X-5	500 mL
<b>Cs Cesium</b>		ICP-12N-10X-0.5	50 mL	<b>Lu Lutetium</b>		ICP-31N-10X-0.5	50 mL
CsNO <sub>3</sub>	ICP-12N-1	ICP-12N-10X-1	100 mL	Lu <sub>2</sub> O <sub>3</sub>	ICP-31N-1	ICP-31N-10X-1	100 mL
2-5% Nitric acid	ICP-12N-5	ICP-12N-10X-5	500 mL	2-5% Nitric acid	ICP-31N-5	contact us	500 mL
<b>Cr Chromium</b>		ICP-13N-R-10X-0.5	50 mL	<b>Mg Magnesium</b>		ICP-32N-10X-0.5	50 mL
Cr(NO <sub>3</sub> ) <sub>3</sub> • 9H <sub>2</sub> O	ICP-13N-R-1	ICP-13N-R-10X-1	100 mL	Mg(NO <sub>3</sub> ) <sub>2</sub> • 6H <sub>2</sub> O	ICP-32N-1	ICP-32N-10X-1	100 mL
2-5% Nitric acid	ICP-13N-R-5	ICP-13N-R-10X-5	500 mL	2-5% Nitric acid	ICP-32N-5	ICP-32N-10X-5	500 mL
<b>Co Cobalt</b>		ICP-14N-10X-0.5	50 mL	<b>Mn Manganese</b>		ICP-33N-10X-0.5	50 mL
Co	ICP-14N-1	ICP-14N-10X-1	100 mL	Mn(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>2</sub>	ICP-33N-1	ICP-33N-10X-1	100 mL
2-5% Nitric acid	ICP-14N-5	ICP-14N-10X-5	500 mL	2-5% Nitric acid	ICP-33N-5	ICP-33N-10X-5	500 mL
<b>Cu Copper</b>		ICP-15N-10X-0.5	50 mL	<b>Hg Mercury</b>		ICP-34N-10X-0.5	50 mL
Cu	ICP-15N-1	ICP-15N-10X-1	100 mL	Hg	ICP-34N-1	ICP-34N-10X-1	100 mL
2-5% Nitric acid	ICP-15N-5	ICP-15N-10X-5	500 mL	10% Nitric acid	ICP-34N-5	ICP-34N-10X-5	500 mL
<b>Dy Dysprosium</b>		ICP-16N-10X-0.5	50 mL	<b>Mo Molybdenum</b>		ICP-35W-10X-0.5	50 mL
Dy <sub>2</sub> O <sub>3</sub>	ICP-16N-1	ICP-16N-10X-1	100 mL	(NH <sub>4</sub> ) <sub>2</sub> MoO <sub>4</sub>	ICP-35W-1	ICP-35W-10X-1	100 mL
2-5% Nitric acid	ICP-16N-5	ICP-16N-10X-5	500 mL	Water tr. NH <sub>4</sub> OH	ICP-35W-5	ICP-35W-10X-5	500 mL
<b>Er Erbium</b>		ICP-17N-10X-0.5	50 mL	<b>Nd Neodymium</b>		ICP-36N-10X-0.5	50 mL
Er <sub>2</sub> O <sub>3</sub>	ICP-17N-1	ICP-17N-10X-1	100 mL	Nd <sub>2</sub> O <sub>3</sub>	ICP-36N-1	ICP-36N-10X-1	100 mL
2-5% Nitric acid	ICP-17N-5	ICP-17N-10X-5	500 mL	2-5% Nitric acid	ICP-36N-5	ICP-36N-10X-5	500 mL
<b>Eu Europium</b>		ICP-18N-10X-0.5	50 mL	<b>Ni Nickel</b>		ICP-37N-10X-0.5	50 mL
Eu <sub>2</sub> O <sub>3</sub>	ICP-18N-1	ICP-18N-10X-1	100 mL	Ni	ICP-37N-1	ICP-37N-10X-1	100 mL
2-5% Nitric acid	ICP-18N-5	contact us	500 mL	2-5% Nitric acid	ICP-37N-5	ICP-37N-10X-5	500 mL
<b>Gd Gadolinium</b>		ICP-19N-10X-0.5	50 mL	<b>Nb Niobium</b>		ICP-38W-10X-0.5	50 mL
Gd <sub>2</sub> O <sub>3</sub>	ICP-19N-1	ICP-19N-10X-1	100 mL	Nb <sub>2</sub> O <sub>5</sub>	ICP-38W-1	ICP-38W-10X-1	100 mL
2-5% Nitric acid	ICP-19N-5	ICP-19N-10X-5	500 mL	Water tr. HF	ICP-38W-5	contact us	500 mL
<b>Ga Gallium</b>		ICP-20N-10X-0.5	50 mL	<b>Pd Palladium</b>		contact us	50 mL
Ga	ICP-20N-1	ICP-20N-10X-1	100 mL	Pd	ICP-40H-1	contact us	100 mL
2-5% Nitric acid	ICP-20N-5	ICP-20N-10X-5	500 mL	10% HCl	ICP-40H-5	contact us	500 mL

Single Element ICP continued on next page

# ICP

## Single Element and Matrix Blanks

### Single Element ICP

Starting Material Matrix	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.	Unit	Starting Material Matrix	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.	Unit
<b>P Phosphorus</b>		ICP-41W-10X-0.5	50 mL	<b>Ta Tantalum</b>		ICP-57W-10X-0.5	50 mL
NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	ICP-41W-1	ICP-41W-10X-1	100 mL	Ta	ICP-57W-1	ICP-57W-10X-1	100 mL
Water	ICP-41W-5	ICP-41W-10X-5	500 mL	Water, tr. to 5% HF	ICP-57W-5	ICP-57W-10X-5	500 mL
<b>Pt Platinum</b>		contact us	50 mL	<b>Te Tellurium</b>		ICP-58H-10X-0.5	50 mL
Pt	ICP-42H-1	contact us	100 mL	TeO <sub>2</sub>	ICP-58H-1	ICP-58H-10X-1	100 mL
10% HCl	ICP-42H-5	contact us	500 mL	20%-40% HCl	ICP-58H-5	ICP-58H-10X-5	500 mL
<b>K Potassium</b>		ICP-43N-10X-0.5	50 mL	<b>Tb Terbium</b>		ICP-59N-10X-0.5	50 mL
KNO <sub>3</sub>	ICP-43N-1	ICP-43N-10X-1	100 mL	Tb <sub>4</sub> O <sub>7</sub>	ICP-59N-1	ICP-59N-10X-1	100 mL
2-5% Nitric acid	ICP-43N-5	ICP-43N-10X-5	500 mL	2-5% Nitric acid	ICP-59N-5	contact us	500 mL
<b>Pr Praseodymium</b>		ICP-44N-10X-0.5	50 mL	<b>Tl Thallium</b>		ICP-60N-10X-0.5	50 mL
Pr <sub>6</sub> O <sub>11</sub>	ICP-44N-1	ICP-44N-10X-1	100 mL	TlNO <sub>3</sub>	ICP-60N-1	ICP-60N-10X-1	100 mL
2-5% Nitric acid	ICP-44N-5	ICP-44N-10X-5	500 mL	2-5% Nitric acid	ICP-60N-5	ICP-60N-10X-5	500 mL
<b>Re Rhenium</b>		ICP-45W-10X-0.5	50 mL	<b>Th Thorium</b>			
Re	ICP-45W-1	ICP-45W-10X-1	100 mL	Th(NO <sub>3</sub> ) <sub>4</sub> • 4H <sub>2</sub> O	ICP-61N-1		100 mL
Water tr. Nitric acid	ICP-45W-5	ICP-45W-10X-5	500 mL	2-5% Nitric acid	ICP-61N-5		500 mL
<b>Rh Rhodium</b>		contact us	50 mL	<b>Tm Thulium</b>		ICP-62N-10X-0.5	50 mL
RhCl <sub>3</sub> • 3H <sub>2</sub> O	ICP-46H-1	contact us	100 mL	Tm <sub>2</sub> O <sub>3</sub>	ICP-62N-1	ICP-62N-10X-1	100 mL
10% HCl	ICP-46H-5	contact us	500 mL	2-5% Nitric acid	ICP-62N-5	contact us	500 mL
<b>Rb Rubidium</b>		ICP-47N-10X-0.5	50 mL	<b>Sn Tin</b>		ICP-63N-10X-0.5	50 mL
RbNO <sub>3</sub>	ICP-47N-1	ICP-47N-10X-1	100 mL	Sn	ICP-63N-1	ICP-63N-10X-1	100 mL
2-5% Nitric acid	ICP-47N-5	ICP-47N-10X-5	500 mL	2-5% Nitric acid tr. HF	ICP-63N-5	contact us	500 mL
<b>Ru Ruthenium</b>		contact us	50 mL	<b>Ti Titanium</b>		ICP-64W-10X-0.5	50 mL
RuCl <sub>3</sub> • 3H <sub>2</sub> O	ICP-48H-1	contact us	100 mL	(NH <sub>4</sub> ) <sub>2</sub> TiF <sub>6</sub>	ICP-64W-1	ICP-64W-10X-1	100 mL
10% HCl	ICP-48H-5	contact us	500 mL	Water tr. HF	ICP-64W-5	ICP-64W-10X-5	500 mL
<b>Sm Samarium</b>		ICP-49N-10X-0.5	50 mL	<b>W Tungsten</b>		ICP-65W-10X-0.5	50 mL
Sm <sub>2</sub> O <sub>3</sub>	ICP-49N-1	ICP-49N-10X-1	100 mL	(NH <sub>4</sub> ) <sub>2</sub> WO <sub>4</sub>	ICP-65W-1	ICP-65W-10X-1	100 mL
2-5% Nitric acid	ICP-49N-5	ICP-49N-10X-5	500 mL	Water tr. NH <sub>4</sub> OH	ICP-65W-5	ICP-65W-10X-5	500 mL
<b>Sc Scandium</b>		ICP-50N-10X-0.5	50 mL	<b>U Uranium</b>			
Sc <sub>2</sub> O <sub>3</sub>	ICP-50N-1	ICP-50N-10X-1	100 mL	UO <sub>2</sub> (NO <sub>3</sub> ) <sub>2</sub> • 6H <sub>2</sub> O	ICP-66N-R-1		100 mL
2-5% Nitric acid	ICP-50N-5	ICP-50N-10X-5	500 mL	2-5% Nitric acid	ICP-66N-R-5		500 mL
<b>Se Selenium</b>		ICP-51N-10X-0.5	50 mL	<b>V Vanadium</b>		ICP-67N-10X-0.5	50 mL
Se	ICP-51N-1	ICP-51N-10X-1	100 mL	V <sub>2</sub> O <sub>5</sub>	ICP-67N-1	ICP-67N-10X-1	100 mL
2-5% Nitric acid	ICP-51N-5	ICP-51N-10X-5	500 mL	2-5% Nitric acid	ICP-67N-5	ICP-67N-10X-5	500 mL
<b>Si Silicon</b>		ICP-52W-10X-0.5	50 mL	<b>Yb Ytterbium</b>		ICP-68N-10X-0.5	50 mL
(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub>	ICP-52W-1	ICP-52W-10X-1	100 mL	Yb <sub>2</sub> O <sub>3</sub>	ICP-68N-1	ICP-68N-10X-1	100 mL
Water tr. HF	ICP-52W-5	ICP-52W-10X-5	500 mL	2-5% Nitric acid	ICP-68N-5	ICP-68N-10X-5	500 mL
<b>Ag Silver</b>		ICP-53N-10X-0.5	50 mL	<b>Y Yttrium</b>		ICP-69N-10X-0.5	50 mL
AgNO <sub>3</sub>	ICP-53N-1	ICP-53N-10X-1	100 mL	Y <sub>2</sub> O <sub>3</sub>	ICP-69N-1	ICP-69N-10X-1	100 mL
2-5% Nitric acid	ICP-53N-5	ICP-53N-10X-5	500 mL	2-5% Nitric acid	ICP-69N-5	ICP-69N-10X-5	500 mL
<b>Na Sodium</b>		ICP-54N-10X-0.5	50 mL	<b>Zn Zinc</b>		ICP-70N-10X-0.5	50 mL
NaNO <sub>3</sub>	ICP-54N-1	ICP-54N-10X-1	100 mL	Zn	ICP-70N-1	ICP-70N-10X-1	100 mL
2-5% Nitric acid	ICP-54N-5	ICP-54N-10X-5	500 mL	2-5% Nitric acid	ICP-70N-5	ICP-70N-10X-5	500 mL
<b>Sr Strontium</b>		ICP-55N-10X-0.5	50 mL	<b>Zr Zirconium</b>		ICP-71N-10X-0.5	50 mL
Sr(NO <sub>3</sub> ) <sub>2</sub>	ICP-55N-1	ICP-55N-10X-1	100 mL	ZrO(NO <sub>3</sub> ) <sub>2</sub>	ICP-71N-1	ICP-71N-10X-1	100 mL
2-5% Nitric acid	ICP-55N-5	ICP-55N-10X-5	500 mL	2-5% Nitric acid	ICP-71N-5	contact us	500 mL
<b>S Sulfur</b>		ICP-56W-10X-0.5	50 mL				
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	ICP-56W-1	ICP-56W-10X-1	100 mL				
Water	ICP-56W-5	ICP-56W-10X-5	500 mL				

### Calibration and Matrix Blanks

#### Nitric Acid Blank

CLP-BLN-5 500 mL  
CLP-BLN-L-VAP 1L (2 x 500 mL)

5% HNO<sub>3</sub> in 18 Megohm ASTM  
Type I deionized Water

#### Water Blank

CLP-BLW-5 500 mL  
CLP-BLW-L-VAP 1L (2 x 500 mL)

18 Megohm ASTM Type I deionized  
Water

#### Hydrochloric Acid Blank

CLP-BLH-5 500 mL  
CLP-BLH-L-VAP 1L (2 x 500 mL)

5% HCl in 18 Megohm ASTM Type I  
deionized Water

### Custom Formulations

#### Meet your specific needs

Request a custom formulation on  
our website or contact our Inorganic  
Technical Service Department.  
email: inotech@accustandard.com

# ICP-MS

## Single Element

ICP-MS Standards are formulated to meet the needs of this very special instrument. As matrix effect is of utmost concern, each standard is formulated in specially purified 18 megohm deionized water and ultra pure acids.

- Traceable to NIST reference materials
- 18 Megohm deionized water
- ppb level contaminants reported on Certificate of Analysis
- Ultra high purity starting materials and acids
- Minimum 3 year shelf life
- Concentration verified by wet chemical and instrumental analysis

### Single Element ICP-MS

Element	Matrix	100 µg/mL	1000 µg/mL	10,000 µg/mL	Unit
Al Aluminum	2-5% HNO <sub>3</sub>	ICP-MS-01N-0.01X-1	ICP-MS-01N-0.1X-1	ICP-MS-01N-1	100 mL
Sb Antimony	2-5% HNO <sub>3</sub> tr. Tartaric acid	ICP-MS-02N-0.01X-1	ICP-MS-02N-0.1X-1	ICP-MS-02N-1	100 mL
As Arsenic	2-5% HNO <sub>3</sub>	ICP-MS-03N-0.01X-1	ICP-MS-03N-0.1X-1	ICP-MS-03N-1	100 mL
Ba Barium	2-5% HNO <sub>3</sub>	ICP-MS-04N-0.01X-1	ICP-MS-04N-0.1X-1	ICP-MS-04N-1	100 mL
Be Beryllium	2-5% HNO <sub>3</sub>	ICP-MS-05N-0.01X-1	ICP-MS-05N-0.1X-1	contact us	100 mL
Bi Bismuth	2-10% HNO <sub>3</sub>	ICP-MS-06N-0.01X-1	ICP-MS-06N-0.1X-1	ICP-MS-06N-1	100 mL
B Boron	Water tr. NH <sub>4</sub> OH	ICP-MS-07W-0.01X-1	ICP-MS-07W-0.1X-1	ICP-MS-07W-1	100 mL
Cd Cadmium	2-5% HNO <sub>3</sub>	ICP-MS-08N-0.01X-1	ICP-MS-08N-0.1X-1	ICP-MS-08N-1	100 mL
Ca Calcium	2-5% HNO <sub>3</sub>	ICP-MS-09N-0.01X-1	ICP-MS-09N-0.1X-1	ICP-MS-09N-1	100 mL
Ce Cerium	2-5% HNO <sub>3</sub>	ICP-MS-11N-0.01X-1	ICP-MS-11N-0.1X-1	ICP-MS-11N-1	100 mL
Cs Cesium	2-5% HNO <sub>3</sub>	ICP-MS-12N-0.01X-1	ICP-MS-12N-0.1X-1	ICP-MS-12N-1	100 mL
Cr Chromium	2-5% HNO <sub>3</sub>	ICP-MS-13N-R-0.01X-1	ICP-MS-13N-R-0.1X-1	ICP-MS-13N-R-1	100 mL
Co Cobalt	2-5% HNO <sub>3</sub>	ICP-MS-14N-0.01X-1	ICP-MS-14N-0.1X-1	ICP-MS-14N-1	100 mL
Cu Copper	2-5% HNO <sub>3</sub>	ICP-MS-15N-0.01X-1	ICP-MS-15N-0.1X-1	ICP-MS-15N-1	100 mL
Dy Dysprosium	2-5% HNO <sub>3</sub>	ICP-MS-16N-0.01X-1	ICP-MS-16N-0.1X-1	ICP-MS-16N-1	100 mL
Er Erbium	2-5% HNO <sub>3</sub>	ICP-MS-17N-0.01X-1	ICP-MS-17N-0.1X-1	ICP-MS-17N-1	100 mL
Eu Europium	2-5% HNO <sub>3</sub>	ICP-MS-18N-0.01X-1	ICP-MS-18N-0.1X-1	ICP-MS-18N-1	100 mL
Gd Gadolinium	2-5% HNO <sub>3</sub>	ICP-MS-19N-0.01X-1	ICP-MS-19N-0.1X-1	ICP-MS-19N-1	100 mL
Ga Gallium	2-5% HNO <sub>3</sub>	ICP-MS-20N-0.01X-1	ICP-MS-20N-0.1X-1	ICP-MS-20N-1	100 mL
Ge Germanium	Water tr. HF	ICP-MS-21W-0.01X-1	ICP-MS-21W-0.1X-1	ICP-MS-21W-1	100 mL
Au Gold	10% HCl	ICP-MS-22H-0.01X-1	ICP-MS-22H-0.1X-1	contact us	100 mL
Hf Hafnium	2-5% HNO <sub>3</sub> tr. HF	ICP-MS-23N-0.01X-1	ICP-MS-23N-0.1X-1	ICP-MS-23N-1	100 mL
Ho Holmium	2-5% HNO <sub>3</sub>	ICP-MS-24N-0.01X-1	ICP-MS-24N-0.1X-1	ICP-MS-24N-1	100 mL
In Indium	2-5% HNO <sub>3</sub>	ICP-MS-25N-0.01X-1	ICP-MS-25N-0.1X-1	ICP-MS-25N-1	100 mL
Ir Iridium	10% HCl	ICP-MS-26H-0.01X-1	ICP-MS-26H-0.1X-1	contact us	100 mL
Fe Iron	2-5% HNO <sub>3</sub>	ICP-MS-27N-0.01X-1	ICP-MS-27N-0.1X-1	ICP-MS-27N-1	100 mL
La Lanthanum	2-5% HNO <sub>3</sub>	ICP-MS-28N-0.01X-1	ICP-MS-28N-0.1X-1	ICP-MS-28N-1	100 mL
Pb Lead	2-5% HNO <sub>3</sub>	ICP-MS-29N-0.01X-1	ICP-MS-29N-0.1X-1	ICP-MS-29N-1	100 mL
Li Lithium	2-5% HNO <sub>3</sub>	ICP-MS-30N-0.01X-1	ICP-MS-30N-0.1X-1	ICP-MS-30N-1	100 mL
Lu Lutetium	2-5% HNO <sub>3</sub>	ICP-MS-31N-0.01X-1	ICP-MS-31N-0.1X-1	ICP-MS-31N-1	100 mL
Mg Magnesium	2-5% HNO <sub>3</sub>	ICP-MS-32N-0.01X-1	ICP-MS-32N-0.1X-1	ICP-MS-32N-1	100 mL
Mn Manganese	2-5% HNO <sub>3</sub>	ICP-MS-33N-0.01X-1	ICP-MS-33N-0.1X-1	ICP-MS-33N-1	100 mL
Hg Mercury	5-10% HNO <sub>3</sub>	ICP-MS-34N-0.01X-1	ICP-MS-34N-0.1X-1	ICP-MS-34N-1	100 mL
Mo Molybdenum	Water tr. NH <sub>4</sub> OH	ICP-MS-35W-0.01X-1	ICP-MS-35W-0.1X-1	ICP-MS-35W-1	100 mL
Nd Neodymium	2-5% HNO <sub>3</sub>	ICP-MS-36N-0.01X-1	ICP-MS-36N-0.1X-1	ICP-MS-36N-1	100 mL
Ni Nickel	2-5% HNO <sub>3</sub>	ICP-MS-37N-0.01X-1	ICP-MS-37N-0.1X-1	ICP-MS-37N-1	100 mL
Nb Niobium	Water tr. HF	ICP-MS-38W-0.01X-1	ICP-MS-38W-0.1X-1	ICP-MS-38W-1	100 mL
Pd Palladium	10% HCl	ICP-MS-40H-0.01X-1	ICP-MS-40H-0.1X-1	contact us	100 mL
P Phosphorus	Water	ICP-MS-41W-0.01X-1	ICP-MS-41W-0.1X-1	ICP-MS-41W-1	100 mL
Pt Platinum	10% HCl	ICP-MS-42H-0.01X-1	ICP-MS-42H-0.1X-1	contact us	100 mL
K Potassium	2-5% HNO <sub>3</sub>	ICP-MS-43N-0.01X-1	ICP-MS-43N-0.1X-1	ICP-MS-43N-1	100 mL
Pr Praseodymium	2-5% HNO <sub>3</sub>	ICP-MS-44N-0.01X-1	ICP-MS-44N-0.1X-1	ICP-MS-44N-1	100 mL
Re Rhenium	Water tr. HNO <sub>3</sub>	ICP-MS-45W-0.01X-1	ICP-MS-45W-0.1X-1	ICP-MS-45W-1	100 mL
Rh Rhodium	10% HCl	ICP-MS-46H-0.01X-1	ICP-MS-46H-0.1X-1	contact us	100 mL
Rb Rubidium	2-5% HNO <sub>3</sub>	ICP-MS-47N-0.01X-1	ICP-MS-47N-0.1X-1	ICP-MS-47N-1	100 mL
Ru Ruthenium	10% HCl	ICP-MS-48H-0.01X-1	ICP-MS-48H-0.1X-1	contact us	100 mL
Sm Samarium	2-5% HNO <sub>3</sub>	ICP-MS-49N-0.01X-1	ICP-MS-49N-0.1X-1	ICP-MS-49N-1	100 mL

Single Element ICP-MS  
continued on next page

# ICP-MS

## Single Element and Matrix Blanks

### Single Element ICP-MS

Element	Matrix	100 µg/mL	1000 µg/mL	10,000 µg/mL	Unit
Sc Scandium	2-5% HNO <sub>3</sub>	ICP-MS-50N-0.01X-1	ICP-MS-50N-0.1X-1	ICP-MS-50N-1	100 mL
Se Selenium	2-5% HNO <sub>3</sub>	ICP-MS-51N-0.01X-1	ICP-MS-51N-0.1X-1	ICP-MS-51N-1	100 mL
Si Silicon	H <sub>2</sub> O tr. HF	ICP-MS-52W-0.01X-1	ICP-MS-52W-0.1X-1	ICP-MS-52W-1	100 mL
Ag Silver	2-5% HNO <sub>3</sub>	ICP-MS-53N-0.01X-1	ICP-MS-53N-0.1X-1	ICP-MS-53N-1	100 mL
Na Sodium	2-5% HNO <sub>3</sub>	ICP-MS-54N-0.01X-1	ICP-MS-54N-0.1X-1	ICP-MS-54N-1	100 mL
Sr Strontium	2-5% HNO <sub>3</sub>	ICP-MS-55N-0.01X-1	ICP-MS-55N-0.1X-1	ICP-MS-55N-1	100 mL
S Sulfur	Water	ICP-MS-56W-0.01X-1	ICP-MS-56W-0.1X-1	ICP-MS-56W-1	100 mL
Ta Tantalum	Water, tr. to 5% HF	ICP-MS-57W-0.01X-1	ICP-MS-57W-0.1X-1	ICP-MS-57W-1	100 mL
Te Tellurium	10% HCl (min.)	ICP-MS-58H-0.01X-1	ICP-MS-58H-0.1X-1	ICP-MS-58H-1	100 mL
Tb Terbium	2-5% HNO <sub>3</sub>	ICP-MS-59N-0.01X-1	ICP-MS-59N-0.1X-1	ICP-MS-59N-1	100 mL
Tl Thallium	2-5% HNO <sub>3</sub>	ICP-MS-60N-0.01X-1	ICP-MS-60N-0.1X-1	ICP-MS-60N-1	100 mL
Th Thorium	2-5% HNO <sub>3</sub>	ICP-MS-61N-0.01X-1	ICP-MS-61N-0.1X-1	-----	100 mL
Tm Thulium	2-5% HNO <sub>3</sub>	ICP-MS-62N-0.01X-1	ICP-MS-62N-0.1X-1	ICP-MS-62N-1	100 mL
Sn Tin	2-5% HNO <sub>3</sub> tr. HF	ICP-MS-63N-0.01X-1	ICP-MS-63N-0.1X-1	ICP-MS-63N-1	100 mL
Ti Titanium	Water tr. HF	ICP-MS-64W-0.01X-1	ICP-MS-64W-0.1X-1	ICP-MS-64W-1	100 mL
W Tungsten	Water tr. NH <sub>4</sub> OH	ICP-MS-65W-0.01X-1	ICP-MS-65W-0.1X-1	ICP-MS-65W-1	
U Uranium	2-5% HNO <sub>3</sub>	ICP-MS-66N-R-0.01X-1	ICP-MS-66N-R-0.1X-1	-----	100 mL
V Vanadium	2-5% HNO <sub>3</sub>	ICP-MS-67N-0.01X-1	ICP-MS-67N-0.1X-1	ICP-MS-67N-1	100 mL
Yb Ytterbium	2-5% HNO <sub>3</sub>	ICP-MS-68N-0.01X-1	ICP-MS-68N-0.1X-1	ICP-MS-68N-1	100 mL
Y Yttrium	2-5% HNO <sub>3</sub>	ICP-MS-69N-0.01X-1	ICP-MS-69N-0.1X-1	ICP-MS-69N-1	100 mL
Zn Zinc	2-5% HNO <sub>3</sub>	ICP-MS-70N-0.01X-1	ICP-MS-70N-0.1X-1	ICP-MS-70N-1	100 mL
Zr Zirconium	2-5% HNO <sub>3</sub>	ICP-MS-71N-0.01X-1	ICP-MS-71N-0.1X-1	ICP-MS-71N-1	100 mL

### Matrix Blanks

#### Nitric Acid Blank

ICP-MS-BLN-1  
ICP-MS-BLN-5

100 mL  
500 mL

5% HNO<sub>3</sub> in 18 Megohm ASTM Type I deionized Water

#### Hydrochloric Acid Blank

ICP-MS-BLH-1  
ICP-MS-BLH-5

100 mL  
500 mL

5% HCl in 18 Megohm ASTM Type I deionized Water

#### Water Blank

ICP-MS-BLW-1  
ICP-MS-BLW-5

100 mL  
500 mL

18 Megohm ASTM Type I deionized Water

Blanks are prepared from the same water source and acids as your standards and therefore provide a consistent matrix. They are excellent as a blank, for preparing a standard curve, or as a diluent for standards and samples.



# AA

## Single Element, Matrix Modifiers and Blanks

- Traceable to NIST reference materials
- 18 Megohm deionized water

- Certificate of Analysis included
- Concentration verified by instrumental analysis

- Minimum 3 year shelf life

### Single Element AA

Element Matrix		1000 µg/mL		Element Matrix		1000 µg/mL	
		Cat. No.	Unit			Cat. No.	Unit
<b>Al Aluminum</b>		AA01N-1	100 mL	<b>Mo Molybdenum</b>		AA35W-1	100 mL
2-5% Nitric acid		AA01N-5	500 mL	Water tr. NH <sub>4</sub> OH		AA35W-5	500 mL
<b>Sb Antimony</b>		AA02N-1	100 mL	<b>Ni Nickel</b>		AA37N-1	100 mL
2-5% HNO <sub>3</sub> tr. Tartaric acid		AA02N-5	500 mL	2-5% Nitric acid		AA37N-5	500 mL
<b>As Arsenic</b>		AA03N-1	100 mL	<b>P Phosphorus</b>		AA41W-1	100 mL
2-5% Nitric acid		AA03N-5	500 mL	Water		AA41W-5	500 mL
<b>Ba Barium</b>		AA04N-1	100 mL	<b>K Potassium</b>		AA43N-1	100 mL
2-5% Nitric acid		AA04N-5	500 mL	2-5% Nitric acid		AA43N-5	500 mL
<b>B Boron</b>		AA07W-1	100 mL	<b>Se Selenium</b>		AA51N-1	100 mL
Water tr. NH <sub>4</sub> OH		AA07W-5	500 mL	2-5% Nitric acid		AA51N-5	500 mL
<b>Cd Cadmium</b>		AA08N-1	100 mL	<b>Si Silicon</b>		AA52W-1	100 mL
2-5% Nitric acid		AA08N-5	500 mL	Water tr. HF		AA52W-5	500 mL
<b>Ca Calcium</b>		AA09N-1	100 mL	<b>Ag Silver</b>		AA53N-1	100 mL
2-5% Nitric acid		AA09N-5	500 mL	2-5% Nitric acid		AA53N-5	500 mL
<b>Cr Chromium</b>		AA13N-1	100 mL	<b>Na Sodium</b>		AA54N-1	100 mL
2-5% Nitric acid		AA13N-5	500 mL	2-5% Nitric acid		AA54N-5	500 mL
<b>Co Cobalt</b>		AA14N-1	100 mL	<b>Sr Strontium</b>		AA55N-1	100 mL
2-5% Nitric acid		AA14N-5	500 mL	2-5% Nitric acid		AA55N-5	500 mL
<b>Cu Copper</b>		AA15N-1	100 mL	<b>S Sulfur</b>		AA56W-1	100 mL
2-5% Nitric acid		AA15N-5	500 mL	Water		AA56W-5	500 mL
<b>Fe Iron</b>		AA27N-1	100 mL	<b>Tl Thallium</b>		AA60N-1	100 mL
2-5% Nitric acid		AA27N-5	500 mL	2-5% Nitric acid		AA60N-5	500 mL
<b>Pb Lead</b>		AA29N-1	100 mL	<b>Sn Tin</b>		AA63N-1	100 mL
2-5% Nitric acid		AA29N-5	500 mL	2-5% Nitric acid tr. HF		AA63N-5	500 mL
<b>Li Lithium</b>		AA30N-1	100 mL	<b>Ti Titanium</b>		AA64W-1	100 mL
2-5% Nitric acid		AA30N-5	500 mL	Water tr. HF		AA64W-5	500 mL
<b>Mg Magnesium</b>		AA32N-1	100 mL	<b>V Vanadium</b>		AA67N-1	100 mL
2-5% Nitric acid		AA32N-5	500 mL	5-10% Nitric acid		AA67N-5	500 mL
<b>Mn Manganese</b>		AA33N-1	100 mL	<b>Y Yttrium</b>		AA69N-1	100 mL
2-5% Nitric acid		AA33N-5	500 mL	2-5% Nitric acid		AA69N-5	500 mL
<b>Hg Mercury</b>		AA34N-R-1	100 mL	<b>Zn Zinc</b>		AA70N-1	100 mL
2-5% Nitric acid		AA34N-R-5	500 mL	2-5% Nitric acid		AA70N-5	500 mL

### Matrix Modifier Solutions for Graphite Furnace AA

These Matrix Modifiers enhance sensitivity and suppress background interferences observed in trace metal analysis.

Modifier Description	Modifier Source	Cat. No.	Unit
<b>Ammonium dihydrogen phosphate</b> 40% in Water	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	MOD-02-0.5	50 mL
		MOD-02-1	100 mL
<b>Ammonium nitrate</b> 5% in Water	NH <sub>4</sub> NO <sub>3</sub>	MOD-03-0.5	50 mL
		MOD-03-1	100 mL
<b>Magnesium nitrate</b> 2% Magnesium in 5% HNO <sub>3</sub>	Mg(NO <sub>3</sub> ) <sub>2</sub>	MOD-07-0.5	50 mL
		MOD-07-1	100 mL
<b>Nickel nitrate</b> 5% Nickel in 5% HNO <sub>3</sub>	Ni(NO <sub>3</sub> ) <sub>2</sub>	MOD-08-0.5	50 mL
		MOD-08-1	100 mL
<b>Palladium nitrate</b> 0.2% Palladium in 5% HNO <sub>3</sub>	Pd(NO <sub>3</sub> ) <sub>2</sub>	MOD-09A-0.5	50 mL
		MOD-09A-1	100 mL

Contact our Inorganic Technical Service Department if you require a different matrix modifier

### Calibration and Matrix Blanks

#### Nitric Acid Blank

CLP-BLN-5 500 mL  
CLP-BLN-L-VAP 1L (2 x 500 mL)  
5% HNO<sub>3</sub> in 18 Megohm ASTM Type I deionized Water

#### Hydrochloric Acid Blank

CLP-BLH-5 500 mL  
CLP-BLH-L-VAP 1L (2 x 500 mL)  
5% HCl in 18 Megohm ASTM Type I deionized Water

#### Water Blank

CLP-BLW-5 500 mL  
CLP-BLW-L-VAP 1L (2 x 500 mL)  
18 Megohm ASTM Type I deionized Water

# Ion Chromatography

## Anions

- 99.99% High purity starting materials
- 18 Megohm, ASTM type I deionized water
- Packaged in pre-cleaned high quality HDPE bottles
- Ready-To-Use mixes and calibration Sets
- Final solution is filtered through a 0.2 µm filter to eliminate contaminants (such as suspended solids and microbes). This extends shelf life and protects your column.
- Standards may be used for other "Classical" or "Wet" methods

### Anion Singles

Water Matrix	100 µg/mL		200 µg/mL		1000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Acetate	IC-ACET-1X-1	100 mL	---	---	IC-ACET-10X-1	100 mL
	IC-ACET-1X-5	500 mL	---	---	IC-ACET-10X-5	500 mL
Bromate	---	---	---	---	IC-BROM-10X-1	100 mL
	---	---	---	---	IC-BROM-10X-5	500 mL
Bromide (Br)	IC-BR-1X-1	100 mL	IC-BR-2X-1	100 mL	IC-BR-10X-1	100 mL
	IC-BR-1X-5	500 mL	IC-BR-2X-5	500 mL	IC-BR-10X-5	500 mL
Citrate	---	---	---	---	IC-CITR-10X-1	100 mL
Chlorate	IC-CHLR-1X-1	100 mL	---	---	IC-CHLR-10X-1	100 mL
	IC-CHLR-1X-5	500 mL	---	---	IC-CHLR-10X-5	500 mL
Chloride (Cl)	IC-CL-1X-1	100 mL	IC-CL-2X-1	100 mL	IC-CL-10X-1	100 mL
	IC-CL-1X-5	500 mL	IC-CL-2X-5	500 mL	IC-CL-10X-5	500 mL
Chlorite	---	---	---	---	IC-CHLT-10X-1	100 mL
Chromate	---	---	---	---	IC-CHRM-10X-1	100 mL
	---	---	---	---	IC-CHRM-10X-5	500 mL
Fluoride (F)	IC-F-1X-1	100 mL	IC-F-2X-1	100 mL	IC-F-10X-1	100 mL
	IC-F-1X-5	500 mL	IC-F-2X-5	500 mL	IC-F-10X-5	500 mL
Formate	IC-FORM-1X-1	100 mL	---	---	IC-FORM-10X-1	100 mL
	IC-FORM-1X-5	500 mL	---	---	IC-FORM-10X-5	500 mL
Glycolate	---	---	---	---	IC-GLYC-10X-1	100 mL
Iodide	---	---	---	---	IC-I-10X-1	100 mL
Lactate	---	---	---	---	IC-LACT-10X-1	100 mL
Malate	---	---	---	---	IC-MALA-10X-1	100 mL
Maleate	---	---	---	---	IC-MALE-R-10X-1	100 mL
Nitrate (NO <sub>3</sub> )	IC-NO3-1X-1	100 mL	IC-NO3-2X-1	100 mL	IC-NO3-10X-1	100 mL
	IC-NO3-1X-5	500 mL	IC-NO3-2X-5	500 mL	IC-NO3-10X-5	500 mL
Nitrate-Nitrogen (NO <sub>3</sub> -N) †	IC-NO3-N-1X-1	100 mL	---	---	IC-NO3-N-10X-1	100 mL
	IC-NO3-N-1X-5	500 mL	---	---	IC-NO3-N-10X-5	500 mL
Nitrite (NO <sub>2</sub> )	IC-NO2-1X-1	100 mL	IC-NO2-2X-1	100 mL	IC-NO2-10X-1	100 mL
	IC-NO2-1X-5	500 mL	IC-NO2-2X-5	500 mL	IC-NO2-10X-5	500 mL
Nitrite-Nitrogen (NO <sub>2</sub> -N) †	IC-NO2-N-1X-1	100 mL	---	---	IC-NO2-N-10X-1	100 mL
	IC-NO2-N-1X-5	500 mL	---	---	IC-NO2-N-10X-5	500 mL
Oxalate	IC-OXAL-1X-1	100 mL	---	---	IC-OXAL-10X-1	100 mL
	IC-OXAL-1X-5	500 mL	---	---	IC-OXAL-10X-5	500 mL
Perchlorate	---	---	---	---	IC-PER-10X-1	100 mL
Phthalate	---	---	---	---	IC-PHTH-10X-1	100 mL
Phosphate (PO <sub>4</sub> )	IC-PO4-1X-1	100 mL	IC-PO4-2X-1	100 mL	IC-PO4-10X-1	100 mL
	IC-PO4-1X-5	500 mL	IC-PO4-2X-5	500 mL	IC-PO4-10X-5	500 mL
Phosphate-Phosphorus (PO <sub>4</sub> -P) †	IC-PO4-P-1X-1	100 mL	---	---	IC-PO4-P-10X-1	100 mL
	IC-PO4-P-1X-5	500 mL	---	---	IC-PO4-P-10X-5	500 mL
Propionate	---	---	---	---	IC-PROP-10X-1	100 mL
Succinate	---	---	---	---	IC-SUCC-10X-1	100 mL
Sulfate (SO <sub>4</sub> )	IC-SO4-1X-1	100 mL	IC-SO4-2X-1	100 mL	IC-SO4-10X-1	100 mL
	IC-SO4-1X-5	500 mL	IC-SO4-2X-5	500 mL	IC-SO4-10X-5	500 mL
Sulfate-Sulfur (SO <sub>4</sub> -S) †	IC-SO4-S-1X-1	100 mL	---	---	IC-SO4-S-10X-1	100 mL
	IC-SO4-S-1X-5	500 mL	---	---	IC-SO4-S-10X-5	500 mL
Sulfide Dilute NaOH, stabilizer *	---	---	---	---	IC-SULF-10X-20ML	20 mL
	---	---	---	---	IC-SULF-10X-20ML-VAP	5 x 20 mL
Tartrate	---	---	---	---	IC-TART-10X-1	100 mL
Thiocyanate	---	---	---	---	IC-THIOC-10X-1	100 mL
Thiosulfate	---	---	---	---	IC-THIOS-10X-1	100 mL

† Calculated as the element \* The matrix used in this standard might interfere with some analytical methods.

# Ion Chromatography

## Anion Sets, Organic Acid Salts, Perchlorate and Eluents

### Anion Sets

<b>IC-AN-1X-1-SET</b>	7 x 100 mL	<b>IC-AN-R-10X-1-SET</b>	7 x 100 mL
<b>IC-AN-1X-5-SET</b>	7 x 500 mL	<b>IC-AN-R-10X-5-SET</b>	7 x 500 mL
Each at 100 µg/mL in Water		Each at 1000 µg/mL	
<b>IC-AN-2X-1-SET</b>	7 x 100 mL	Fluoride (F)	Bromide (Br)
<b>IC-AN-2X-5-SET</b>	7 x 500 mL	Chloride (Cl)	Phosphate-Phosphorus (PO <sub>4</sub> -P)
Each at 200 µg/mL in Water		Nitrite-Nitrogen (NO <sub>2</sub> -N)	Sulfate-Sulfur (SO <sub>4</sub> -S)
<b>IC-AN-10X-1-SET</b>	7 x 100 mL	Nitrate-Nitrogen (NO <sub>3</sub> -N)	
<b>IC-AN-10X-5-SET</b>	7 x 500 mL		
Each at 1000 µg/mL in Water			
Fluoride (F)	Bromide (Br)		
Chloride (Cl)	Phosphate (PO <sub>4</sub> )		
Nitrite (NO <sub>2</sub> )	Sulfate (SO <sub>4</sub> )		
Nitrate (NO <sub>3</sub> )			

### Organic Acid Salt Standards

Water Matrix	100 µg/mL				1000 µg/mL			
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
<b>Formate</b>	IC-FORM-1X-1	100 mL	IC-FORM-1X-5	500 mL	IC-FORM-10X-1	100 mL	IC-FORM-10X-5	500 mL
<b>Acetate</b>	IC-ACET-1X-1	100 mL	IC-ACET-1X-5	500 mL	IC-ACET-10X-1	100 mL	IC-ACET-10X-5	500 mL
<b>Oxalate</b>	IC-OXAL-1X-1	100 mL	IC-OXAL-1X-5	500 mL	IC-OXAL-10X-1	100 mL	IC-OXAL-10X-5	500 mL
<b>Chromate</b>	-----	----	-----	----	IC-CHRM-10X-1	100 mL	IC-CHRM-10X-5	500 mL
<b>Glycolate</b>	-----	----	-----	----	IC-GLYC-10X-1	100 mL	-----	----
<b>Lactate</b>	-----	----	-----	----	IC-LACT-10X-1	100 mL	-----	----
<b>Malate</b>	-----	----	-----	----	IC-MALA-10X-1	100 mL	-----	----
<b>Maleate</b>	-----	----	-----	----	IC-MALE-R-10X-1	100 mL	-----	----
<b>Phthalate</b>	-----	----	-----	----	IC-PHTH-10X-1	100 mL	-----	----
<b>Propionate</b>	-----	----	-----	----	IC-PROP-10X-1	100 mL	-----	----
<b>Succinate</b>	-----	----	-----	----	IC-SUCC-10X-1	100 mL	-----	----
<b>Tartrate</b>	-----	----	-----	----	IC-TART-10X-1	100 mL	-----	----

### Method 314.0 Perchlorate in Drinking Water by IC

Perchlorate has become an analyte of environmental interest since being detected in a number of drinking and groundwater supplies located in Midwestern states. EPA method 314.0 was released as an approved method to achieve the required sensitivity.

#### Perchlorate Standard

**IC-PER-10X-1**      100 mL  
1000 µg/mL in Water  
Perchlorate

#### Conductivity Meter

**Calibration Standard**  
**M-314.0-CMCS-1**      100 mL  
1410 µs/cm @ 25°C in Water

#### Mixed Common

**Anion Stock**  
**M-314.0-MCA-250X-1**      100 mL  
25 mg/mL each in Water      3 comps.  
Chloride      Carbonate  
Sulfate

### Ion Chromatography Eluents

	Cat. No.	Unit		Cat. No.	Unit
<b>0.5 M Sodium bicarbonate</b> (100X concentrate)	IC-ELU-01-1	100 mL	<b>0.5 M Sodium carbonate</b> (100X concentrate)	IC-ELU-02-1	100 mL
	IC-ELU-01-1-PAK	5 x 100 mL		IC-ELU-02-1-PAK	5 x 100 mL

#### Technical Note

Ready to dilute concentrates. Open a fresh bottle and dilute the volume 100 mL to 10 L and be assured of a fresh uncontaminated mobile phase

# Ion Chromatography

## Anions

### Anion Mixes

#### Anion Mix #1

IC-MAN-01-1 100 mL  
At stated conc. (µg/mL) in Water  
5 comps.

Fluoride (F)	20
Chloride (Cl)	30
Nitrate (NO <sub>3</sub> )	100
Phosphate (PO <sub>4</sub> )	150
Sulfate (SO <sub>4</sub> )	150

#### Anion Mix #2

IC-MAN-02-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	100
Chloride (Cl)	200
Bromide (Br)	400
Nitrate (NO <sub>3</sub> )	400
Phosphate (PO <sub>4</sub> )	600
Sulfate (SO <sub>4</sub> )	400

#### Anion Mix #3

IC-MAN-03-1 100 mL  
At stated conc. (µg/mL) in Water  
3 comps.

Fluoride (F)	100
Chloride (Cl)	100
Sulfate (SO <sub>4</sub> )	100

#### Anion Mix #4

IC-MAN-04-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	100
Chloride (Cl)	100
Bromide (Br)	100
Nitrate (NO <sub>3</sub> )	100
Phosphate (PO <sub>4</sub> )	100
Sulfate (SO <sub>4</sub> )	100

#### Anion Mix #6

IC-MAN-06-R1-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	1
Chloride (Cl)	5
Bromide (Br)	5
Nitrate (NO <sub>3</sub> )	5
Phosphate (PO <sub>4</sub> )	5
Sulfate (SO <sub>4</sub> )	10

#### Anion Mix #7

IC-MAN-07-R1-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	1
Chloride (Cl)	10
Bromide (Br)	10
Nitrate (NO <sub>3</sub> )	10
Phosphate (PO <sub>4</sub> )	10
Sulfate (SO <sub>4</sub> )	10

#### Anion Mix #8

IC-MAN-08-R1-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	10
Chloride (Cl)	20
Bromide (Br)	20
Nitrate (NO <sub>3</sub> )	20
Phosphate (PO <sub>4</sub> )	20
Sulfate (SO <sub>4</sub> )	20

#### Anion Mix #9

IC-MAN-09-R1-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	20
Chloride (Cl)	40
Bromide (Br)	40
Nitrate (NO <sub>3</sub> )	40
Phosphate (PO <sub>4</sub> )	40
Sulfate (SO <sub>4</sub> )	40

#### Anion Mix #10

IC-MAN-10-R1-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	25
Chloride (Cl)	50
Bromide (Br)	50
Nitrate (NO <sub>3</sub> )	50
Phosphate (PO <sub>4</sub> )	50
Sulfate (SO <sub>4</sub> )	50

#### Technical Note

To enhance the shelf life and stability of IC products, Nitrate has been removed from mixes that contain Nitrate.

#### Dichloroacetate Surrogate Standard

M-300.1-SS 100 mL  
0.5 mg/mL Dichloroacetate in Water

#### Anion Mix #11

IC-MAN-11-1 100 mL  
At stated conc. (µg/mL) in Water  
5 comps.

Chloride (Cl)	1000
Bromide (Br)	1000
Nitrate (NO <sub>3</sub> )	1000
Phosphate (PO <sub>4</sub> )	1000
Sulfate (SO <sub>4</sub> )	1000

#### Anion Mix #12

IC-MAN-12-1 100 mL  
At stated conc. (µg/mL) in Water  
5 comps.

Chloride (Cl)	15
Bromide (Br)	15
Nitrate (NO <sub>3</sub> )	15
Phosphate (PO <sub>4</sub> )	15
Sulfate (SO <sub>4</sub> )	15

#### Anion Mix #13

IC-MAN-13-1 100 mL  
At stated conc. (µg/mL) in Water  
3 comps.

Fluoride (F)	25
Chloride (Cl)	50
Sulfate (SO <sub>4</sub> )	100

Anion Mix #14-R2 plus  
IC-NO2-N-1X is perfect for  
Method 300.1

#### Anion Mix #14 Revised

IC-MAN-14-R2-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	20
Chloride (Cl)	30
Bromide (Br)	100
Nitrogen-Nitrate (NO <sub>3</sub> -N)	100
Phosphorus-Phosphate (PO <sub>4</sub> -P)	150
Sulfate (SO <sub>4</sub> )	150

#### Nitrite

IC-NO2-N-1X-1 100 mL  
Nitrite (NO<sub>2</sub>-N) 100 µg/mL

#### Anion Mix #14

IC-MAN-14-R3-1 100 mL  
At stated conc. (µg/mL) in Water  
6 comps.

Fluoride (F)	20
Chloride (Cl)	30
Bromide (Br)	100
Nitrate (NO <sub>3</sub> )	100
Phosphate (PO <sub>4</sub> )	150
Sulfate (SO <sub>4</sub> )	150

#### Anion Mix #15

IC-MAN-15-R2-1 100 mL  
At stated conc. (µg/mL) in Water  
3 comps.

Fluoride (F)	100
Nitrate (NO <sub>3</sub> )	100
Phosphate (PO <sub>4</sub> )	100

#### Anion Mix #18

IC-MAN-18-R1-1 100 mL  
At stated conc. (µg/mL) in Water  
5 comps.

Fluoride (F)	100
Chloride (Cl)	100
Nitrate (NO <sub>3</sub> )	100
Phosphate (PO <sub>4</sub> )	100
Sulfate (SO <sub>4</sub> )	100

#### Technical Note

Several Nitrite concentrations that can be added just prior to analysis for maximum stability.

#### Nitrite

IC-NO2-10X-1 100 mL	1000 µg/mL
IC-NO2-1X-1 100 mL	100 µg/mL
IC-NO2-0.1X-1 100 mL	10 µg/mL

### Merck Equivalent Multi-Element Anion Standards

#### Anion Multi-Element Std I

MES-AN-01-1 100 mL  
MES-AN-01-5 500 mL  
At stated conc. (µg/mL) 3 comps.  
in Water

Fluoride (F)	1000
Phosphate (PO <sub>4</sub> )	1000
Bromide (Br)	1000

#### Anion Multi-Element Std II

MES-AN-02-1 100 mL  
MES-AN-02-5 500 mL  
At stated conc. (µg/mL) 3 comps.  
in Water

Chloride (Cl)	1000
Nitrate (NO <sub>3</sub> )	1000
Sulfate (SO <sub>4</sub> )	1000

#### IC Multi-Element Std I

MES-IC-01-1 100 mL  
MES-IC-01-5 500 mL  
At stated conc. (µg/mL) 5 comps.  
Water

Fluoride (F)	100
Chloride (Cl)	250
Nitrate (NO <sub>3</sub> )	500
Sulfate (SO <sub>4</sub> )	500
Phosphate (PO <sub>4</sub> )	1000

#### IC Multi-Element Std V

MES-IC-05-1 100 mL  
MES-IC-05-5 500 mL  
At stated conc. (µg/mL) 6 comps.  
Water

Fluoride (F)	10
Bromide (Br)	10
Nitrate (NO <sub>3</sub> )	50
Phosphate (PO <sub>4</sub> )	50
Chloride (Cl)	100
Sulfate (SO <sub>4</sub> )	200

# Ion Chromatography

## Cations

### Ion Chrom - Cation Singles

Matrix	100 µg/mL		1000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit
<b>Calcium (Ca)</b>	IC-CA-1X-1	100 mL	IC-CA-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-CA-1X-5	500 mL	IC-CA-10X-5	500 mL
<b>Ammonium (NH<sub>4</sub>) *</b>	IC-NH4-1X-1	100 mL	IC-NH4-10X-1 †	100 mL
Water	IC-NH4-1X-5	500 mL	IC-NH4-10X-5 †	500 mL
<b>Ammonium-Nitrogen (NH<sub>4</sub>-N) †</b>	IC-NH4-N-1X-1	100 mL	IC-NH4-N-10X-1	100 mL
Water	IC-NH4-N-1X-5	500 mL	IC-NH4-N-10X-5	500 mL
<b>Magnesium (Mg)</b>	IC-MG-1X-1	100 mL	IC-MG-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-MG-1X-5	500 mL	IC-MG-10X-5	500 mL
<b>Potassium (K)</b>	IC-K-1X-1	100 mL	IC-K-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-K-1X-5	500 mL	IC-K-10X-5	500 mL
<b>Sodium (Na)</b>	IC-NA-1X-1	100 mL	IC-NA-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-NA-1X-5	500 mL	IC-NA-10X-5	500 mL
<b>Lithium (Li)</b>	IC-LI-1X-1	100 mL	IC-LI-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-LI-1X-5	500 mL	IC-LI-10X-5	500 mL
<b>Barium (Ba)</b>	IC-BA-1X-1	100 mL	IC-BA-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-BA-1X-5	500 mL	IC-BA-10X-5	500 mL
<b>Strontium (Sr)</b>	IC-SR-1X-1	100 mL	IC-SR-10X-1	100 mL
Water, tr. HNO <sub>3</sub>	IC-SR-1X-5	500 mL	IC-SR-10X-5	500 mL
<b>Sets of items listed above</b>	IC-CAT-1X-1-SET	<b>8 x 100 mL</b>	IC-CAT-10X-1-SET	<b>8 x 100 mL</b>
	IC-CAT-1X-5-SET	<b>8 x 500 mL</b>	IC-CAT-10X-5-SET	<b>8 x 500 mL</b>

\* 1,000 µg/mL as Ammonium (NH<sub>4</sub>) Other Nitrogen species equivalents are: NH<sub>3</sub> (Ammonia) = 944 µg/mL and N (Nitrogen) = 776 µg/mL

† Calculated as the element

### Ion Chrom - Cation Mixes

#### Cation Mix #1

IC-MCA-01-1 **100 mL**  
At stated conc. (µg/mL) in  
Dilute HNO<sub>3</sub> 6 comps.

Calcium (Ca)	1000
Ammonium (NH <sub>4</sub> )	400
Magnesium (Mg)	200
Potassium (K)	200
Sodium (Na)	200
Lithium (Li)	50

#### Cation Mix #3

IC-MCA-03-1 **100 mL**  
At stated conc. (µg/mL) in  
Dilute HNO<sub>3</sub> 4 comps.

Calcium (Ca)	100
Potassium (K)	100
Sodium (Na)	50
Lithium (Li)	10

#### Cation Mix #5

IC-MCA-05-1 **100 mL**  
At stated conc. (µg/mL) in  
Dilute HNO<sub>3</sub> 4 comps.

Ammonium (NH <sub>4</sub> )	3
Potassium (K)	6
Sodium (Na)	3
Lithium (Li)	0.5

#### Cation Mix #6

IC-MCA-06-1 **100 mL**  
At stated conc. (µg/mL) in  
Dilute HNO<sub>3</sub> 6 comps.

Calcium (Ca)	2
Ammonium (NH <sub>4</sub> )	1.5
Magnesium (Mg)	2
Potassium (K)	2.5
Sodium (Na)	1.5
Lithium (Li)	0.2

#### Cation Mix #2

IC-MCA-02-1 **100 mL**  
At stated conc. (µg/mL) in  
Dilute HNO<sub>3</sub> 6 comps.

Calcium (Ca)	100
Ammonium (NH <sub>4</sub> )	100
Magnesium (Mg)	100
Potassium (K)	100
Sodium (Na)	100
Lithium (Li)	100

#### Cation Mix #4

IC-MCA-04-1 **100 mL**  
At stated conc. (µg/mL) in  
Dilute HNO<sub>3</sub> 4 comps.

Calcium (Ca)	400
Magnesium (Mg)	200
Barium (Ba)	1600
Strontium (Sr)	600

Traceability to NIST SRMs by  
Wet Chemical / Gravimetric Assay

Traceability to NIST SRMs by  
Instrumental Analysis

Reference to NIST Traceability during  
product preparation

### Merck Multi-Element Ion Chrom Standards

#### IC Multi-Element Std VI

MES-IC-06-1 **100 mL**  
MES-IC-06-5 **500 mL**  
At stated conc. (µg/mL) 5 comps.  
Water, tr. HNO<sub>3</sub>

Ammonium (NH <sub>4</sub> )	10
Potassium (K)	50
Sodium (Na)	100
Calcium (Ca)	100
Magnesium (Mg)	100

#### IC Multi-Element Std VII

MES-IC-07-1 **100 mL**  
MES-IC-07-5 **500 mL**  
At stated conc. (µg/mL) 9 comps.  
Water, tr. HNO<sub>3</sub>

Ammonium (NH <sub>4</sub> )	100
Barium (Ba)	100
Calcium (Ca)	100
Potassium (K)	100
Lithium (Li)	100
Sodium (Na)	100
Magnesium (Mg)	100
Manganese (Mn)	100
Strontium (Sr)	100

# Wet Chemicals

Our Wet Chemical Standards are prepared from the highest quality raw material according to ASTM, EPA or "Standard Methods" <sup>1</sup> procedures. All balances used in preparation are calibrated against NIST traceable weights. Each batch of finished product is analyzed to verify concentration against NIST standards when possible. All of our Wet Chemical standards are subject to the same rigorous quality control procedures as our ICP and IC standards.

1 Standard Methods for the Examination of Water and Wastewater. American Public Health Association, American Water Works Association, Water Environment Federation

## Inorganic Constituents

### Bromide

IC-BR-10X-1 100 mL  
1000 µg/mL Bromide in Water

### Method 300.1 Ion Chrom Standard Revised

IC-MAN-14-R2-1 100 mL  
At stated conc. (µg/mL) in Water 6 comps.

F (Fluoride)	20
Cl (Chloride)	30
Br (Bromide)	100
NO <sub>3</sub> -N (Nitrate-Nitrogen)	100
PO <sub>4</sub> -P (Phosphate-Phosphorus)	150
SO <sub>4</sub> (Sulfate)	150

#### Technical Note

This product was designed to more closely meet the EPA standard by having the concentrations for the nutrients calculated back to the element rather than the anion.

### Dichloroacetate Surrogate Standard

M-300.1-SS 100 mL  
0.5 mg/mL Dichloroacetate in Water

### Cyanide

WC-CN-1X-1 100 mL  
WC-CN-1X-5 500 mL  
100 µg/mL Cyanide in 2% NaOH

WC-CN-10X-1 100 mL  
WC-CN-10X-5 500 mL  
1000 µg/mL Cyanide in 2% NaOH

### Chloride

IC-CL-10X-1 100 mL  
1000 µg/mL Chloride in Water

### Total Residual Chlorine

WC-TRC-10X-10ML 10 mL  
1000 µg/mL Chlorine in Water

### Fluoride

IC-F-10X-1 100 mL  
1000 µg/mL Fluoride in Water

### Iodide

IC-I-10X-1 100 mL  
1000 µg/mL Iodide in Water

### pH

WC-PH-4-1 100 mL  
WC-PH-4-5 500 mL  
pH of 4.0 in Water

WC-PH-7-1 100 mL  
WC-PH-7-5 500 mL  
pH of 7.0 in Water

WC-PH-10-1 100 mL  
WC-PH-10-5 500 mL  
pH of 10.0 in Water

### Phosphorus - Total

IC-PO4-P-10X-1 100 mL  
1000 µg/mL Phosphorus in Water

#### Technical Note

Can also be used for ortho-phosphate analysis.

#### Technical Note

Nitrogen Species are all calculated back to Nitrogen - Not the Anion or Cation species.

### Nitrogen - Ammonium

IC-NH4-N-10X-1 100 mL  
1000 µg/mL Ammonium-Nitrogen in Water

### Nitrogen - Nitrite

IC-NO2-N-10X-1 100 mL  
1000 µg/mL Nitrite-Nitrogen in Water

### Nitrogen - Nitrate

IC-NO3-N-10X-1 100 mL  
1000 µg/mL Nitrate-Nitrogen in Water

### Silica

WC-SIO2-10X-1 100 mL  
1000 µg/mL as Silica (SiO<sub>2</sub>) in Water tr. HF

### Sulfate

IC-SO4-10X-1 100 mL  
1000 µg/mL Sulfate (SO<sub>4</sub>) in Water

### Hexavalent Chromium (Cr<sup>+6</sup>)

WC-HEX-10X-1 100 mL  
1000 µg/mL in Water

## Physical & Aggregate Properties

These Standards are concerned primarily with measuring physical characteristics of a sample as opposed to the chemical concentrations. These analytes are measured frequently in both drinking and waste waters.

### Turbidity

WC-TURB-4X-1 100 mL  
400 NTU non-ratio Turbidity Standard

Made with styrene divinylbenzene copolymer beads. Please verify that this will work with your turbidity meter. Do not shake prior to use.

### Alkalinity

WC-ALK-10X-1 100 mL  
1000 µg/mL CaCO<sub>3</sub> to pH 4.5

### Hardness

WC-HARD-10X-1 100 mL  
1000 µg/mL equivalent CaCO<sub>3</sub>

A combination of Ca and Mg to give an approx. concentration of 1000 µg/mL CaCO<sub>3</sub>. Hardness µg/mL equivalent CaCO<sub>3</sub> = 2.497 [Ca µg/mL] + 4.118 [Mg µg/mL]

### Conductivity

At stated conc. (µmhos) in Water

WC-COND-10X-1 1,000 100 mL  
WC-COND-10X-5 1,000 500 mL

WC-COND-1.47X-1 147 100 mL  
WC-COND-1.47X-5 147 500 mL

WC-COND-14.13X-1 1,413 100 mL  
WC-COND-14.13X-5 1,413 500 mL

WC-COND-129X-1 12,900 100 mL  
WC-COND-129X-5 12,900 500 mL

### Methylene Blue Activated Substance (MBAS)

WC-MBAS-R1-10X-1 100 mL  
1000 µg/mL in Water

### Solids

WC-SOL 1 Unit

3 comps.  
1000 ppm TSS (Total Suspended Solids) and 1000 ppm TDS (Total Dissolved Solids) for a 2000 ppm TS (Total Solids).

Dilute to 100 mL. Rinse vial and cap several times to recover all solids.

### Dissolved Solids

WC-SOL-DS-1 100 mL  
1000 µg/mL in Water

### Suspended Solids

WC-SOL-SS-1 100 mL  
1000 µg/mL in Water

Shake well before pouring and rinse bottle thoroughly to completely transfer contents.

# Wet Chemicals

## Aggregate Organic

Rather than determining individual organic analytes, these Standards are used to determine organic matter in broad categories, based primarily on how they react.

### Biochemical Oxygen Demand (BOD)

**WC-BOD-10ML** 10 mL  
100 µg/mL BOD (After Dilution)

75 mg/L glucose and 75 mg/L glutamic acid provided in a flame sealed ampule. Dilute to 1L immediately before use.

### Absorbable Organic Halogens (AOX)

**WC-AOX-2X-20ML** 20 mL  
**WC-AOX-2X-20ML-VAP** 5 x 20 mL  
200 µg/mL Chlorine in Water

### Oil and Grease

**WC-OILG-10X-1** 100 mL  
1000 µg/mL Total Oil and Grease in n-Propanol

Contains 500 µg/mL vegetable oil and 500 µg/mL petroleum oil. Shake well before use.

### Phenols

**WC-PHEN-10X-1** 100 mL  
1000 µg/mL Phenol in water

### Chemical Oxygen Demand (COD)

**WC-COD-5X-10ML** 10 mL  
500 µg/mL COD in Water

**WC-COD-0.5X-1** 100 mL  
50 µg/mL COD in Water

**WC-COD-1X-1** 100 mL  
100 µg/mL COD in Water

**WC-COD-5X-1** 100 mL  
500 µg/mL COD in Water

**WC-COD-10X-1** 100 mL  
1000 µg/mL COD in Water

**WC-COD-50X-1** 100 mL  
5000 µg/mL COD in Water

**WC-COD-100X-1** 100 mL  
10000 µg/mL COD in Water

### Total Organic Carbon (TOC)

**WC-TOC-1X-1** 100 mL  
100 µg/mL TOC in water, tr. H<sub>2</sub>SO<sub>4</sub>

**WC-TOC-5X-1** 100 mL  
500 µg/mL TOC in water, tr. H<sub>2</sub>SO<sub>4</sub>

**WC-TOC-10X-1** 100 mL  
1000 µg/mL TOC in water, tr. H<sub>2</sub>SO<sub>4</sub>

### Total Inorganic Carbon (TIC)

**WC-TIC-10X-1** 100 mL  
1000 µg/mL Total Inorganic Carbon in Water

### Total Organic Nitrogen (TON)

**WC-TON-10X-1** 100 mL  
1000 µg/mL Total Organic Nitrogen in Water

### Total Kjeldahl Nitrogen (TKN)

**WC-TKN-10X-1** 100 mL  
1000 µg/mL Total Kjeldahl Nitrogen in Water

## D8083 Nitrogen in Water

### Total Nitrogen Stock Calibration Standard

**D-8083-TN-1** 100 mL  
Nitrogen @ 1000 µg/mL in 0.1% Hydrochloric acid

### Total Nitrogen Stock Laboratory Control Standard

**D-8083-LCS-1** 100 mL  
Nitrogen @ 1000 µg/mL in 0.1% Hydrochloric acid

### Stock TON Test Solution

**D-8083-TON-1** 100 mL  
Nitrogen @ 1000 µg/mL in Water

# TPH, Oil and Grease EPA Methods

## Method 1664 Oil, Grease & Total Petroleum Hydrocarbon (TPH)

This Precision and Recovery (PAR) Spiking Solution was developed for Method 1664. This performance based method was developed to replace previous gravimetric procedures incorporating Freon-113 as the extraction solvent for the determination of Oil and Grease and Total Petroleum Hydrocarbons. Each standard is packaged in a flame sealed ampule.

### Precision and Recovery (PAR) Spiking Solutions

<b>M-1664-5ML</b> <b>M-1664-5ML-PAK</b> 4.0 mg/mL each in Acetone	<b>1 x 5 mL</b> <b>SAVE 5 x 5 mL</b> 2 comps.	<b>M-1664-20ML</b> <b>M-1664-20ML-PAK</b> 4.0 mg/mL each in Acetone	<b>1 x 20 mL</b> <b>SAVE 5 x 20 mL</b> 2 comps.
<i>n</i> -Hexadecane	Stearic acid	<i>n</i> -Hexadecane	Stearic acid

## Method 413.2 & 418.1 Total Petroleum Hydrocarbon Analysis by IR REVIEW PRODUCTS REVIEW PRODUCTS

### Oil, Grease & Petroleum Hydrocarbon Concentrates Mix

<b>M-418-CON</b> At stated Vol.%	<b>1 x 1 mL</b> 3 comps.
Chlorobenzene 25.0	<i>n</i> -Hexadecane 37.5
Isooctane 37.5	

### Oil, Grease and Petroleum Hydrocarbon Total Recoverable (IR Method)

<b>M-418-R1</b> <b>M-418-R1-PAK</b> Total 4.13 mg/mL in Freon 113	<b>1 x 1 mL</b> <b>SAVE 5 x 1 mL</b>
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## Method 8440 Total Petroleum Hydrocarbon Analysis

### Total Recoverable Petroleum Hydrocarbon Mix

<b>M-8440</b> <b>M-8440-PAK</b> At stated Wt.% in Tetrachloroethene	<b>1 x 1 mL</b> <b>SAVE 5 x 1 mL</b> 3 comps.
Chlorobenzene 0.10	Isooctane 0.15
<i>n</i> -Hexadecane 0.15	

### Total Petroleum Hydrocarbon Concentrate Mix

<b>M-8440-CON</b> <b>M-8440-CON-PAK</b> At stated Vol.%	<b>1 x 1 mL</b> <b>SAVE 5 x 1 mL</b> 3 comps.
Chlorobenzene 25.0	Isooctane 37.5
<i>n</i> -Hexadecane 37.5	

### Silica Gel Cleanup Calibration Solution

<b>M-8440-SGC</b> <b>M-8440-SGC-PAK</b> 10.0 mg/mL in Tetrachloroethene	<b>1 x 1 mL</b> <b>SAVE 5 x 1 mL</b>
Corn Oil	



# Multi-Element ICP and ICP-MS

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### Custom Formulations

#### Meet your specific needs.

Request a custom formulation on our website or contact our Inorganic Technical Service Department  
email: [inotech@accustandard.com](mailto:inotech@accustandard.com)

Inorganic products containing acid generally require a hazardous fee for air shipments.  
Inorganic products in water generally do not.



# ICP

## Multi-Element QC and Second Source QC

### Quality Control Standards

Quality Control Standards can be used for many different applications. QC Standards are ideal for calibration when performing NPDES monitoring requirements and can be used for standard curve checks, inter-element correction methods, interference checks or any other unique application.

#### QC Standard #1

**QCS-01-1** 100 mL  
**QCS-01-5** 500 mL  
 100 µg/mL each in 5% HNO<sub>3</sub> tr. HF 23 comps.

Antimony (Sb)	Manganese (Mn)
Arsenic (As)	Molybdenum (Mo)
Beryllium (Be)	Nickel (Ni)
Cadmium (Cd)	Phosphorus (P)
Calcium (Ca)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cobalt (Co)	Thallium (Tl)
Copper (Cu)	Tin (Sn)
Iron (Fe)	Titanium (Ti)
Lead (Pb)	Vanadium (V)
Lithium (Li)	Zinc (Zn)
Magnesium (Mg)	

#### QC Standard #2

**QCS-02-1** 100 mL  
**QCS-02-5** 500 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF 7 comps

Aluminum (Al)	100	Silicon (Si) †	500
Barium (Ba)	100	Silver (Ag)	50
Boron (B)	100	Sodium (Na)	100
Potassium (K)	1000		† 1070 µg/mL as SiO <sub>2</sub>

#### QC Standard #2R

**QCS-02-R1-1** 100 mL  
**QCS-02-R1-5** 500 mL  
 100 µg/mL each in 5% HNO<sub>3</sub> tr. HF 7 comps.

Aluminum (Al)	Silicon (Si) †
Barium (Ba)	Silver (Ag)
Boron (B)	Sodium (Na)
Potassium (K)	† 214 µg/mL as SiO <sub>2</sub>

#### QC Standard #3

**QCS-03-1** 100 mL  
**QCS-03-5** 500 mL  
 100 µg/mL each in 5% HNO<sub>3</sub> 15 comps.

Aluminum (Al)	Lead (Pb)
Barium (Ba)	Magnesium (Mg)
Cadmium (Cd)	Manganese (Mn)
Calcium (Ca)	Nickel (Ni)
Chromium (Cr)	Sodium (Na)
Cobalt (Co)	Titanium (Ti)
Copper (Cu)	Zinc (Zn)
Iron (Fe)	

#### QC Standard #4

**QCS-04-1** 100 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 19 comps.

Aluminum (Al)	100	Indium (In)	200
Barium (Ba)	5	Iron (Fe)	15
Beryllium (Be)	1	Lead (Pb)	200
Bismuth (Bi)	200	Manganese (Mn)	5
Boron (B)	15	Nickel (Ni)	50
Cadmium (Cd)	20	Silver (Ag)	50
Chromium (Cr)	25	Strontium (Sr)	1
Cobalt (Co)	20	Thallium (Tl)	40
Copper (Cu)	20	Zinc (Zn)	20
Gallium (Ga)	150		

### Second Source QC Standards

These Alternative Source Standards exactly match a formulation from another source you may be already using. These formulations save you the cost of a custom formulation by providing you with true independent lots.

#### Second Source QC Standard #1

**QCS-ASL-7-1** 100 mL  
**QCS-ASL-7-5** 500 mL  
 At stated conc. (µg/mL) in 2-5% HNO<sub>3</sub> tr. HF 7 comps.

Aluminum (Al)	100	Silicon (Si)	50
Barium (Ba)	100	Silver (Ag)	100
Boron (B)	100	Sodium (Na)	100
Potassium (K)	1000		

#### Second Source QC Standard #2

**QCS-ASL-21-1** 100 mL  
**QCS-ASL-21-5** 500 mL  
 100 µg/mL each in 2-5% HNO<sub>3</sub> tr. HF 21 comps.

Antimony (Sb)	Magnesium (Mg)
Arsenic (As)	Manganese (Mn)
Beryllium (Be)	Molybdenum (Mo)
Cadmium (Cd)	Nickel (Ni)
Calcium (Ca)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cobalt (Co)	Thallium (Tl)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Vanadium (V)
Lead (Pb)	Zinc (Zn)
Lithium (Li)	

#### Second Source QC Standard #3

**QCS-ASL-19-1** 100 mL  
**QCS-ASL-19-5** 500 mL  
 100 µg/mL each in 2-5% HNO<sub>3</sub> tr. HF 19 comps.

Antimony (Sb)	Magnesium (Mg)
Arsenic (As)	Manganese (Mn)
Beryllium (Be)	Molybdenum (Mo)
Cadmium (Cd)	Nickel (Ni)
Calcium (Ca)	Selenium (Se)
Chromium (Cr)	Thallium (Tl)
Cobalt (Co)	Titanium (Ti)
Copper (Cu)	Vanadium (V)
Iron (Fe)	Zinc (Zn)
Lead (Pb)	

- NIST Traceable
- Independent Lots
- Exact Match

Match Other Supplier's Products.  
 Use as a True Second Source.

# ICP

## Screening, Groundwater & Wastewater, SDWA Standards

### Screening Standards

These four Qualitative Standards can be combined to scan samples quickly and easily for elements present. They should be used for element identification only. The concentration of each element is approximately 10 µg/mL. To screen for **all 69 elements** these 4 semi-quantitative standards can be blended together and used immediately.

#### Semi-Quantitative Standard #1

**SQS-01-1** **100 mL**  
10 µg/mL each in 2-5% HNO<sub>3</sub> tr. HF 33 comps.

Aluminum (Al)	Sodium (Na)
Arsenic (As)	Neodymium (Nd)
Barium (Ba)	Phosphorus (P)
Bismuth (Bi)	Lead (Pb)
Calcium (Ca)	Praseodymium (Pr)
Cadmium (Cd)	Scandium (Sc)
Cerium (Ce)	Selenium (Se)
Dysprosium (Dy)	Samarium (Sm)
Erbium (Er)	Strontium (Sr)
Europium (Eu)	Terbium (Tb)
Gallium (Ga)	Thorium (Th)
Gadolinium (Gd)	Thallium (Tl)
Holmium (Ho)	Thulium (Tm)
Indium (In)	Uranium (U)
Lanthanum (La)	Yttrium (Y)
Lutetium (Lu)	Ytterbium (Yb)
Magnesium (Mg)	

#### Semi-Quantitative Standard #2

**SQS-02-R1-1** **100 mL**  
10 µg/mL each in 2-5% HNO<sub>3</sub> tr. HCl tr. HF 33 comps.

Boron (B)	Platinum (Pt)
Beryllium (Be)	Rubidium (Rb)
Cobalt (Co)	Rhenium (Re)
Chromium (Cr)	Rhodium (Rh)
Cesium (Cs)	Ruthenium (Ru)
Copper (Cu)	Sulfur (S)
Iron (Fe)	Antimony (Sb)
Germanium (Ge)	Silicon (Si)
Hafnium (Hf)	Tin (Sn)
Iridium (Ir)	Tantalum (Ta)
Potassium (K)	Tellurium (Te)
Lithium (Li)	Titanium (Ti)
Manganese (Mn)	Vanadium (V)
Molybdenum (Mo)	Tungsten (W)
Niobium (Nb)	Zinc (Zn)
Nickel (Ni)	Zirconium (Zr)
Palladium (Pd)	

#### Semi-Quantitative Standard #3

**SQS-03-1** **100 mL**  
10 µg/mL each in 2-5% HNO<sub>3</sub> 2 comps.

Mercury (Hg) Silver (Ag)

#### Semi-Quantitative Standard #4

**SQS-04-1** **100 mL**

10 µg/mL each in 5% HCl

Gold (Au)

#### Technical Note

To verify screening results, use single element standards to confirm and quantify the concentration.

### Groundwater & Wastewater Standard

#### Trace Metals I

**WPTM-01-1** **100 mL**

**WPTM-01-5** **500 mL**

At stated conc. (µg/mL) in 5% HNO<sub>3</sub>

15 comps.

Aluminum (Al)	500	Cobalt (Co)	100	Mercury (Hg)	5
Arsenic (As)	100	Copper (Cu)	100	Nickel (Ni)	100
Beryllium (Be)	100	Iron (Fe)	100	Selenium (Se)	25
Cadmium (Cd)	25	Lead (Pb)	100	Vanadium (V)	250
Chromium (Cr)	100	Manganese (Mn)	100	Zinc (Zn)	100

### SDWA (Safe Drinking Water Act) Standards

#### Mercury Solution

**SDWA-03-1** **100 mL**

**SDWA-03-5** **500 mL**

10 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

#### Primary Metals for Analysis by ICP-MS

Contains all approved elements

**SDWA-06-MS-1** **100 mL**

**SDWA-06-MS-5** **500 mL**

10 µg/mL each in 2% HNO<sub>3</sub>

11 comps.

Antimony (Sb)	Copper (Cu)
Arsenic (As)	Lead (Pb)
Barium (Ba)	Nickel (Ni)
Beryllium (Be)	Selenium (Se)
Cadmium (Cd)	Thallium (Tl)
Chromium (Cr)	

# ICP

## MISA Test Group 29

### MISA Test Group 29 Analysis Calibration Standards

For use in MISA Test Group 29 Analysis or general use standards. Set of six standards contains 69 elements at 100 µg/mL each. Ideal for the laboratory that wants to analyze for everything.

#### MISA Standard 1

##### Rare Earth Metals

**MISA-01-1** 100 mL  
100 µg/mL each in 5% HNO<sub>3</sub> 18 comps.

Cerium (Ce)	Praseodymium (Pr)
Dysprosium (Dy)	Scandium (Sc)
Erbium (Er)	Samarium (Sm)
Europium (Eu)	Terbium (Tb)
Gadolinium (Gd)	Thorium (Th)
Holmium (Ho)	Thulium (Tm)
Lanthanum (La)	Uranium (U)
Lutetium (Lu)	Ytterbium (Yb)
Neodymium (Nd)	Yttrium (Y)

#### MISA Standard 2

##### Precious Metals

**MISA-02-1** 100 mL  
100 µg/mL each in 10% HCl 6 comps.

Gold (Au)	Platinum (Pt)
Iridium (Ir)	Rhodium (Rh)
Palladium (Pd)	Ruthenium (Ru)

#### MISA Standard 3

##### Tellurium

**MISA-03-1** 100 mL  
100 µg/mL in 10% HCl

Tellurium (Te)

#### MISA Standard 4

##### Alkali, Alkaline Earth, Non-Transition Group

**MISA-04-1** 100 mL  
100 µg/mL each in 10% HNO<sub>3</sub> 16 comps.

Aluminum (Al)	Indium (In)
Arsenic (As)	Lithium (Li)
Barium (Ba)	Magnesium (Mg)
Beryllium (Be)	Potassium (K)
Bismuth (Bi)	Rubidium (Rb)
Calcium (Ca)	Selenium (Se)
Cesium (Cs)	Sodium (Na)
Gallium (Ga)	Strontium (Sr)

#### MISA Standard 5

##### Fluoride Soluble Group

**MISA-05-1** 100 mL  
100 µg/mL each in 5% HNO<sub>3</sub> tr. HF 15 comps.

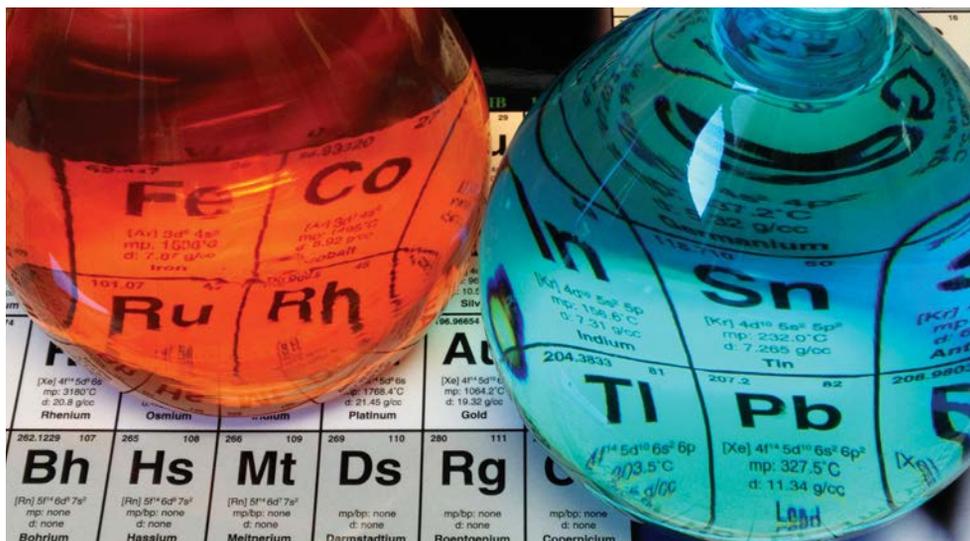
Antimony (Sb)	Silicon (Si)
Boron (B)	Sulfur (S)
Germanium (Ge)	Tantalum (Ta)
Hafnium (Hf)	Tin (Sn)
Molybdenum (Mo)	Titanium (Ti)
Niobium (Nb)	Tungsten (W)
Phosphorus (P)	Zirconium (Zr)
Rhenium (Re)	

#### MISA Standard 6

##### Transition Metals

**MISA-06-1** 100 mL  
100 µg/mL each in 10% HNO<sub>3</sub> 13 comps.

Cadmium (Cd)	Mercury (Hg)
Cobalt (Co)	Nickel (Ni)
Copper (Cu)	Silver (Ag)
Chromium (Cr)	Thallium (Tl)
Iron (Fe)	Vanadium (V)
Lead (Pb)	Zinc (Zn)
Manganese (Mn)	



# ICP

## Contract Laboratory Program (CLP)

### Calibration Check Standards

#### Calibration Standard #1

CLP-CAL-01-1 **100 mL**  
5000 µg/mL each in 5% HNO<sub>3</sub> 4 comps.

Calcium (Ca)	Potassium (K)
Magnesium (Mg)	Sodium (Na)

#### Calibration Standard #2

CLP-CAL-02-1 **100 mL**  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 5 comps.

Chromium (Cr)	100	Silver (Ag)	100
Manganese (Mn)	150	Zinc (Zn)	200
Nickel (Ni)	400		

#### Calibration Standard #3

CLP-CAL-03-1 **100 mL**  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 7 comps.

Aluminum (Al)	2000	Copper (Cu)	250
Barium (Ba)	2000	Iron (Fe)	1000
Beryllium (Be)	50	Vanadium (V)	500
Cobalt (Co)	500		

#### Calibration Standard #4

CLP-CAL-04-1 **100 mL**  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 5 comps.

Arsenic (As)	100	Selenium (Se)	50
Cadmium (Cd)	50	Thallium (Tl)	100
Lead (Pb)	50		

### Interferents Standards

#### Primary Interferents

CLP-PIN-01-1 **100 mL**  
CLP-PIN-01-5 **500 mL**

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 4 comps.

Aluminum (Al)	5000
Calcium (Ca)	5000
Iron (Fe)	2000
Magnesium (Mg)	5000

						Al Aluminium	Si Silicon
25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium
43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin
	76	77	78	79 Au	80 Hg	81 Tl	82 Pb Lead

# ICP

## EPA Method 200.7

### Method 200.7 Calibration Standards

#### Mixed Calibration Standard #1

M-200.7-01-1 100 mL

M-200.7-01-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 50 comps.

Antimony (Sb) 50	Calcium (Ca) 100
Arsenic (As) 100	Copper (Cu) 20
Barium (Ba) 10	Manganese (Mn) 20
Boron (B) 20	Selenium (Se) 50
Cadmium (Cd) 20	Silver (Ag) 5

#### Mixed Calibration Standard #2

M-200.7-02R-1 100 mL

M-200.7-02R-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF  
6 comps.

Lithium (Li) 50	Sodium (Na) 100
Molybdenum (Mo) 100	Strontium (Sr) 10
Potassium (K) 200	Titanium (Ti) 100

#### Mixed Calibration Standard #3

M-200.7-03R-1 100 mL

M-200.7-03R-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 4 comps.

Cerium (Ce) 20	Phosphorus (P) 100
Cobalt (Co) 20	Vanadium (V) 20

#### Mixed Calibration Standard #4

M-200.7-04-1 100 mL

M-200.7-04-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF  
5 comps.

Aluminum (Al) 100	Tin (Sn) 40
Chromium (Cr) 50	Zinc (Zn) 50
Silicon (Si) † 100	† 214 µg/mL as SiO <sub>2</sub>

#### Mixed Calibration Standard #5

M-200.7-05-1 100 mL

M-200.7-05-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 6 comps.

Beryllium (Be) 10	Magnesium (Mg) 100
Iron (Fe) 100	Nickel (Ni) 20
Lead (Pb) 100	Thallium (Tl) 50

### Method 200.7 Instrument Performance Check

#### Instrument Performance Check Standard #1

M-200.7-IPC-01-1

M-200.7-IPC-01-5

At stated conc. (µg/mL) in 5% HNO<sub>3</sub>

100 mL

500 mL

26 comps.

Aluminum (Al) 20	Cobalt (Co) 20	Potassium (K) 100
Arsenic (As) 20	Copper (Cu) 20	Selenium (Se) 20
Barium (Ba) 20	Iron (Fe) 20	Silver (Ag) 2.5
Beryllium (Be) 20	Lead (Pb) 20	Sodium (Na) 20
Boron (B) 20	Lithium (Li) 20	Strontium (Sr) 20
Cadmium (Cd) 20	Magnesium (Mg) 20	Thallium (Tl) 20
Calcium (Ca) 20	Manganese (Mn) 20	Vanadium (V) 20
Cerium (Ce) 20	Nickel (Ni) 20	Zinc (Zn) 20
Chromium (Cr) 20	Phosphorus (P) 100	

#### Instrument Performance Check Standard #2

M-200.7-IPC-02-1

M-200.7-IPC-02-5

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF

100 mL

500 mL

5 comps.

Antimony (Sb) 20	Silicon (Si) † 100	Titanium (Ti) 20
Molybdenum (Mo) 20	Tin (Sn) 20	† 214 µg/mL as SiO <sub>2</sub>

### Method 200.7 Performance Check and Mercury Standard

#### Laboratory Performance Check Standard

Used in demonstrating the initial and continuing verification of the calibration curves by this method.

LPCS-01-1

100 mL

LPCS-01-5

500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF

29 comps.

Aluminum (Al) 20	Manganese (Mn) 20
Antimony (Sb) 20	Molybdenum (Mo) 20
Arsenic (As) 20	Nickel (Ni) 20
Barium (Ba) 20	Phosphorus (P) 100
Beryllium (Be) 20	Potassium (K) 100
Boron (B) 20	Selenium (Se) 20
Cadmium (Cd) 20	Silicon (Si) † 100
Calcium (Ca) 20	Silver (Ag) 5
Chromium (Cr) 20	Sodium (Na) 20
Cobalt (Co) 20	Strontium (Sr) 20
Copper (Cu) 20	Thallium (Tl) 20
Iron (Fe) 20	Tin (Sn) 20
Lead (Pb) 20	Vanadium (V) 20
Lithium (Li) 20	Zinc (Zn) 20
Magnesium (Mg) 20	† 214 µg/mL as SiO <sub>2</sub>

#### Laboratory Performance Check Standard

Same as LPCS-01 with additional Titanium

LPCS-01R-1

100 mL

LPCS-01R-5

500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF

30 comps.

Aluminum (Al) 20	Molybdenum (Mo) 20
Antimony (Sb) 20	Nickel (Ni) 20
Arsenic (As) 20	Phosphorus (P) 100
Barium (Ba) 20	Potassium (K) 100
Beryllium (Be) 20	Selenium (Se) 20
Boron (B) 20	Silicon (Si) † 100
Cadmium (Cd) 20	Silver (Ag) 5
Calcium (Ca) 20	Sodium (Na) 20
Chromium (Cr) 20	Strontium (Sr) 20
Cobalt (Co) 20	Thallium (Tl) 20
Copper (Cu) 20	Tin (Sn) 20
Iron (Fe) 20	Titanium (Ti) 20
Lead (Pb) 20	Vanadium (V) 20
Lithium (Li) 20	Zinc (Zn) 20
Magnesium (Mg) 20	† 214 µg/mL as SiO <sub>2</sub>
Manganese (Mn) 20	

#### Mercury Standard

In separate solution due to incompatibility with other elements.

TCLP-02-1

100 mL

TCLP-02-5

500 mL

20 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

#### Technical Note

The analytes Ca, K, Mg, and Na are not included in the stock solution because their concentrations vary widely in environmental samples. Use M-200.7-SP-02-R to calibrate for these elements.

# ICP

## EPA Method 200.7

### Method 200.7 Fortifying Standards

#### Laboratory Fortifying Stock Solution

Use in preparing the laboratory fortified blank and the laboratory fortified sample matrix.

**LFSS-01-1** 100 mL  
**LFSS-01-5** 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF  
25 comps.

Aluminum (Al)	25	Manganese (Mn)	25
Antimony (Sb)	25	Molybdenum (Mo)	10
Arsenic (As)	25	Nickel (Ni)	25
Barium (Ba)	25	Phosphorus (P)	50
Beryllium (Be)	5	Selenium (Se)	25
Boron (B)	25	Silicon (Si) †	25
Cadmium (Cd)	10	Silver (Ag)	2.5
Chromium (Cr)	25	Strontium (Sr)	25
Cobalt (Co)	10	Thallium (Tl)	25
Copper (Cu)	25	Tin (Sn)	10
Iron (Fe)	25	Vanadium (V)	10
Lead (Pb)	25	Zinc (Zn)	25
Lithium (Li)	25		

† 53.5 µg/mL as SiO<sub>2</sub>

#### Instrument Fortifying Standard

**M-200.7-LFSS-01-1** 100 mL  
**M-200.7-LFSS-01-5** 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF  
26 comps.

Aluminum (Al)	20	Lithium (Li)	20
Arsenic (As)	20	Magnesium (Mg)	20
Barium (Ba)	20	Manganese (Mn)	20
Beryllium (Be)	20	Nickel (Ni)	20
Boron (B)	20	Phosphorus (P)	20
Cadmium (Cd)	20	Potassium (K)	500
Calcium (Ca)	20	Selenium (Se)	20
Cerium (Ce)	20	Silver (Ag)	7.5
Chromium (Cr)	20	Sodium (Na)	20
Cobalt (Co)	20	Strontium (Sr)	20
Copper (Cu)	20	Thallium (Tl)	20
Iron (Fe)	20	Vanadium (V)	20
Lead (Pb)	20	Zinc (Zn)	20

#### Instrument Fortifying Standard #2

**M-200.7-LFSS-02-1** 100 mL  
**M-200.7-LFSS-02-5** 500 mL

20 µg/mL each in 5% HNO<sub>3</sub> tr. HF  
5 comps.

Antimony (Sb)	Tin (Sn)
Molybdenum (Mo)	Titanium (Ti)
Silicon (Si) †	† 42.78 µg/mL as SiO <sub>2</sub>

### Method 200.7 Spiking Standards

#### Spiking Standards

**M-200.7-SP-02-R-0.01X-1** 100 mL  
**M-200.7-SP-02-R-0.01X-5** 500 mL

100 µg/mL each in 2% HNO<sub>3</sub>  
4 comps.

Calcium (Ca)	Potassium (K)
Magnesium (Mg)	Sodium (Na)

**M-200.7-SP-02-R-0.1X-1** 100 mL  
**M-200.7-SP-02-R-0.1X-5** 500 mL

1000 µg/mL each in 2% HNO<sub>3</sub>  
4 comps.

Calcium (Ca)	Potassium (K)
Magnesium (Mg)	Sodium (Na)

**M-200.7-SP-02-R** 50 mL  
**M-200.7-SP-02-R-1** 100 mL  
**M-200.7-SP-02-R-5** 500 mL

10,000 µg/mL each in 2% HNO<sub>3</sub>  
4 comps.

Calcium (Ca)	Potassium (K)
Magnesium (Mg)	Sodium (Na)



### Method 6010 Spiking Standards

Convenient solutions that can be used for spiking samples pre- or post- digestion.

#### Spiking Standard #1

**QCS-01-1** 100 mL  
**QCS-01-5** 500 mL

100 µg/mL each in 5% HNO<sub>3</sub> tr. HF 23 comps.

Antimony (Sb)	Manganese (Mn)
Arsenic (As)	Molybdenum (Mo)
Beryllium (Be)	Nickel (Ni)
Cadmium (Cd)	Phosphorus (P)
Calcium (Ca)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cobalt (Co)	Thallium (Tl)
Copper (Cu)	Tin (Sn)
Iron (Fe)	Titanium (Ti)
Lead (Pb)	Vanadium (V)
Lithium (Li)	Zinc (Zn)
Magnesium (Mg)	

#### Mercury Standard

Mercury is available in a separate solution due to incompatibility with other elements.

**TCLP-02-1** 100 mL  
**TCLP-02-5** 500 mL

20 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)



#### Spiking Standard #2

**QCS-02-1** 100 mL  
**QCS-02-5** 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF 7 comps.

Aluminum (Al) 100	Silicon (Si) † 500
Barium (Ba) 100	Silver (Ag) 50
Boron (B) 100	Sodium (Na) 100
Potassium (K) 1000	† 1070 µg/mL as SiO <sub>2</sub>

#### QC Standard #2R

**QCS-02-R1-1** 100 mL  
**QCS-02-R1-5** 500 mL

100 µg/mL each in 5% HNO<sub>3</sub> tr. HF 7 comps.

Aluminum (Al)	Silicon (Si) †
Barium (Ba)	Silver (Ag)
Boron (B)	Sodium (Na)
Potassium (K)	† 214 µg/mL as SiO <sub>2</sub>

### Method 6010 Performance and Interference Check Standards

#### Laboratory Performance Check Standard

**LPCS-01R-1** 100 mL  
**LPCS-01R-5** 500 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF 30 comps.

Aluminum (Al) 20	Chromium (Cr) 20	Molybdenum (Mo) 20	Strontium (Sr) 20
Antimony (Sb) 20	Cobalt (Co) 20	Nickel (Ni) 20	Thallium (Tl) 20
Arsenic (As) 20	Copper (Cu) 20	Phosphorus (P) 100	Tin (Sn) 20
Barium (Ba) 20	Iron (Fe) 20	Potassium (K) 100	Titanium (Ti) 20
Beryllium (Be) 20	Lead (Pb) 20	Selenium (Se) 20	Vanadium (V) 20
Boron (B) 20	Lithium (Li) 20	Silicon (Si) † 100	Zinc (Zn) 20
Cadmium (Cd) 20	Magnesium (Mg) 20	Silver (Ag) 5	
Calcium (Ca) 20	Manganese (Mn) 20	Sodium (Na) 20	† 214 µg/mL as SiO <sub>2</sub>

#### Primary Interferents

**CLP-PIN-01-1** 100 mL  
**CLP-PIN-01-5** 500 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 4 comps.

Aluminum (Al) 5000	Iron (Fe) 2000
Calcium (Ca) 5000	Magnesium (Mg) 5000

#### Set-up Solution

#### Nebulizer Adjustment Solution

**ICP-69N-1** 100 mL  
 1000 µg/mL in 2% HNO<sub>3</sub>  
 Yttrium (Y)

# USP 232 Elemental Impurities and IP 501

## USP 232 Elemental Impurities

Limits for the amounts of elemental impurities in drug products are specified by the United States Pharmacopeia (USP) and the International Council for Harmonisation (ICH). These limits are detailed in USP General Chapter 232 and ICH Guideline for Elemental Impurities Q3D. Standards based on oral permitted daily exposures along with an internal standard are provided, as well as high and low level multi-element calibration standards, which allow for quantitative analysis through custom applications. Additional custom standards are available.

### USP 232 Oral Impurities Mix 1

<b>USP-232-01-1</b> <b>100 mL</b>			
At stated conc. (µg/mL) 2-5% HNO <sub>3</sub> 4 comps.			
Arsenic (As)	15	Lead (Pb)	5
Cadmium (Cd)	5	Mercury (Hg)	30

### USP 232 Oral Impurities Mix 2

<b>USP-232-02-1</b> <b>100 mL</b>			
At stated conc. (µg/mL) 2-5% HNO <sub>3</sub> 6 comps.			
Cobalt (Co)	50	Silver (Ag)	150
Nickel (Ni)	200	Thallium (Tl)	8
Selenium (Se)	150	Vanadium (V)	100

### USP 232 Oral Impurities Mix 3

<b>USP-232-03-1</b> <b>100 mL</b>			
100 µg/mL each in 10% HCl 7 comps.			
Gold (Au)		Platinum (Pt)	
Iridium (Ir)		Rhodium (Rh)	
Osmium (Os)		Ruthenium (Ru)	
Palladium (Pd)			

### USP 232 Oral Impurities Mix 4

<b>USP-232-04-1</b> <b>100 mL</b>			
At stated conc. (µg/mL) 7 comps			
5% HNO <sub>3</sub> tr. HF			
Antimony (Sb)	120	Lithium (Li)	55
Barium (Ba)	140	Molybdenum (Mo)	300
Chromium (Cr)	1100	Tin (Sn)	600
Copper (Cu)	300		

### USP 232 Low Level Calibration Standard A

<b>USP-232-CAL-LOW-A-1</b> <b>100 mL</b>			
10 µg/mL each in 5% HNO <sub>3</sub> , tr HF 16 comps.			
Antimony (Sb)		Lithium (Li)	
Arsenic (As)		Molybdenum (Mo)	
Barium (Ba)		Nickel (Ni)	
Cadmium (Cd)		Selenium (Se)	
Chromium (Cr)		Silver (Ag)	
Cobalt (Co)		Tin (Sn)	
Copper (Cu)		Thallium (Tl)	
Lead (Pb)		Vanadium (V)	

### USP 232 Low Level Calibration Standard B

<b>USP-232-CAL-LOW-B-1</b> <b>100 mL</b>			
10 µg/mL each in 10% HCl 7 comps.			
Gold (Au)		Platinum (Pt)	
Iridium (Ir)		Rhodium (Rh)	
Osmium (Os)		Ruthenium (Ru)	
Palladium (Pd)			

### USP 232 Low Level Calibration Standard C

<b>USP-232-CAL-LOW-C-1</b> <b>100 mL</b>			
10 µg/mL in 5% HNO <sub>3</sub>			
Mercury (Hg)			

### USP 232 Internal Standard

<b>USP-232-05-1</b> <b>100 mL</b>			
At stated conc. (µg/mL) 6 comps.			
2-5% HNO <sub>3</sub> tr. HCl tr. HF			
Bismuth (Bi)	5	Lutetium (Lu)	5
Germanium (Ge)	5	Scandium (Sc)	10
Indium (In)	5	Tellurium (Te)	25

### USP 232 High Level Calibration Standard A

<b>USP-232-CAL-HIGH-A-1</b> <b>100 mL</b>			
100 µg/mL each in 5% HNO <sub>3</sub> , tr HF 16 comps.			
Antimony (Sb)		Lithium (Li)	
Arsenic (As)		Molybdenum (Mo)	
Barium (Ba)		Nickel (Ni)	
Cadmium (Cd)		Selenium (Se)	
Chromium (Cr)		Silver (Ag)	
Cobalt (Co)		Tin (Sn)	
Copper (Cu)		Thallium (Tl)	
Lead (Pb)		Vanadium (V)	

### USP 232 High Level Calibration Standard B

<b>USP-232-CAL-HIGH-B-1</b> <b>100 mL</b>			
100 µg/mL each in 10% HCl 7 comps.			
Gold (Au)		Platinum (Pt)	
Iridium (Ir)		Rhodium (Rh)	
Osmium (Os)		Ruthenium (Ru)	
Palladium (Pd)			

### USP 232 High Level Calibration Standard C

<b>USP-232-CAL-HIGH-C-1</b> <b>100 mL</b>			
100 µg/mL in 5% HNO <sub>3</sub>			
Mercury (Hg)			

## IP 501 - Determination of Metals in Residual Fuels

### IP-501 Mix 1

<b>IP-501-01-1</b> <b>100 mL</b>			
<b>IP-501-01-5</b> <b>500 mL</b>			
At stated conc. (µg/mL) 2-5% Nitric Acid, tr. HF 13 comps.			
Aluminum (Al)	500	Phosphorus (P)	500
Calcium (Ca)	500	Potassium (K)	500
Copper (Cu)	500	Silicon (Si)	500
Iron (Fe)	500	Sodium (Na)	500
Lead (Pb)	500	Vanadium (V)	1000
Magnesium (Mg)	500	Zinc (Zn)	500
Nickel (Ni)	500		

### IP-501 Mix 2

<b>IP-501-02-1</b> <b>100 mL</b>			
<b>IP-501-02-5</b> <b>500 mL</b>			
At stated conc. (µg/mL) 2-5% Nitric Acid, tr. HF 13 comps.			
Aluminum (Al)	100	Phosphorus (P)	100
Calcium (Ca)	250	Potassium (K)	100
Copper (Cu)	250	Silicon (Si)	100
Iron (Fe)	250	Sodium (Na)	250
Lead (Pb)	250	Vanadium (V)	250
Magnesium (Mg)	250	Zinc (Zn)	250
Nickel (Ni)	250		

### IP-501 Mix 3

<b>IP-501-03-1</b> <b>100 mL</b>			
<b>IP-501-03-5</b> <b>500 mL</b>			
1000 µg/mL each 2-5% Nitric Acid, tr. HF 9 comps.			
Aluminum (Al)		Silicon (Si)	
Calcium (Ca)		Sodium (Na)	
Iron (Fe)		Vanadium (V)	
Nickel (Ni)		Zinc (Zn)	
Phosphorus (P)			

# Cannabis and E-Cigarette Standards

## Cannabis - Heavy Metal Analysis

Regulations for the testing of heavy metals in cannabis products differ based on state requirements and the route of administration. These standards can be used for commonly set maximum limits or to provide flexibility to allow calibration over a wide range of concentrations.

### Cannabis Metals 1

**CP-MET-01-1** 100 mL  
At stated conc. (µg/mL) 4 comps  
2-5% Nitric acid

Arsenic (As) 15 Lead (Pb) 5  
Cadmium (Cd) 5 Mercury (Hg) 30

### Cannabis Metals 2

**CP-MET-02-1** 100 mL  
At stated conc. (µg/mL) 4 comps  
2-5% Nitric acid

Arsenic (As) 20 Lead (Pb) 50  
Cadmium (Cd) 20 Mercury (Hg) 10

## Cannabis Metals Low & High Level Calibration Stds.

**CP-MET-CAL-LOW-1** 100 mL  
10 µg/mL each in  
2-5% Nitric acid 4 comps.

Arsenic (As) Lead (Pb)  
Cadmium (Cd) Mercury (Hg)

**CP-MET-CAL-HIGH-1** 100 mL  
100 µg/mL each in  
2-5% Nitric acid 4 comps.

Arsenic (As) Lead (Pb)  
Cadmium (Cd) Mercury (Hg)

Testing of heavy metals is important because metallic impurities can be absorbed from the soil when the plant grows, or be introduced during preparation of the consumer product.

Element		1000 µg/mL		Element		1000 µg/mL	
Starting Material	Matrix	Cat. No.	Unit	Starting Material	Matrix	Cat. No.	Unit
<b>Aluminum (Al)</b>	2-5% Nitric acid	ICP-01N-1	100 mL	<b>Nickel (Ni)</b>	2-5% Nitric acid	ICP-37N-1	100 mL
Al(NO <sub>3</sub> ) <sub>3</sub> • 9H <sub>2</sub> O		ICP-01N-5	500 mL	Ni		ICP-37N-5	500 mL
<b>Arsenic (As)</b>	2-5% Nitric acid	ICP-03N-1	100 mL	<b>Potassium (K)</b>	2-5% Nitric acid	ICP-43N-1	100 mL
As		ICP-03N-5	500 mL	KNO <sub>3</sub>		ICP-43N-5	500 mL
<b>Cadmium (Cd)</b>	2-5% Nitric acid	ICP-08N-1	100 mL	<b>Sodium (Na)</b>	2-5% Nitric acid	ICP-54N-1	100 mL
Cd		ICP-08N-5	500 mL	NaNO <sub>3</sub>		ICP-54N-5	500 mL
<b>Chromium (Cr)</b>	2-5% Nitric acid	ICP-13N-R-1	100 mL	<b>Thallium (Tl)</b>	2-5% Nitric acid	ICP-60N-1	100 mL
Cr(NO <sub>3</sub> ) <sub>3</sub> • 9H <sub>2</sub> O		ICP-13N-R-5	500 mL	TlNO <sub>3</sub>		ICP-60N-5	500 mL
<b>Iron (Fe)</b>	2-5% Nitric acid	ICP-27N-1	100 mL	<b>Thorium (Th)</b>	2-5% Nitric acid	ICP-61N-1	100 mL
Fe(NO <sub>3</sub> ) <sub>3</sub> • 9H <sub>2</sub> O		ICP-27N-5	500 mL	Th(NO <sub>3</sub> ) <sub>4</sub> • 4H <sub>2</sub> O		ICP-61N-5	500 mL
<b>Lead (Pb)</b>	2-5% Nitric acid	ICP-29N-1	100 mL	<b>Uranium (U)</b>	2-5% Nitric acid	ICP-66N-R-1	100 mL
Pb(NO <sub>3</sub> ) <sub>2</sub>		ICP-29N-5	500 mL	UO <sub>2</sub> (NO <sub>3</sub> ) <sub>2</sub> • 6H <sub>2</sub> O		ICP-66N-R-5	500 mL
<b>Mercury (Hg)</b>	10% Nitric acid	ICP-34N-1	100 mL	<b>Vanadium (V)</b>	2-5% Nitric acid	ICP-67N-1	100 mL
Hg		ICP-34N-5	500 mL	V <sub>2</sub> O <sub>5</sub>		ICP-67N-5	500 mL
<b>Molybdenum (Mo)</b>	Water tr. NH <sub>4</sub> OH	ICP-35W-1	100 mL				
(NH <sub>4</sub> ) <sub>2</sub> MoO <sub>4</sub>		ICP-35W-5	500 mL				

## Cannabis Metals Standards

### Initial Calibr. Verification

**CP-MET-VER-1** 100 mL  
2-5% Nitric acid (µg/mL) 26 comps.

Calcium 1000  
Iron 1000  
Potassium 1000  
Magnesium 1000  
Sodium 1000  
Strontium 1000  
Silver 10  
Aluminum 10  
Arsenic 10  
Barium 10  
Beryllium 10  
Cadmium 10  
Cobalt 10  
Chromium 10  
Copper 10  
Manganese 10  
Molybdenum 10  
Nickel 10  
Lead 10  
Antimony 10  
Selenium 10  
Thallium 10  
Vanadium 10  
Zinc 10  
Thorium 10  
Uranium 10

### Environmental Spike Mix

**CP-MET-SPIKE-1** 100 mL  
2-5% Nitric acid (µg/mL), 24 comps.  
tr HF

Calcium 1000  
Iron 1000  
Potassium 1000  
Magnesium 1000  
Sodium 1000  
Silver 100  
Aluminum 100  
Arsenic 100  
Barium 100  
Beryllium 100  
Cadmium 100  
Cobalt 100  
Chromium 100  
Manganese 100  
Molybdenum 100  
Lead 100  
Antimony 100  
Selenium 100  
Thallium 100  
Vanadium 100  
Zinc 100  
Uranium 100  
Copper 100  
Nickel 100

### Environmental Calibration

**CP-MET-CAL-1** 100 mL  
10% Nitric acid (µg/mL) 25 comps.

Calcium 1000  
Iron 1000  
Potassium 1000  
Magnesium 1000  
Sodium 1000  
Silver 10  
Aluminum 10  
Arsenic 10  
Barium 10  
Beryllium 10  
Cadmium 10  
Cobalt 10  
Chromium 10  
Copper 10  
Manganese 10  
Molybdenum 10  
Nickel 10  
Lead 10  
Antimony 10  
Selenium 10  
Thallium 10  
Vanadium 10  
Zinc 10  
Thorium 10  
Uranium 10

### Internal Standard

**CP-MET-INTSTD-1** 100 mL  
Each in 100 µg/mL 8 comps.  
10% Nitric acid, tr HCl

Lithium-6 Indium  
Scandium Terbium  
Germanium Lutetium  
Rhodium Bismuth

### Tuning Stock Solution

**CP-MET-TUNSTOCK-1** 100 mL  
Each in 10 µg/mL 5 comps.  
2-5% Nitric acid

Lithium Thallium  
Yttrium Cobalt  
Cerium

### Hg Calibration Solution

**CP-MET-HG-0.01X-1** 100 mL  
10 µg/mL in 5% Nitric acid

**CP-MET-HG-1** 100 mL  
1000 µg/mL in 10% Nitric acid  
Mercury

## Electronic Cigarette Analysis

### Electronic Cigarettes Trace Metals Standards

#### EC-MET-01-1

10 µg/mL each in 2% Nitric Acid

Cadmium (Cd) Copper (Cu)  
Chromium (Cr)

#### 100 mL

4 comps.

Nickel (Ni)

#### EC-MET-02-1

10 µg/mL each in 2% Nitric Acid

Aluminum (Al) Lead (Pb)  
Arsenic (As) Iron (Fe)

#### 100 mL

5 comps.

Manganese (Mn)



# ICP Alternate Source

## Agilent

### AccuStandard equivalent of Agilent

#### ICP-OES Wavelength Calibration Solution

AG-WAVECAL-ASL-1	100 mL
AG-WAVECAL-ASL-5	500 mL
AG-WAVECAL-ASL-10X-1	100 mL
AG-WAVECAL-ASL-10X-5	500 mL
At stated conc. (µg/mL) in 1% HNO <sub>3</sub>	15 comps.

	CAL	CAL-10X
Aluminum (Al)	5	50
Arsenic (As)	5	50
Barium (Ba)	5	50
Cadmium (Cd)	5	50
Cobalt (Co)	5	50
Chromium (Cr)	5	50
Copper (Cu)	5	50
Manganese (Mn)	5	50
Molybdenum (Mo)	5	50
Nickel (Ni)	5	50
Lead (Pb)	5	50
Selenium (Se)	5	50
Strontium (Sr)	5	50
Zinc (Zn)	5	50
Potassium (K)	50	500

#### ICP-MS Stock Tuning Solution

AG-TUNSTOCK-ASL-1	100 mL
AG-TUNSTOCK-ASL-5	500 mL
10 µg/mL in 2% HNO <sub>3</sub>	5 comps.

Lithium (Li)	Thallium (Tl)
Yttrium (Y)	Cobalt (Co)
Cerium (Ce)	

#### ICP-MS Stock Tuning Solution

AG-TUNSTOCK1-ASL-1	100 mL
AG-TUNSTOCK1-ASL-5	500 mL
10 µg/mL in 2% HNO <sub>3</sub>	6 comps.

Lithium (Li)	Cerium (Ce)
Magnesium (Mg)	Thallium (Tl)
Yttrium (Y)	Cobalt (Co)

#### Internal Standard Mix for ICP-MS

AG-INTSTD-ASL-1	100 mL
AG-INTSTD-ASL-5	500 mL
100 µg/mL in 10% HNO <sub>3</sub> , tr. HCl	8 comps.

Lithium-6 (Li-6)	Indium (In)
Scandium (Sc)	Terbium (Tb)
Germanium (Ge)	Lutetium (Lu)
Rhodium (Rh)	Bismuth (Bi)

#### QCSTD-27 Quality Control Std

AG-QCSTD-ASL-1	100 mL
AG-QCSTD-ASL-5	500 mL
100 µg/mL in 5% HNO <sub>3</sub> , tr. HF	27 comps.

Aluminum (Al)	Manganese (Mn)
Antimony (Sb)	Molybdenum (Mo)
Arsenic (As)	Nickel (Ni)
Barium (Ba)	Potassium (K)
Beryllium (Be)	Selenium (Se)
Boron (B)	Silicon (Si)
Cadmium (Cd)	Silver (Ag)
Calcium (Ca)	Strontium (Sr)
Chromium (Cr)	Sodium (Na)
Cobalt (Co)	Thallium (Tl)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Vanadium (V)
Lead (Pb)	Zinc (Zn)
Magnesium (Mg)	

#### 7500 Series PA Tuning 1

AG-TUN1-ASL-1	100 mL
AG-TUN1-ASL-5	500 mL
At stated conc. (µg/mL) in 5% HNO <sub>3</sub>	26 comps.

Zinc (Zn)	20	Barium (Ba)	5
Beryllium (Be)	20	Cobalt (Co)	5
Cadmium (Cd)	20	Strontium (Sr)	5
Arsenic (As)	20	Vanadium (V)	5
Nickel (Ni)	10	Chromium (Cr)	5
Lead (Pb)	10	Manganese (Mn)	5
Magnesium (Mg)	10	Lithium-6 (Li-6)	5
Thallium (Tl)	5	Scandium (Sc)	5
Sodium (Na)	5	Indium (In)	5
Aluminum (Al)	5	Lutetium (Lu)	5
Uranium (U)	5	Bismuth (Bi)	5
Copper (Cu)	5	Yttrium (Y)	2.5
Thorium (Th)	5	Ytterbium (Yb)	2.5

#### 7500 Series PA Tuning 2

AG-TUN2-ASL-1	100 mL
AG-TUN2-ASL-5	500 mL
At stated conc. (µg/mL) in 10% HCl, 1% HNO <sub>3</sub> tr. HF	8 comps.

Molybdenum (Mo)	10	Ruthenium (Ru)	10
Antimony (Sb)	10	Palladium (Pd)	10
Tin (Sn)	10	Titanium (Ti)	5
Germanium (Ge)	10	Iridium (Ir)	5

#### Environmental Spike Mix

AG-SPIKE-ASL-R1-1	100 mL
AG-SPIKE-ASL-R1-5	500 mL
At stated conc. (µg/mL) in 5% HNO <sub>3</sub> tr. HF	24 comps.

Calcium (Ca)	1000	Chromium (Cr)	100
Iron (Fe)	1000	Copper (Cu)	100
Potassium (K)	1000	Manganese (Mn)	100
Magnesium (Mg)	1000	Molybdenum (Mo)	100
Sodium (Na)	1000	Nickel (Ni)	100
Silver (Ag)	100	Lead (Pb)	100
Aluminum (Al)	100	Antimony (Sb)	100
Arsenic (As)	100	Selenium (Se)	100
Barium (Ba)	100	Thallium (Tl)	100
Beryllium (Be)	100	Uranium (U)	100
Cadmium (Cd)	100	Vanadium (V)	100
Cobalt (Co)	100	Zinc (Zn)	100

#### Environmental Initial Calibration Verification

AG-VER1-ASL-R1-1	100 mL
AG-VER1-ASL-R1-5	500 mL
At stated conc. (µg/mL) in 5% HNO <sub>3</sub>	26 comps.

Calcium (Ca)	1000	Chromium (Cr)	10
Iron (Fe)	1000	Copper (Cu)	10
Potassium (K)	1000	Manganese (Mn)	10
Magnesium (Mg)	1000	Molybdenum (Mo)	10
Sodium (Na)	1000	Nickel (Ni)	10
Strontium (Sr)	100	Lead (Pb)	10
Silver (Ag)	10	Antimony (Sb)	10
Aluminum (Al)	10	Selenium (Se)	10
Arsenic (As)	10	Thallium (Tl)	10
Barium (Ba)	10	Uranium (U)	10
Beryllium (Be)	10	Vanadium (V)	10
Cadmium (Cd)	10	Zinc (Zn)	10
Cobalt (Co)	10	Thorium (Th)	10

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#### ICV-7 Quality Control Standard

AG-ICV7-ASL-1	100 mL
AG-ICV7-ASL-5	500 mL
At stated conc. (µg/mL) in 5% HNO <sub>3</sub>	22 comps.

Calcium (Ca)	5000	Copper (Cu)	25
Magnesium (Mg)	5000	Zinc (Zn)	20
Potassium (K)	5000	Manganese (Mn)	15
Sodium (Na)	5000	Arsenic (As)	10
Aluminum (Al)	200	Chromium (Cr)	10
Barium (Ba)	200	Silver (Ag)	10
Iron (Fe)	100	Thallium (Tl)	10
Antimony (Sb)	60	Beryllium (Be)	5
Cobalt (Co)	50	Cadmium (Cd)	5
Vanadium (V)	50	Lead (Pb)	5
Nickel (Ni)	40	Selenium (Se)	5

#### ANALT-B Quality Control Std

AG-ANALTB-ASL-1	100 mL
AG-ANALTB-ASL-5	500 mL
At stated conc. (µg/mL) in 5% HNO <sub>3</sub>	12 comps.

Cadmium (Cd)	100	Beryllium (Be)	50
Nickel (Ni)	100	Cobalt (Co)	50
Lead (Pb)	100	Chromium (Cr)	50
Silver (Ag)	100	Copper (Cu)	50
Zinc (Zn)	100	Manganese (Mn)	50
Barium (Ba)	50	Vanadium (V)	50

# ICP Alternate Source

## Agilent

### AccuStandard equivalent of Agilent

#### Environmental Calibration Std.

AG-CAL-ASL-1 100 mL

AG-CAL-ASL-5 500 mL

At stated conc. (µg/mL) in 10% HNO<sub>3</sub> 25 comps.

Calcium (Ca) 1000	Copper (Cu) 10
Iron (Fe) 1000	Manganese (Mn) 10
Potassium (K) 1000	Molybdenum (Mo) 10
Magnesium (Mg) 1000	Nickel (Ni) 10
Sodium (Na) 1000	Lead (Pb) 10
Silver (Ag) 10	Antimony (Sb) 10
Aluminum (Al) 10	Selenium (Se) 10
Arsenic (As) 10	Thallium (Tl) 10
Barium (Ba) 10	Vanadium (V) 10
Beryllium (Be) 10	Zinc (Zn) 10
Cadmium (Cd) 10	Thorium (Th) 10
Cobalt (Co) 10	Uranium (U) 10
Chromium (Cr) 10	

#### Calibration Mix 1 AA & ICP-OES

AG-CAL1-ASL-1 100 mL

AG-CAL1-ASL-5 500 mL

100 µg/mL each in 2% HNO<sub>3</sub> tr.HF 4 comps.

Antimony (Sb)	Tin (Sn)
Molybdenum (Mo)	Thallium (Tl)

#### Calibration Mix 2 AA & ICP-OES

AG-CAL2-ASL-1 100 mL

AG-CAL2-ASL-5 500 mL

100 µg/mL each in 5% HNO<sub>3</sub> 18 comps.

Silver (Ag)	Manganese (Mn)
Aluminum (Al)	Nickel (Ni)
Arsenic (As)	Lead (Pb)
Barium (Ba)	Selenium (Se)
Beryllium (Be)	Thallium (Tl)
Cadmium (Cd)	Thorium (Th)
Cobalt (Co)	Uranium (U)
Chromium (Cr)	Vanadium (V)
Copper (Cu)	Zinc (Zn)

#### Calibration Mix Majors For AA & ICP-OES

AG-CALMAJOR-ASL-1 100 mL

AG-CALMAJOR-ASL-5 500 mL

500 µg/mL each in 5% HNO<sub>3</sub> 5 comps.

Calcium (Ca)	Magnesium (Mg)
Iron (Fe)	Sodium (Na)
Potassium (K)	

#### Internal Standard Mix

AG-INT-ASL-1 100 mL

AG-INT-ASL-5 500 mL

10 µg/mL each in 5% HNO<sub>3</sub> 7 comps.

Bismuth (Bi)	Scandium (Sc)
Germanium (Ge)	Terbium (Tb)
Indium (In)	Yttrium (Y)
Lithium-6 (Li-6)	

#### ICP Internal Standard

AG-INT2-ASL-1 100 mL

AG-INT2-ASL-5 500 mL

100 µg/mL each in 5% HNO<sub>3</sub> 6 comps.

Lithium-6 (Li-6)	Indium (In)
Scandium (Sc)	Terbium (Tb)
Yttrium (Y)	Bismuth (Bi)

#### Multi-Element Calibration Std. 1

AG-MECAL1-ASL-1 100 mL

AG-MECAL1-ASL-5 500 mL

10 µg/mL each in 5% HNO<sub>3</sub> 17 comps.

Cerium (Ce)	Praseodymium (Pr)
Dysprosium (Dy)	Scandium (Sc)
Erbium (Er)	Samarium (Sm)
Europium (Eu)	Terbium (Tb)
Gadolinium (Gd)	Thorium (Th)
Holmium (Ho)	Thulium (Tm)
Lanthanum (La)	Yttrium (Y)
Lutetium (Lu)	Ytterbium (Yb)
Neodymium (Nd)	

#### Multi-Element Calibration Std. 2A

AG-MECAL2A-ASL-1 100 mL

AG-MECAL2A-ASL-5 500 mL

10 µg/mL each in 5% HNO<sub>3</sub> 27 comps.

Silver (Ag)	Lithium (Li)
Aluminum (Al)	Magnesium (Mg)
Arsenic (As)	Manganese (Mn)
Barium (Ba)	Sodium (Na)
Beryllium (Be)	Nickel (Ni)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Rubidium (Rb)
Cobalt (Co)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cesium (Cs)	Thallium (Tl)
Copper (Cu)	Uranium (U)
Iron (Fe)	Vanadium (V)
Gallium (Ga)	Zinc (Zn)
Potassium (K)	

#### Multi-Element Calibration Std. 3

AG-MECAL3-ASL-R-1 100 mL

AG-MECAL3-ASL-R-5 500 mL

10 µg/mL each in 10% HCl, 1% HNO<sub>3</sub> 10 comps.

Gold (Au)	Rhodium (Rh)
Hafnium (Hf)	Ruthenium (Ru)
Iridium (Ir)	Antimony (Sb)
Palladium (Pd)	Tin (Sn)
Platinum (Pt)	Tellurium (Te)

#### Multi-Element Calibration Std. 4

AG-MECAL4-ASL-R1-1 100 mL

AG-MECAL4-ASL-R1-5 500 mL

10 µg/mL each in Water, tr. HF 13 comps.

Boron (B)	Silicon (Si)
Germanium (Ge)	Tantalum (Ta)
Molybdenum (Mo)	Tin (Sn)
Niobium (Nb)	Titanium (Ti)
Phosphorus (P)	Tungsten (W)
Rhenium (Re)	Zirconium (Zr)
Sulfur (S)	

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### AccuStandard equivalent of Perkin Elmer

#### Instrument Calibration Std. 1

**PE-CAL1-ASL-1** 100 mL  
**PE-CAL1-ASL-5** 500 mL  
 20 µg/mL each in 2% HNO<sub>3</sub> tr. Tartaric acid  
 20 comps.

Silver (Ag)	Molybdenum (Mo)
Aluminum (Al)	Nickel (Ni)
Arsenic (As)	Lead (Pb)
Barium (Ba)	Antimony (Sb)
Beryllium (Be)	Selenium (Se)
Cadmium (Cd)	Thorium (Th)
Cobalt (Co)	Thallium (Tl)
Chromium (Cr)	Uranium (U)
Copper (Cu)	Vanadium (V)
Manganese (Mn)	Zinc (Zn)

#### Instrument Calibration Std. 2

**PE-CAL2-ASL-1** 100 mL  
**PE-CAL2-ASL-5** 500 mL  
 100 µg/mL each in 5% HNO<sub>3</sub> tr. HF, tr. Tartaric acid  
 26 comps.

Silver (Ag)	Manganese (Mn)
Aluminum (Al)	Molybdenum (Mo)
Arsenic (As)	Sodium (Na)
Barium (Ba)	Nickel (Ni)
Beryllium (Be)	Lead (Pb)
Calcium (Ca)	Antimony (Sb)
Cadmium (Cd)	Selenium (Se)
Cobalt (Co)	Tin (Sn)
Chromium (Cr)	Strontium (Sr)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Thallium (Tl)
Potassium (K)	Vanadium (V)
Magnesium (Mg)	Zinc (Zn)

#### Instrument Calibration Std. 3

**PE-CAL3-ASL-1** 100 mL  
**PE-CAL3-ASL-5** 500 mL  
 1000 µg/mL each in 5% HNO<sub>3</sub> 5 comps.

Iron (Fe)	Sodium (Na)
Potassium (K)	Magnesium (Mg)
Calcium (Ca)	

#### Instrument Calibration Std. 1

**PE-CAL4-ASL-1** 100 mL  
**PE-CAL4-ASL-5** 500 mL  
 5000 µg/mL each in 5% HNO<sub>3</sub> 4 comps.

Calcium (Ca)	Magnesium (Mg)
Potassium (K)	Sodium (Na)

#### Instrument Check Standard 3

**PE-CHK3-ASL-1** 100 mL  
**PE-CHK3-ASL-5** 500 mL  
 200 µg/mL each in 2% HNO<sub>3</sub> 5 comps.

Calcium (Ca)	Magnesium (Mg)
Iron (Fe)	Sodium (Na)
Potassium (K)	

#### Interference Check Standard 18

**PE-ICS18-ASL-1-SET** 2 x 100 mL  
**PE-ICS18-ASL-5-SET** 2 x 500 mL

**PE-ICS18-ASL**  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 16 comps.

Potassium (K)	20000	Cobalt (Co)	300
Arsenic (As)	1000	Chromium (Cr)	300
Lead (Pb)	1000	Copper (Cu)	300
Thallium (Tl)	1000	Nickel (Ni)	300
Selenium (Se)	500	Vanadium (V)	300
Silver (Ag)	300	Zinc (Zn)	300
Barium (Ba)	300	Manganese (Mn)	200
Cadmium (Cd)	300	Beryllium (Be)	100

#### PE-ICS18-HG-ASL

100 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

Supplied separately for better product stability.

#### Internal Standard Mix

**PE-INT-ASL-1** 100 mL  
**PE-INT-ASL-5** 500 mL  
 10 µg/mL each in 5% HNO<sub>3</sub> 7 comps.

Lithium-6 (Li-6)	Indium (In)
Scandium (Sc)	Terbium (Tb)
Germanium (Ge)	Bismuth (Bi)
Yttrium (Y)	

#### Multi-Element Calibration Std 1

**PE-MECAL1-ASL-1** 100 mL  
**PE-MECAL1-ASL-5** 500 mL  
 10 µg/mL each in 2% HNO<sub>3</sub> 9 comps.

Beryllium (Be)	Magnesium (Mg)
Bismuth (Bi)	Nickel (Ni)
Cerium (Ce)	Lead (Pb)
Cobalt (Co)	Uranium (U)
Indium (In)	

#### Multi-Element Calibration Std 2

**PE-MECAL2-ASL-1** 100 mL  
**PE-MECAL2-ASL-5** 500 mL  
 10 µg/mL each in 5% HNO<sub>3</sub> 17 comps.

Cerium (Ce)	Praseodymium (Pr)
Dysprosium (Dy)	Samarium (Sm)
Erbium (Er)	Scandium (Sc)
Europium (Eu)	Terbium (Tb)
Gadolinium (Gd)	Thorium (Th)
Holmium (Ho)	Thulium (Tm)
Lanthanum (La)	Ytterbium (Yb)
Lutetium (Lu)	Yttrium (Y)
Neodymium (Nd)	

#### Multi-Element Calibration Std 3

**PE-MECAL3-ASL-1-SET** 2 x 100 mL  
**PE-MECAL3-ASL-5-SET** 2 x 500 mL

#### PE-MECAL3-ASL

10 µg/mL each in 5% HNO<sub>3</sub> 29 comps.

Silver (Ag)	Potassium (K)
Aluminum (Al)	Lithium (Li)
Arsenic (As)	Magnesium (Mg)
Barium (Ba)	Manganese (Mn)
Beryllium (Be)	Sodium (Na)
Bismuth (Bi)	Nickel (Ni)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Rubidium (Rb)
Cobalt (Co)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cesium (Cs)	Thallium (Tl)
Copper (Cu)	Uranium (U)
Iron (Fe)	Vanadium (V)
Gallium (Ga)	Zinc (Zn)
Indium (In)	

#### PE-MECAL3-HG-ASL

10 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

Supplied separately for better product stability.

#### Multi-Element Calibration Std 4

**PE-MECAL4-ASL-R1-1** 100 mL  
**PE-MECAL4-ASL-R1-5** 500 mL  
 10 µg/mL each in 10% HCl, 1% HNO<sub>3</sub> 10 comps.

Gold (Au)	Rhodium (Rh)
Hafnium (Hf)	Ruthenium (Ru)
Iridium (Ir)	Antimony (Sb)
Palladium (Pd)	Tin (Sn)
Platinum (Pt)	Tellurium (Te)

#### Multi-Element Calibration Std 5

**PE-MECAL5-ASL-1** 100 mL  
**PE-MECAL5-ASL-5** 500 mL  
 10 µg/mL each in Water, tr. HF 12 comps.

Boron (B)	Sulfur (S)
Germanium (Ge)	Silicon (Si)
Molybdenum (Mo)	Tantalum (Ta)
Niobium (Nb)	Titanium (Ti)
Phosphorus (P)	Tungsten (W)
Rhenium (Re)	Zirconium (Zr)

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# ICP Alternate Source

## Perkin Elmer / Horiba Jobin-Yvon

### AccuStandard equivalent of Perkin Elmer

#### QC Standard 7 Elements

PE-QC7-ASL-1 100 mL  
PE-QC7-ASL-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF  
7 comps.

Potassium (K)	1000	Barium (Ba)	100
Silicon (Si)	500	Sodium (Na)	100
Aluminum (Al)	100	Silver (Ag)	50
Boron (B)	100		

#### Tuning Solution I

PE-TUNSOL-ASL-1 100 mL  
PE-TUNSOL-ASL-5 500 mL

10 µg/mL each in 2% HNO<sub>3</sub>, tr. HCl 12 comps.

Barium (Ba)	Magnesium (Mg)
Beryllium (Be)	Lead (Pb)
Cerium (Ce)	Rhodium (Rh)
Cobalt (Co)	Thallium (Tl)
Indium (In)	Uranium (U)
Lithium (Li)	Yttrium (Y)

#### QC Standard 21 Elements

PE-QC21-ASL-1 100 mL  
PE-QC21-ASL-5 500 mL

100 µg/mL each in 5% HNO<sub>3</sub>, tr. HF, tr. Tartaric acid  
21 comps.

Arsenic (As)	Molybdenum (Mo)
Beryllium (Be)	Nickel (Ni)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Antimony (Sb)
Cobalt (Co)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Thallium (Tl)
Lithium (Li)	Vanadium (V)
Magnesium (Mg)	Zinc (Zn)
Manganese (Mn)	

#### Initial Calibration Verification Standard 1

PE-VER1-ASL-1 100 mL  
PE-VER1-ASL-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. Tartaric acid  
26 comps.

Iron (Fe)	1000	Chromium (Cr)	10
Potassium (K)	1000	Copper (Cu)	10
Calcium (Ca)	1000	Manganese (Mn)	10
Sodium (Na)	1000	Molybdenum (Mo)	10
Magnesium (Mg)	1000	Nickel (Ni)	10
Strontium (Sr)	1000	Lead (Pb)	10
Silver (Ag)	10	Antimony (Sb)	10
Aluminum (Al)	10	Selenium (Se)	10
Arsenic (As)	10	Thallium (Tl)	10
Barium (Ba)	10	Vanadium (V)	10
Beryllium (Be)	10	Zinc (Zn)	10
Cadmium (Cd)	10	Thorium (Th)	10
Cobalt (Co)	10	Uranium (U)	10

### AccuStandard equivalent of Horiba Jobin-Yvon

#### Instrument Calibration Standard

JY-CAL-ASL-1 100 mL  
JY-CAL-ASL-5 500 mL

5000 µg/mL each in 2-5% HNO<sub>3</sub> 4 comps.

Calcium (Ca)	Potassium (K)
Magnesium (Mg)	Sodium (Na)

#### Quality Control Standard 7

JY-QC7-ASL-1 100 mL  
JY-QC7-ASL-5 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 7 comps.

Potassium (K)	1000
Silicon (Si)	500
Aluminum (Al)	100
Boron (B)	100
Barium (Ba)	100
Sodium (Na)	100
Silver (Ag)	50

#### Quality Control Standard 21

JY-QC21-ASL-1 100 mL  
JY-QC21-ASL-5 500 mL

100 µg/mL each in 2-5% HNO<sub>3</sub> tr. HF 21 comps.

Arsenic (As)	Molybdenum (Mo)
Beryllium (Be)	Nickel (Ni)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Antimony (Sb)
Cobalt (Co)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Thallium (Tl)
Lithium (Li)	Vanadium (V)
Magnesium (Mg)	Zinc (Zn)
Manganese (Mn)	

#### Quality Control Standard 23

JY-QC23-ASL-1 100 mL  
JY-QC23-ASL-5 500 mL

1000 µg/mL each in 2-5% HNO<sub>3</sub> 23 comps.

Silver (Ag)	Indium (In)
Aluminum (Al)	Potassium (K)
Boron (B)	Lithium (Li)
Barium (Ba)	Magnesium (Mg)
Bismuth (Bi)	Manganese (Mn)
Cadmium (Cd)	Sodium (Na)
Calcium (Ca)	Nickel (Ni)
Chromium (Cr)	Lead (Pb)
Cobalt (Co)	Strontium (Sr)
Copper (Cu)	Thallium (Tl)
Iron (Fe)	Zinc (Zn)
Gallium (Ga)	

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# ICP Alternate Source

## Merck

### AccuStandard equivalent of Merck Multi-Element Standards

#### ICP Multi-Element

##### Standard Solution IV

MES-04-1 100 mL  
 MES-04-5 500 mL  
 1000 µg/mL each in 1 mol/L HNO<sub>3</sub>  
 23 comps.

Silver (Ag)	Indium (In)
Aluminum (Al)	Potassium (K)
Boron (B)	Lithium (Li)
Barium (Ba)	Magnesium (Mg)
Bismuth (Bi)	Manganese (Mn)
Calcium (Ca)	Sodium (Na)
Cadmium (Cd)	Nickel (Ni)
Cobalt (Co)	Lead (Pb)
Chromium (Cr)	Strontium (Sr)
Copper (Cu)	Thallium (Tl)
Iron (Fe)	Zinc (Zn)
Gallium (Ga)	

#### ICP Multi-Element

##### Standard Solution VI for MS

MES-06-1-SET 100 mL  
 MES-06-5-SET 500 mL

##### MES-06

At stated conc. (µg/mL) in 1 mol/L HNO<sub>3</sub> tr. HF 29 comps.

Silver (Ag)	10
Aluminum (Al)	10
Arsenic (As)	100
Boron (B)	100
Barium (Ba)	10
Beryllium (Be)	100
Bismuth (Bi)	10
Calcium (Ca)	1000
Cadmium (Cd)	10
Cobalt (Co)	10
Chromium (Cr)	10
Copper (Cu)	10
Iron (Fe)	100
Gallium (Ga)	10
Potassium (K)	10
Lithium (Li)	10
Magnesium (Mg)	10
Manganese (Mn)	10
Molybdenum (Mo)	10
Sodium (Na)	10
Nickel (Ni)	10
Lead (Pb)	10
Rubidium (Rb)	10
Selenium (Se)	100
Strontium (Sr)	10
Thallium (Tl)	10
Uranium (U)	10
Vanadium (V)	10
Zinc (Zn)	100

##### MES-06-TE

10 µg/mL in 10% HCl  
 Tellurium (Te)

Supplied separately for better stability

#### Merck Multi-Element Ion Chromatography Standards pages 8-9

##### Anion Mixes

MES-AN-01-1 and -5  
 MES-AN-02-1 and -5  
 MES-IC-01-1 and -5  
 MES-IC-05-1 and -5

##### Cation Mixes

MES-IC-06-1 and -5  
 MES-IC-07-1 and -5

#### ICP Multi-Element

##### Standard Solution VIII

MES-08-1-SET 2 x 100 mL  
 MES-08-5-SET 2 x 500 mL

##### MES-08

100 µg/mL each in 1 mol/L HNO<sub>3</sub>  
 23 comps.

Aluminum (Al)	Potassium (K)
Boron (B)	Lithium (Li)
Barium (Ba)	Magnesium (Mg)
Beryllium (Be)	Manganese (Mn)
Bismuth (Bi)	Sodium (Na)
Calcium (Ca)	Nickel (Ni)
Cadmium (Cd)	Lead (Pb)
Cobalt (Co)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Copper (Cu)	Thallium (Tl)
Iron (Fe)	Zinc (Zn)
Gallium (Ga)	

##### MES-08-TE

100 µg/mL in 10% HCl  
 Tellurium (Te)

Supplied separately for better stability

#### ICP Multi-Element

##### Standard Solution IX

MES-09-1-SET 2 x 100 mL  
 MES-09-5-SET 2 x 500 mL

##### MES-09

100 µg/mL each in 1 mol/L HNO<sub>3</sub>  
 8 comps.

Arsenic (As)	Chromium (Cr)
Beryllium (Be)	Nickel (Ni)
Lead (Pb)	Selenium (Se)
Cadmium (Cd)	Thallium (Tl)

##### MES-09-HG

100 µg/mL in 1 mol/L HNO<sub>3</sub>  
 Mercury (Hg)

Supplied separately for better stability

#### ICP Multi-Element

##### Standard Solution X

MES-10-1 100 mL  
 MES-10-5 500 mL  
 At stated conc. (µg/mL) in 1 mol/L HNO<sub>3</sub>

23 comps.

Calcium (Ca)	3500
Magnesium (Mg)	1500
Sodium (Na)	800
Potassium (K)	300
Boron (B)	10
Iron (Fe)	10
Molybdenum (Mo)	10
Strontium (Sr)	10
Arsenic (As)	5
Barium (Ba)	5
Nickel (Ni)	5
Vanadium (V)	5
Zinc (Zn)	5
Manganese (Mn)	3
Cobalt (Co)	2.5
Lead (Pb)	2.5
Beryllium (Be)	2
Cadmium (Cd)	2
Chromium (Cr)	2
Copper (Cu)	2
Bismuth (Bi)	1
Selenium (Se)	1
Thallium (Tl)	1

Supplied at a 1:10 dilution for better long-term stability

#### ICP Multi-Element

##### Standard Solution XII

MES-12-1-SET 2 x 100 mL  
 MES-12-5-SET 2 x 500 mL

##### MES-12-R1

1000 µg/mL each 5% HCl, tr. HNO<sub>3</sub>, tr. HF 7 comps.

Arsenic (As)	Silicon (Si)
Molybdenum (Mo)	Tungsten (W)
Phosphorus (P)	Vanadium (V)
Sulfur (S)	

##### MES-12-ZR

1000 µg/mL in 5% HCl  
 Zirconium (Zr)

Supplied separately for better product stability

#### ICP Multi-Element

##### Standard Solution XIII

MES-13-1-SET 2 x 100 mL  
 MES-13-5-SET 2 x 500 mL

##### MES-13

At stated conc. (µg/mL) in 5% HNO<sub>3</sub>  
 14 comps.

Aluminum (Al)	500
Arsenic (As)	100
Beryllium (Be)	100
Cadmium (Cd)	25
Cobalt (Co)	100
Chromium (Cr)	100
Copper (Cu)	100
Iron (Fe)	100
Manganese (Mn)	100
Nickel (Ni)	100
Lead (Pb)	100
Selenium (Se)	25
Vanadium (V)	250
Zinc (Zn)	100

##### MES-13-HG

5 µg/mL each in 5% HNO<sub>3</sub>  
 Mercury (Hg)

Supplied separately for better stability

#### ICP Multi-Element

##### Standard Solution XVI

MES-16-1 100 mL  
 MES-16-5 500 mL

100 µg/mL each in 5% HNO<sub>3</sub> tr. HF  
 21 comps.

Antimony (Sb)	Magnesium (Mg)
Arsenic (As)	Manganese (Mn)
Beryllium (Be)	Molybdenum (Mo)
Cadmium (Cd)	Nickel (Ni)
Calcium (Ca)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cobalt (Co)	Thallium (Tl)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Vanadium (V)
Lead (Pb)	Zinc (Zn)
Lithium (Li)	

#### ICP Multi-Element

##### Standard Solution XVII

MES-17-1 100 mL  
 MES-17-5 500 mL

100 µg/mL each in 15% HCl tr. HNO<sub>3</sub> 7 comps.

Hafnium (Hf)	Tantalum (Ta)
Iridium (Ir)	Titanium (Ti)
Antimony (Sb)	Zirconium (Zr)
Tin (Sn)	

#### ICP Multi-Element

##### Standard Solution XXI for MS

MES-21-1-SET 2 x 100 mL  
 MES-21-5-SET 2 x 500 mL

##### MES-21

10 µg/mL each in 5% HNO<sub>3</sub>  
 29 comps.

Silver (Ag)	Potassium (K)
Aluminum (Al)	Lithium (Li)
Arsenic (As)	Magnesium (Mg)
Barium (Ba)	Manganese (Mn)
Beryllium (Be)	Sodium (Na)
Bismuth (Bi)	Nickel (Ni)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Rubidium (Rb)
Cobalt (Co)	Selenium (Se)
Chromium (Cr)	Strontium (Sr)
Cesium (Cs)	Thallium (Tl)
Copper (Cu)	Vanadium (V)
Iron (Fe)	Uranium (U)
Gallium (Ga)	Zinc (Zn)
Indium (In)	

##### MES-21-HG

10 µg/mL in 5% HNO<sub>3</sub>  
 Mercury (Hg)

Supplied separately for better product stability

#### ICP Multi-Element

##### Standard Solution XXIV

MES-24-1 100 mL  
 MES-24-5 500 mL

At stated conc. (µg/mL) in 1% HNO<sub>3</sub>  
 15 comps.

Aluminum (Al)	50
Arsenic (As)	50
Barium (Ba)	50
Cadmium (Cd)	50
Cobalt (Co)	50
Chromium (Cr)	50
Copper (Cu)	50
Potassium (K)	500
Magnesium (Mn)	50
Molybdenum (Mo)	50
Nickel (Ni)	50
Lead (Pb)	50
Selenium (Se)	50
Strontium (Sr)	50
Zinc (Zn)	50

AccuStandard is not affiliated with these companies and brands. The only purpose is to cross reference with our corresponding products.

# ICP-MS

## Calibration Standards and Matrix Blanks

ICP-MS Standards are formulated to meet the needs of this very special instrument. As matrix effect is of utmost concern, each standard is formulated in specially purified 18 megohm deionized water and ultra pure acids.

- Traceable to NIST reference materials
- 18 Megohm deionized water
- Concentration verified by wet chemical and instrumental analysis
- Ultra high purity starting materials and acids

### Calibration Standards

These five standards encompass the entire range of elements all at 10 ppm.

#### Calibration Standard 1

ICP-MS-CAL1-1 100 mL  
10 µg/mL each in 5% HNO<sub>3</sub> 17 comps.

Element	Most Abundant Isotope
Cerium (Ce)	140
Dysprosium (Dy)	164
Erbium (Er)	166
Europium (Eu)	153
Gadolinium (Gd)	158
Holmium (Ho)	165
Lanthanum (La)	139
Lutetium (Lu)	175
Neodymium (Nd)	143
Praseodymium (Pr)	141
Samarium (Sm)	152
Scandium (Sc)	45
Terbium (Tb)	159
Thorium (Th)	232
Thulium (Tm)	169
Ytterbium (Yb)	174
Yttrium (Y)	89

#### Calibration Standard 2

ICP-MS-CAL2-1 100 mL  
10 µg/mL each in 5% HNO<sub>3</sub> 29 comps.

Element	Most Abundant Isotope
Aluminum (Al)	27
Arsenic (As)	75
Barium (Ba)	138
Beryllium (Be)	9
Bismuth (Bi)	209
Cadmium (Cd)	114
Calcium (Ca)	40
Cesium (Cs)	133
Chromium (Cr)	52
Cobalt (Co)	59
Copper (Cu)	63
Gallium (Ga)	69
Indium (In)	115
Iron (Fe)	56
Lead (Pb)	208
Lithium (Li)	7
Magnesium (Mg)	24
Manganese (Mn)	55
Nickel (Ni)	58
Potassium (K)	39
Rubidium (Rb)	85
Selenium (Se)	80
Silver (Ag)	107
Sodium (Na)	23
Strontium (Sr)	88
Thallium (Tl)	205
Uranium (U)	238
Vanadium (V)	51
Zinc (Zn)	64

#### Calibration Standard 3

ICP-MS-CAL3-R-1 100 mL  
10 µg/mL each in 10% HCl, 1% HNO<sub>3</sub> 10 comps.

Element	Most Abundant Isotope
Antimony (Sb)	121
Gold (Au)	197
Hafnium (Hf)	180
Iridium (Ir)	193
Palladium (Pd)	106
Platinum (Pt)	195
Rhodium (Rh)	103
Ruthenium (Ru)	102
Tellurium (Te)	130
Tin (Sn)	120

#### Calibration Standard 4

ICP-MS-CAL4-1 100 mL  
10 µg/mL each in Water tr. HF 12 comps.

Element	Most Abundant Isotope
Boron (B)	11
Germanium (Ge)	74
Molybdenum (Mo)	98
Niobium (Nb)	93
Phosphorus (P)	31
Rhenium (Re)	187
Silicon (Si)	28
Sulfur (S)	32
Tantalum (Ta)	181
Titanium (Ti)	48
Tungsten (W)	184
Zirconium (Zr)	90

#### Calibration Standard 5

ICP-MS-CAL5-1 100 mL  
10 µg/mL in 5% HNO<sub>3</sub>

Element	Most Abundant Isotope
Mercury (Hg)	202

#### Calibration Standard Set

ICP-MS-CAL-R-1-SET 5 x 100 mL  
ICP-MS-CAL1-1 ICP-MS-CAL4-1  
ICP-MS-CAL2-1 ICP-MS-CAL5-1  
ICP-MS-CAL3-R-1

### Matrix Blanks

#### Nitric Acid Blank

ICP-MS-BLN-1 100 mL  
ICP-MS-BLN-5 500 mL

5% HNO<sub>3</sub> in 18 Megohm ASTM Type I deionized Water

#### Hydrochloric Acid Blank

ICP-MS-BLH-1 100 mL  
ICP-MS-BLH-5 500 mL

5% HCl in 18 Megohm ASTM Type I deionized Water

These blanks are prepared from the same water source and acids as your standards and therefore provide a consistent matrix. They are excellent as a blank, for preparing a standard curve, or as a diluent for standards and samples.

#### Water Blank

ICP-MS-BLW-1 100 mL  
ICP-MS-BLW-5 500 mL

18 Megohm ASTM Type I deionized Water

# ICP-MS

## Tuning Solutions, Interference Check and Memory Check

### Tuning Solutions

We offer two tuning solutions, both range from 7-238 mass units. Choose the one which best suits your needs.

**ICP-MS-TUNSOL1-1** 100 mL  
100 µg/mL each in 2% HNO<sub>3</sub> 8 comps.

Element	Isotope	Most Abundant
Barium (Ba)	138	
Beryllium (Be)	9	
Copper (Cu)	63	
Indium (In)	115	
Lithium (Li)	7	
Magnesium (Mg)	24	
Thallium (Tl)	205	
Uranium (U)	238	

**ICP-MS-TUNSOL2-1** 100 mL  
100 µg/mL each in 2% HNO<sub>3</sub> 13 comps.

Element	Isotope	Most Abundant
Barium (Ba)	138	
Beryllium (Be)	9	
Bismuth (Bi)	209	
Cerium (Ce)	140	
Copper (Cu)	63	
Holmium (Ho)	165	
Indium (In)	115	
Lead (Pb)	208	
Lithium (Li)	7	
Magnesium (Mg)	24	
Thallium (Tl)	205	
Uranium (U)	238	
Yttrium (Y)	89	

### Interference Check Standards

#### Solution A

**ICP-MS-INTA-1** 100 mL  
At stated conc. (µg/mL) in 1% HNO<sub>3</sub> 12 comps.

Element	µg/mL	Isotope	Most Abundant
Aluminum (Al)	1000	27	
Carbon (C)	2000	12	
Calcium (Ca)	3000	40	
Chloride (Cl)	18000	35	
Iron (Fe)	2500	56	
Magnesium (Mg)	1000	24	
Molybdenum (Mo)	20	98	
Phosphorus (P)	1000	31	
Potassium (K)	1000	39	
Sodium (Na)	2500	23	
Sulfur (S)	1000	32	
Titanium (Ti)	20	48	

#### Solution B

**ICP-MS-INTB-1** 100 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 11 comps.

Element	µg/mL	Isotope	Most Abundant
Arsenic (As)	10	75	
Cadmium (Cd)	10	114	
Carbon (C)	20	12	
Chromium (Cr)	20	52	
Copper (Cu)	20	63	
Manganese (Mn)	20	55	
Nickel (Ni)	20	58	
Selenium (Se)	10	80	
Silver (Ag)	20	107	
Vanadium (V)	20	51	
Zinc (Zn)	10	64	

#### Solution B

**ICP-MS-INTB-R1-1** 100 mL  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 11 comps.

Element	µg/mL	Isotope	Most Abundant
Arsenic (As)	10	75	
Cadmium (Cd)	10	114	
Chromium (Cr)	20	52	
Cobalt (Co)	20	59	
Copper (Cu)	20	63	
Manganese (Mn)	20	55	
Nickel (Ni)	20	58	
Selenium (Se)	10	80	
Silver (Ag)	5	107	
Vanadium (V)	20	51	
Zinc (Zn)	10	64	

### Memory Check Solution

#### Memory Check Solution Set

**ICP-MS-MEMCHKA-R1-SET** 2 x 100 mL

ICP-MS-MEMCHKA1-R1  
ICP-MS-MEMCHKA2-R1

#### Solution A

**ICP-MS-MEMCHKA1-R1** 100 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 24 comps.

Element	µg/mL	Isotope	Most Abundant
Aluminum (Al)	1000	27	
Antimony (Sb)	20	121	
Arsenic (As)	20	75	
Barium (Ba)	20	138	
Beryllium (Be)	20	9	
Cadmium (Cd)	20	114	
Calcium (Ca)	1000	40	
Carbon (C)	2000	12	
Chromium (Cr)	20	52	
Cobalt (Co)	20	59	
Copper (Cu)	20	63	
Iron (Fe)	1000	56	
Lead (Pb)	20	208	
Magnesium (Mg)	1000	24	
Molybdenum (Mo)	20	98	
Potassium (K)	1000	39	
Titanium (Ti)	20	48	
Manganese (Mn)	20	55	
Nickel (Ni)	20	58	
Selenium (Se)	20	80	
Sodium (Na)	1000	23	
Thallium (Tl)	20	205	
Vanadium (V)	20	51	
Zinc (Zn)	20	64	

#### ICP-MS-MEMCHKA2-R1

20 µg/mL In 2% HNO<sub>3</sub> 100 mL

Element	Isotope	Most Abundant
Silver (Ag)	107	

#### Solution B

**ICP-MS-MEMCHKB-R1** 100 mL  
At stated conc. (µg/mL) in Water 3 comps.

Element	µg/mL	Isotope	Most Abundant
Chloride (Cl)	7200	35	
Phosphorus (P)	1000	31	
Sulfur (S)	1000	32	

### Technical Note

These memory check solutions are not designed to be used as standards. The solutions should be mixed together right before aspiration. Precipitate will form over time - this is normal and will not affect the performance of the solution. The mixture is used only to determine the memory or "carry-over" that occurs after running a "concentrated" solution.



# ICP-MS

## Spiking, QC and Internal Standards

### Spiking Standards

#### Spiking Standard for Water

ICP-MS-SPIKE-W-1 100 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 17 comps.

Element	Most Abundant	
	µg/mL	Isotope
Antimony (Sb)	100	121
Arsenic (As)	50	75
Barium (Ba)	250	138
Beryllium (Be)	25	9
Cadmium (Cd)	25	114
Chromium (Cr)	100	52
Cobalt (Co)	100	59
Copper (Cu)	100	63
Iron (Fe)	500	56
Lead (Pb)	50	208
Manganese (Mn)	100	55
Nickel (Ni)	100	58
Selenium (Se)	25	80
Silver (Ag)	25	107
Thallium (Tl)	25	205
Vanadium (V)	100	51
Zinc (Zn)	250	64

#### Spiking Standard for Soil

ICP-MS-SPIKE-S-1 100 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 15 comps.

Element	Most Abundant	
	µg/mL	Isotope
Antimony (Sb)	100	121
Arsenic (As)	50	75
Barium (Ba)	250	138
Beryllium (Be)	25	9
Cadmium (Cd)	50	114
Chromium (Cr)	250	52
Cobalt (Co)	100	59
Copper (Cu)	250	63
Lead (Pb)	100	208
Nickel (Ni)	125	58
Selenium (Se)	25	80
Silver (Ag)	25	107
Thallium (Tl)	25	205
Vanadium (V)	150	51
Zinc (Zn)	250	90

### Quality Control

#### Sample 1

ICP-MS-QC1-1

100 mL

10 µg/mL each in 2% HNO<sub>3</sub> 9 comps.

Element	Most Abundant	
	Isotope	
Beryllium (Be)	9	
Bismuth (Bi)	209	
Cerium (Ce)	140	
Cobalt (Co)	59	
Indium (In)	115	
Lead (Pb)	208	
Magnesium (Mg)	24	
Nickel (Ni)	58	
Uranium (U)	238	

#### Sample 2

ICP-MS-QC2-1

100 mL

10 µg/mL each in 5% HNO<sub>3</sub> 25 comps

Element	Most Abundant	
	Isotope	
Aluminium (Al)	27	
Antimony (Sb)	121	
Arsenic (As)	75	
Barium (Ba)	138	
Beryllium (Be)	9	
Cadmium (Cd)	114	
Calcium (Ca)	40	
Chromium (Cr)	52	
Cobalt (Co)	59	
Copper (Cu)	63	
Iron (Fe)	56	
Lead (Pb)	208	
Magnesium (Mg)	24	
Manganese (Mn)	55	
Molybdenum (Mo)	98	
Nickel (Ni)	56	
Potassium (K)	39	
Selenium (Se)	80	
Silver (Ag)	107	
Sodium (Na)	23	
Thallium (Tl)	205	
Thorium (Th)	232	
Uranium (U)	238	
Vanadium (V)	51	
Zinc (Zn)	64	

#### Sample 3

ICP-MS-QC3-1

100 mL

10 µg/mL each in 5% HNO<sub>3</sub> tr. HF 21 comps.

Element	Most Abundant	
	Isotope	
Antimony (Sb)	121	
Arsenic (As)	75	
Beryllium (Be)	9	
Cadmium (Cd)	114	
Calcium (Ca)	40	
Chromium (Cr)	52	
Cobalt (Co)	59	
Copper (Cu)	63	
Iron (Fe)	56	
Lead (Pb)	208	
Lithium (Li)	7	
Magnesium (Mg)	24	
Manganese (Mn)	55	
Molybdenum (Mo)	98	
Nickel (Ni)	58	
Selenium (Se)	80	
Strontium (Sr)	88	
Thallium (Tl)	205	
Titanium (Ti)	48	
Vanadium (V)	51	
Zinc (Zn)	64	

### Internal Standards

#### Single Internal Standards at 2 concentrations

Element	Matrix	10 µg/mL		100 µg/mL	
		Cat. No.	Unit	Cat. No.	Unit
Bismuth	2-5% HNO	ICP-MS-IS-BI-1	100 mL	ICP-MS-IS-BI-10X-1	100 mL
Holmium	2-5% HNO	ICP-MS-IS-HO-1	100 mL	ICP-MS-IS-HO-10X-1	100 mL
Indium	2-5% HNO <sub>3</sub>	ICP-MS-IS-IN-1	100 mL	ICP-MS-IS-IN-10X-1	100 mL
Lutetium	2-5% HNO <sub>3</sub>	ICP-MS-IS-LU-1	100 mL	ICP-MS-IS-LU-10X-1	100 mL
Lithium-6	2-5% HNO <sub>3</sub>	ICP-MS-IS-LI6-1	100 mL	ICP-MS-IS-LI6-10X-1	100 mL
Rhodium	10% HCl	ICP-MS-IS-RH-1	100 mL	ICP-MS-IS-RH-10X-1	100 mL
Scandium	2-5% HNO <sub>3</sub>	ICP-MS-IS-SC-1	100 mL	ICP-MS-IS-SC-10X-1	100 mL
Terbium	2-5% HNO <sub>3</sub>	ICP-MS-IS-TB-1	100 mL	ICP-MS-IS-TB-10X-1	100 mL
Yttrium	2-5% HNO <sub>3</sub>	ICP-MS-IS-Y-1	100 mL	ICP-MS-IS-Y-10X-1	100 mL

#### Internal Standard Mix

These internal standards have been chosen because they all have nearly 100% abundance of a single isotope and they are not commonly found in routine samples.

ICP-MS-IS-MIX1-1 100 mL

10 µg/mL each in 2% HNO<sub>3</sub> 7 comps.

Element	Most Abundant	
	Isotope	
Bismuth (Bi)	209	
Holmium (Ho)	165	
Indium (In)	115	
Lithium-6 (Li-6)	6	
Scandium (Sc)	45	
Terbium (Tb)	159	
Yttrium (Y)	89	

# ICP-MS

## EPA Method 200.8 & 6020

### Method 200.8 Determination of Trace Elements in Waters and Wastes by ICP-MS

#### Calibration Standards

##### Calibration Standard #1 (1991 Version)

ICP-MS-200.8-CAL1-1 100 mL  
10 µg/mL each in 5% HNO<sub>3</sub> tr. HF 18 comps.

Element	Isotope
Aluminum (Al)	27
Antimony (Sb)	121
Arsenic (As)	75
Beryllium (Be)	9
Cadmium (Cd)	114
Chromium (Cr)	52
Cobalt (Co)	59
Copper (Cu)	63
Lead (Pb)	208
Manganese (Mn)	55
Molybdenum (Mo)	98
Nickel (Ni)	58
Selenium (Se)	80
Thallium (Tl)	205
Thorium (Th)	232
Uranium (U)	238
Vanadium (V)	51
Zinc (Zn)	64

##### Calibration Standard #2

ICP-MS-200.8-CAL2-1 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 2 comps.

Element	Isotope
Barium (Ba)	138
Silver (Ag)	67

##### Calibration Standard #1R (1994 Version)

ICP-MS-200.8-CAL1R-1 100 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> tr. HF

Element	µg/mL	Isotope
Aluminum (Al)	10	27
Antimony (Sb)	10	121
Arsenic (As)	10	75
Beryllium (Be)	10	9
Cadmium (Cd)	10	114
Chromium (Cr)	10	52
Cobalt (Co)	10	59
Copper (Cu)	10	63
Lead (Pb)	10	208
Manganese (Mn)	10	55
Molybdenum (Mo)	10	98
Nickel (Ni)	10	58
Selenium (Se)	50	80
Thallium (Tl)	10	205
Thorium (Th)	10	232
Uranium (U)	10	238
Vanadium (V)	10	51
Zinc (Zn)	10	64

##### Calibration Standard #3

ICP-MS-200.8-CAL3-1 100 mL  
1 component in 5% HNO<sub>3</sub>

Element	µg/mL	Isotope
Mercury (Hg)	5	202

#### Internal Standards

##### Internal Standard #1

ICP-MS-200.8-IS-1 100 mL  
100 µg/mL each in 2% HNO<sub>3</sub> 5 comps.

Element	Isotope
Scandium (Sc)	45
Yttrium (Y)	89
Indium (In)	115
Terbium (Tb)	159
Bismuth (Bi)	209

##### Internal Standard #2

ICP-MS-200.8-IS2-1 100 mL  
100 µg/mL in 2% HNO<sub>3</sub>

Element	Isotope
Gold (Au)	197

See previous page for  
Single-Element Internal Standards

##### Tuning Standard

ICP-MS-200.8-TUN-1 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 5 comps.

Element	Isotope
Beryllium (Be)	75
Magnesium (Mg)	24
Cobalt (Co)	59
Indium (In)	115
Lead (Pb)	208

### Method 6020 Standards for Inductively Coupled Mass Spectrometry

##### Calibration Standard

ICP-MS-6020-CAL-R-1 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 22 comps.

Element	Isotope
Aluminum (Al)	27
Antimony (Sb)	121
Arsenic (As)	75
Barium (Ba)	138
Beryllium (Be)	9
Cadmium (Cd)	114
Calcium (Ca)	40
Chromium (Cr)	52
Cobalt (Co)	59
Copper (Cu)	63
Iron (Fe)	56
Lead (Pb)	208
Magnesium (Mg)	24
Manganese (Mn)	55
Nickel (Ni)	58
Potassium (K)	39
Selenium (Se)	80
Silver (Ag)	107
Sodium (Na)	23
Thallium (Tl)	205
Vanadium (V)	51
Zinc (Zn)	64

##### Interference Check Standard #1

ICP-MS-6020-INT1-1 100 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 12 comps.

Element	µg/mL	Isotope
Aluminum (Al)	1000	27
Chloride (Cl)	10000	35
Calcium (Ca)	1000	40
Carbon (C)	2000	12
Iron (Fe)	1000	56
Magnesium (Mg)	1000	24
Molybdenum (Mo)	20	98
Phosphorus (P)	1000	31
Potassium (K)	1000	39
Sodium (Na)	1000	23
Sulfur (S)	1000	32
Titanium (Ti)	20	48

##### Interference Check Standard #2

ICP-MS-6020-INT2-1 100 mL  
2 µg/mL each in 5% HNO<sub>3</sub> tr. HF 9 comps.

Element	Isotope
Arsenic (As)	75
Cadmium (Cd)	114
Chromium (Cr)	52
Cobalt (Co)	59
Copper (Cu)	63
Manganese (Mn)	55
Nickel (Ni)	58
Silver (Ag)	107
Zinc (Zn)	64

##### Tuning Standard

ICP-MS-6020-TUN-1 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 4 comps.

Element	Isotope
Cobalt (Co)	59
Indium (In)	115
Lithium (Li)	7
Thallium (Tl)	205

# Inorganic ASTM Methods

## ASTM D664 Total Acid Number

### D664 Total Acid Number Set

TAN-5-SET

2 x 500 mL

TAN-2-5, TAN-5-5

### Total Acid Number 2

TAN-2-5

500 mL

2 mg/g in Mineral oil

### Total Acid Number 5

TAN-5-5

500 mL

5 mg/g in Mineral oil

## ASTM D1159 Bromine Number

### D1159 Bromine Number Set

BR-NO-200ML-SET

2 x 200 mL

BR-NO-2-200ML, BR-NO-10-200ML

### Bromine Number 2

BR-NO-2-200ML

200 mL

2 g/100 g in Toluene

### Bromine Number 10

BR-NO-10-200ML

200 mL

10 g/100 g in Toluene

## ASTM D2710 Bromine Index

### D2710 Bromine Index Set

BR-IN-200ML-SET

3 x 200 mL

BR-IN-10-200ML, BR-IN-100-200ML  
BR-IN-1000-200ML

### Bromine Index 10

BR-IN-10-200ML

200 mL

10 mg/100g in Toluene

### Bromine Index 100

BR-IN-100-200ML

200 mL

100 mg/100 g in Toluene

### Bromine Index 1000

BR-IN-1000-200ML

200 mL

1000 mg/100 g in Toluene

## ASTM 2896 Total Base Number

### D2896 Total Base Number

TBN-5-SET

3 x 500 mL

TBN-2-5, TBN-5-5, TBN-10-5

### Total Base Number 2

TBN-2-5

500 mL

2 mg/g in Mineral oil

### Total Base Number 5

TBN-5-5

500 mL

5 mg/g in Mineral oil

### Total Base Number 10

TBN-10-5

500 mL

10 mg/g in Mineral oil

## ASTM D3230 Determination of Salts in Crude Oil

### Mixed Salt Solution

D-3230-89-1

100 mL

D-3230-89-5

500 mL

At stated conc. (µg/mL) in Alcohol Solution (1-butanol : MeOH) (ratio 63:37)

3 comps.

Calcium chloride

10

Sodium chloride

70

Magnesium chloride

20

## ASTM D3237 Lead in Gasoline by AA Spectroscopy

### Lead Standard Calibration Curve

D-3237-CAL-SET

4 x 100 mL

Set includes the following Catalog Numbers:

Description	Cat. No.	Unit
Blank 1% Aliquot 336/MIBK	D-3237-01	100 mL
0.02 g Pb / gal ( 5.3 mg Pb/ L) in 1% Aliquot 336 / MIBK	D-3237-02	100 mL
0.05 g Pb / gal ( 13.2 mg Pb/ L) in 1% Aliquot 336 / MIBK	D-3237-03	100 mL
0.10 g Pb / gal ( 26.4 mg Pb/ L) in 1% Aliquot 336 / MIBK	D-3237-04	100 mL

### Technical Note

D3237 Meets EPA guidelines for RFG Analysis

## ASTM D3831 Manganese in Gasoline by AA Spectroscopy

### Manganese Stock Solution

D-3831-1

1 x 100 mL

1.0 g Mn / gal (264.2 mg Mn / L) in Methyl isobutyl ketone

Manganese

### Manganese Stock Solution

D-3831-R1-1

1 x 100 mL

400 mg/L in Methyl isobutyl ketone

Manganese

## ASTM D8083 Total Nitrogen and TKN by Calculation in Water

### Total Nitrogen Stock Calibration Standard

D-8083-TN-1

100 mL

Nitrogen @ 1000 µg/mL in 0.1% Hydrochloric acid

### Total Nitrogen Stock Laboratory Control Standard

D-8083-LCS-1

100 mL

Nitrogen @ 1000 µg/mL in 0.1% Hydrochloric acid

### Stock TON Test Solution

D-8083-TON-1

100 mL

Nitrogen @ 1000 µg/mL in Water

# Organometallic Standards

## AA, ICP, DCP & XRF Analysis

These Standards were formulated for the analysis of metals in oils and other organic matrices. The standards provide a convenient way to analyze for metals (wear metals, additives and contaminants) in lubricating oil, gasoline, residual oil, crude oil, turbine fuel and environmental samples. Organometallic Standards listed on this page may contain sulfur which can be introduced by possible sulfonated starting materials used to formulate the actual organometallic standard.

- Single & Multi Element Standards
- Formulated from Ultra High Purity Organometallic starting materials & matrices

### Single Element Organometallic

Element	1000 µg/g in 75 cSt base oil		5000 µg/g in 75 cSt base oil	
	Cat. No.	Unit	Cat. No.	Unit
Aluminum (Al)	WM-75CST-01	50 grams	WM-75CST-01-5X	50 grams
Antimony (Sb)	WM-75CST-02	50 grams	WM-75CST-02-5X	50 grams
Arsenic (As)	WM-75CST-03	50 grams	-----	----
Barium (Ba)	WM-75CST-04	50 grams	WM-75CST-04-5X	50 grams
Beryllium (Be)	WM-75CST-05	50 grams	-----	----
Bismuth (Bi)	WM-75CST-06	50 grams	-----	----
Boron (B)	WM-75CST-07	50 grams	WM-75CST-07-5X	50 grams
Cadmium (Cd)	WM-75CST-08	50 grams	WM-75CST-08-5X	50 grams
Calcium (Ca)	WM-75CST-09	50 grams	WM-75CST-09-5X	50 grams
Cerium (Ce)	WM-75CST-11	50 grams	WM-75CST-11-5X	50 grams
Chromium (Cr)	WM-75CST-13	50 grams	WM-75CST-13-5X	50 grams
Cobalt (Co)	WM-75CST-14	50 grams	WM-75CST-14-5X	50 grams
Copper (Cu)	WM-75CST-15	50 grams	WM-75CST-15-5X	50 grams
Indium (In)	WM-75CST-25	50 grams	WM-75CST-25-5X	50 grams
Iron (Fe)	WM-75CST-27	50 grams	WM-75CST-27-5X	50 grams
Lanthanum (La)	-----	----	WM-75CST-28-5X	50 grams
Lead (Pb)	WM-75CST-29	50 grams	WM-75CST-29-5X	50 grams
Lithium (Li)	WM-75CST-30	50 grams	WM-75CST-30-5X	50 grams
Magnesium (Mg)	WM-75CST-32	50 grams	WM-75CST-32-5X	50 grams
Manganese (Mn)	WM-75CST-33	50 grams	WM-75CST-33-5X	50 grams
Mercury (Hg)	WM-75CST-34	50 grams	-----	----
Molybdenum (Mo)	WM-75CST-35	50 grams	WM-75CST-35-5X	50 grams
Nickel (Ni)	WM-75CST-37	50 grams	WM-75CST-37-5X	50 grams
Phosphorus (P)	WM-75CST-41	50 grams	WM-75CST-41-5X	50 grams
Potassium (K)	WM-75CST-43	50 grams	WM-75CST-43-5X	50 grams
Scandium (Sc)	WM-75CST-50	50 grams	-----	----
Selenium (Se)	WM-75CST-51	50 grams	-----	----
Silicon (Si)	WM-75CST-52	50 grams	WM-75CST-52-5X	50 grams
Silver (Ag)	WM-75CST-53	50 grams	WM-75CST-53-5X	50 grams
Sodium (Na)	WM-75CST-54	50 grams	WM-75CST-54-5X	50 grams
Strontium (Sr)	WM-75CST-55	50 grams	WM-75CST-55-5X	50 grams
Sulfur (S)	WM-75CST-56	50 grams	WM-75CST-56-5X	50 grams
Thallium (Tl)	WM-75CST-60	50 grams	-----	----
Tin (Sn)	WM-75CST-63	50 grams	WM-75CST-63-5X	50 grams
Titanium (Ti)	WM-75CST-64	50 grams	WM-75CST-64-5X	50 grams
Tungsten (W)	WM-75CST-65	50 grams	WM-75CST-65-5X	50 grams
Vanadium (V)	WM-75CST-67	50 grams	WM-75CST-67-5X	50 grams
Yttrium (Y)	WM-75CST-69	50 grams	WM-75CST-69-5X	50 grams
Zinc (Zn)	WM-75CST-70	50 grams	WM-75CST-70-5X	50 grams
Zirconium (Zn)	WM-75CST-71	50 grams	WM-75CST-71-5X	50 grams

### Organometallic Contents

Single Element, Matrix Oil and Stabilizer  
 Wear Metal Multi-Element  
 Metals Additives  
 Elements in Lubricating Oil  
 SULFUR-FREE Single Element

### Matrix Oil and Stabilizer

**75 cSt Oil**  
 MOSOL-75 500 mL

**Stabilizer**  
 WM-STAB 1 x 50 grams

#### Technical Note

Used to improve the stability of Organometallic Standards when diluting into solvents such as Kerosene. Add 0.6% by weight.



# Organometallic Standards

## AA, ICP, DCP & XRF Analysis

### 21 Wear Metal Multi-Element

In base oil at the stated concentration

Conc.	Cat. No.	Unit
10 µg/g	WM-21-1X-100G	100 grams
	WM-21-1X-200G	200 grams
30 µg/g	WM-21-3X-100G	100 grams
	WM-21-3X-200G	200 grams
50 µg/g	WM-21-5X-100G	100 grams
	WM-21-5X-200G	200 grams
100 µg/g	WM-21-10X-100G	100 grams
	WM-21-10X-200G	200 grams
300 µg/g	WM-21-30X-100G	100 grams
	WM-21-30X-200G	200 grams
500 µg/g	WM-21-50X-100G	100 grams
	WM-21-50X-200G	200 grams
900 µg/g	WM-21-90X-100G	100 grams
	WM-21-90X-200G	200 grams

Silver (Ag)	Molybdenum (Mo)
Aluminum (Al)	Sodium (Na)
Boron (B)	Nickel (Ni)
Barium (Ba)	Phosphorus (P)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Silicon (Si)
Chromium (Cr)	Tin (Sn)
Copper (Cu)	Titanium (Ti)
Iron (Fe)	Vanadium (V)
Magnesium (Mg)	Zinc (Zn)
Manganese (Mn)	

### 22 Wear Metal Multi-Element

21 Wear Metals plus Potassium (K) in base oil at the stated concentration

Conc.	Cat. No.	Unit
10 µg/g	WM-22-1X-100G	100 grams
	WM-22-1X-200G	200 grams
30 µg/g	WM-22-3X-100G	100 grams
	WM-22-3X-200G	200 grams
50 µg/g	WM-22-5X-100G	100 grams
	WM-22-5X-200G	200 grams
100 µg/g	WM-22-10X-100G	100 grams
	WM-22-10X-200G	200 grams
300 µg/g	WM-22-30X-100G	100 grams
	WM-22-30X-200G	200 grams
500 µg/g	WM-22-50X-100G	100 grams
	WM-22-50X-200G	200 grams
900 µg/g	WM-22-90X-100G	100 grams
	WM-22-90X-200G	200 grams

Silver (Ag)	Manganese (Mn)
Aluminum (Al)	Molybdenum (Mo)
Boron (B)	Sodium (Na)
Barium (Ba)	Nickel (Ni)
Calcium (Ca)	Phosphorus (P)
Cadmium (Cd)	Lead (Pb)
Chromium (Cr)	Silicon (Si)
Copper (Cu)	Tin (Sn)
Iron (Fe)	Titanium (Ti)
Potassium (K)	Vanadium (V)
Magnesium (Mg)	Zinc (Zn)

### 23 Wear Metal Multi-Element

21 Wear Metals plus Potassium (K) and Antimony (Sb) in base oil at the stated conc.

Conc.	Cat. No.	Unit
10 µg/g	WM-23-1X-100G	100 grams
	WM-23-1X-200G	200 grams
30 µg/g	WM-23-3X-100G	100 grams
	WM-23-3X-200G	200 grams
50 µg/g	WM-23-5X-100G	100 grams
	WM-23-5X-200G	200 grams
100 µg/g	WM-23-10X-100G	100 grams
	WM-23-10X-200G	200 grams
300 µg/g	WM-23-30X-100G	100 grams
	WM-23-30X-200G	200 grams
500 µg/g	WM-23-50X-100G	100 grams
	WM-23-50X-200G	200 grams
900 µg/g	WM-23-90X-100G	100 grams
	WM-23-90X-200G	200 grams

Silver (Ag)	Molybdenum (Mo)
Aluminum (Al)	Sodium (Na)
Boron (B)	Nickel (Ni)
Barium (Ba)	Phosphorus (P)
Calcium (Ca)	Lead (Pb)
Cadmium (Cd)	Antimony (Sb)
Chromium (Cr)	Silicon (Si)
Copper (Cu)	Tin (Sn)
Iron (Fe)	Titanium (Ti)
Potassium (K)	Vanadium (V)
Magnesium (Mg)	Zinc (Zn)
Manganese (Mn)	

### Metals Additives

MA-900-100G 100 grams  
MA-900-200G 200 grams

900 µg/g each in Base oil

Barium (Ba)	Magnesium (Mg)	Zinc (Zn)
Calcium (Ca)	Phosphorus (P)	

### Elements in Lubricating Oil

#### Elements in Lubricating Oil

ASTM-P-0110-SET

17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

ASTM-P-0110	Nominal Values				
	Ba (Wt.%)	Ca (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
-01	0.100	0.600	0.005	0.175	0.060
-02	0.175	0.500	0.200	0.050	0.080
-03	0.000	0.400	0.150	0.300	0.180
-04	0.025	0.260	0.250	0.150	0.120
-05	0.150	0.005	0.005	0.450	0.070
-06	0.000	0.400	0.025	0.350	0.100
-07	0.200	0.300	0.060	0.250	0.120
-08	0.000	0.200	0.100	0.450	0.100
-09	0.100	0.060	0.080	0.300	0.130
-10	0.050	0.060	0.050	0.200	0.050
-11	0.075	0.050	0.120	0.100	0.075
-12	0.010	0.025	0.150	0.200	0.130
-13	0.005	0.005	0.200	0.400	0.150
-14	0.000	0.170	0.250	0.550	0.110
-15	0.000	0.100	0.100	0.200	0.200
-16	0.005	0.010	0.010	0.600	0.250
-17	0.000	0.000	0.000	0.000	0.000

#### Elements in Lubricating Oil

ASTM-P-0117-SET

10 x 100 mL

Designed for ASTM D6443

ASTM-P-0117	Nominal Values						
	Ca (Wt.%)	Cl (Wt.%)	Cu (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
-01	0.020	0.030	0.010	0.200	0.250	1.000	0.020
-02	0.020	0.020	0.050	0.200	0.020	0.020	0.250
-03	0.020	0.200	0.010	0.040	0.250	0.150	0.250
-04	0.020	0.200	0.050	0.040	0.020	1.000	0.020
-05	0.400	0.020	0.010	0.040	0.020	1.000	0.250
-06	0.400	0.020	0.050	0.040	0.250	0.020	0.020
-07	0.400	0.200	0.010	0.200	0.020	0.020	0.050
-08	0.400	0.200	0.050	0.200	0.250	1.000	0.250
-09	0.200	0.100	0.025	0.080	0.150	0.500	0.100
-10	0.000	0.000	0.000	0.000	0.000	0.000	0.000

#### Technical Note

Concentrations in these sets are targets. Actual production lots may vary.

# Organometallic Standards

## Premium Sulfur-Free

### Sulfur-Free Single Element Organometallic

Element	1000 µg/g		5000 µg/g	
	Cat. No.	Unit	Cat. No.	Unit
Aluminum (Al)	WM-NMS-01	50 mL	WM-NMS-01-5X	50 mL
Antimony (Sb)	WM-NMS-02	50 mL	WM-NMS-02-5X	50 mL
Arsenic (As)	WM-NMS-03	50 mL	WM-NMS-03-5X	50 mL
Barium (Ba)	WM-NMS-04	50 mL	WM-NMS-04-5X	50 mL
Beryllium (Be)	WM-NMS-05	50 mL	WM-NMS-05-5X	50 mL
Boron (B)	WM-NMS-07	50 mL	WM-NMS-07-5X	50 mL
Cadmium (Cd)	WM-NMS-08	50 mL	WM-NMS-08-5X	50 mL
Calcium (Ca)	WM-NMS-09	50 mL	WM-NMS-09-5X	50 mL
Cerium (Ce)	WM-NMS-11	50 mL	WM-NMS-11-5X	50 mL
Chromium (Cr)	WM-NMS-13	50 mL	WM-NMS-13-5X	50 mL
Cobalt (Co)	WM-NMS-14	50 mL	WM-NMS-14-5X	50 mL
Copper (Cu)	WM-NMS-15	50 mL	WM-NMS-15-5X	50 mL
Gold (Au)	WM-NMS-22	50 mL	-----	----
Iron (Fe)	WM-NMS-27	50 mL	WM-NMS-27-5X	50 mL
Lead (Pb)	WM-NMS-29	50 mL	WM-NMS-29-5X	50 mL
Lithium (Li)	WM-NMS-30	50 mL	WM-NMS-30-5X	50 mL
Magnesium (Mg)	WM-NMS-32	50 mL	WM-NMS-32-5X	50 mL
Manganese (Mn)	WM-NMS-33	50 mL	WM-NMS-33-5X	50 mL
Mercury (Hg)	WM-NMS-34	50 mL	WM-NMS-34-5X	50 mL
Molybdenum (Mo)	WM-NMS-35	50 mL	WM-NMS-35-5X	50 mL
Palladium (Pd)	WM-NMS-40	50 mL	WM-NMS-40-5X	50 mL
Phosphorus (P)	WM-NMS-41	50 mL	WM-NMS-41-5X	50 mL
Platinum (Pt)	WM-NMS-42	50 mL	WM-NMS-42-5X	50 mL
Potassium (K)	WM-NMS-43	50 mL	WM-NMS-43-5X	50 mL
Selenium (Se)	WM-NMS-51	50 mL	WM-NMS-51-5X	50 mL
Silicon (Si)	WM-NMS-52	50 mL	WM-NMS-52-5X	50 mL
Silver (Ag)	WM-NMS-53	50 mL	WM-NMS-53-5X	50 mL
Sodium (Na)	WM-NMS-54	50 mL	WM-NMS-54-5X	50 mL
Strontium (Sr)	WM-NMS-55	50 mL	WM-NMS-55-5X	50 mL
Thallium (Tl)	WM-NMS-60	50 mL	WM-NMS-60-5X	50 mL
Tin (Sn)	WM-NMS-63	50 mL	WM-NMS-63-5X	50 mL
Titanium (Ti)	WM-NMS-64	50 mL	WM-NMS-64-5X	50 mL
Vanadium (V)	WM-NMS-67	50 mL	WM-NMS-67-5X	50 mL
Yttrium (Y)	WM-NMS-69	50 mL	WM-NMS-69-5X	50 mL
Zinc (Zn)	WM-NMS-70	50 mL	WM-NMS-70-5X	50 mL
Zirconium (Zr)	WM-NMS-71	50 mL	WM-NMS-71-5X	50 mL

- Stabilized
- Ready for Use

Premium Sulfur-Free  
Sulfur below detection  
limits for most elements  
No Metallic Sulfonates

All elements are provided in mineral oil except for Mercury, Palladium and Platinum which are provided in xylene.

#### Technical Note

Sulfur below detection limits for most elements. Sulfur content otherwise noted on certificate. For use with X-ray fluorescence (XRF), plasma emission (ICP or DCP), rotating disk (RDE), or atomic absorption (AA) spectroscopy. May be blended together to prepare multi-element standards. Solutions are stabilized with proprietary chelation and stabilization solution and are ready for use.

Suitable for ASTM  
D4628, D4927, D4951,  
D5056, D5185, D6443,  
D6481

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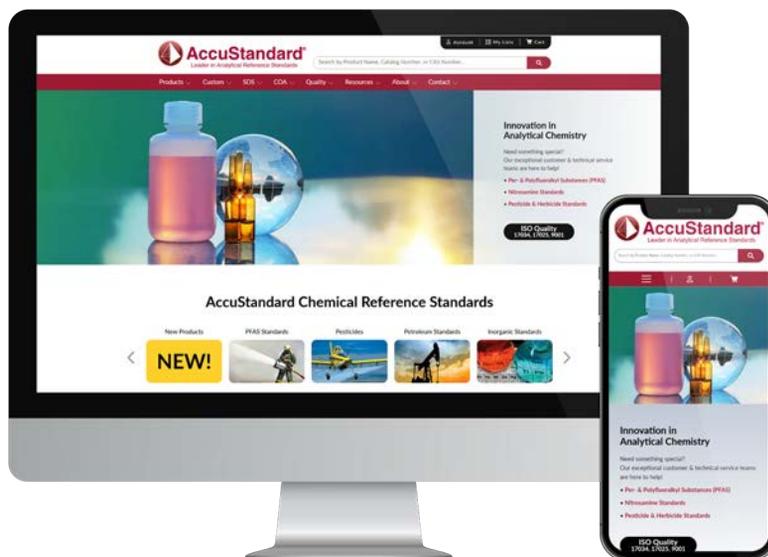
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#### Website

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203-786-5290 (International)

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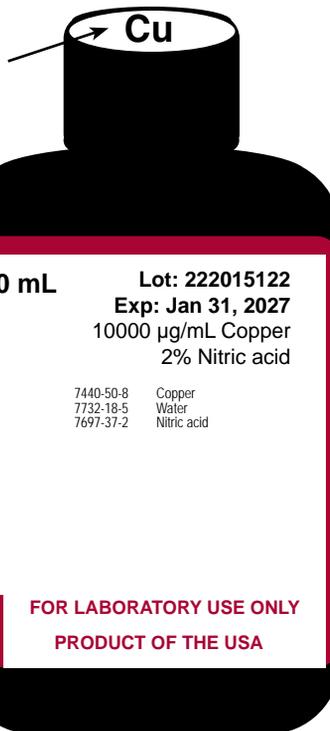
#### Mail:

AccuStandard, Inc.  
125 Market Street  
New Haven, CT 06513  
USA

# Packaging and Shipping

## Product labeling

Cap label to more easily identify single element



**QR Code** - Using a mobile device, scan QR code to access product information including COAs and SDS

<table border="0"><tr><td>H290</td><td>H314</td><td>H302</td><td>H318</td></tr><tr><td>P338</td><td>P352</td><td>P340</td><td>P331</td></tr><tr><td>P233</td><td>P262</td><td>P202</td><td>P264</td></tr><tr><td>P284</td><td>P280</td><td></td><td></td></tr></table> <p>Refer to SDS for Safety Information</p> <p>Signal Word <b>Danger</b></p> 	H290	H314	H302	H318	P338	P352	P340	P331	P233	P262	P202	P264	P284	P280		
H290	H314	H302	H318													
P338	P352	P340	P331													
P233	P262	P202	P264													
P284	P280															

 ICP-15N-10X-1CopperPlasma Emission Standards (ICP) **Storage Condition:** Ambient (>5 C)  **Date Opened:**  **Cu**  Traceable to National Institute of Standards and Technology | **100 mL**  **Lot: 222015122** **Exp: Jan 31, 2027** 10000 µg/mL Copper 2% Nitric acid  7440-50-8 Copper 7732-18-5 Water 7697-37-2 Nitric acid | **FOR LABORATORY USE ONLY**  **PRODUCT OF THE USA** |

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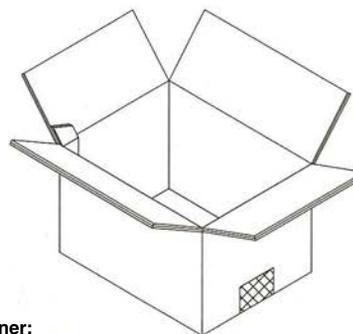
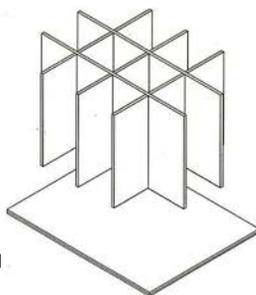
## Packaging and Shipping



**Dividers:**  
Natural Kraft  
Corrugated Fiberboard



Made with recyclable and biodegradable materials



**Shipping Container:**  
Natural Kraft Corrugated Fiberboard

## Shipping

We have many years of experience shipping worldwide, and offer the best and most efficient options available.

- Multiple shipping options available for delivery.
- Packaging maximizes space and keeps dimensions and weight down to minimize shipping charges.
- Designed and tested to meet DOT and IATA shipping regulations.

Products containing acid generally require a hazardous fee for air shipments.  
Inorganic products in water generally do not.





**AccuStandard<sup>®</sup>**

125 Market St, New Haven, CT 06513 USA

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Rev. 3/2026