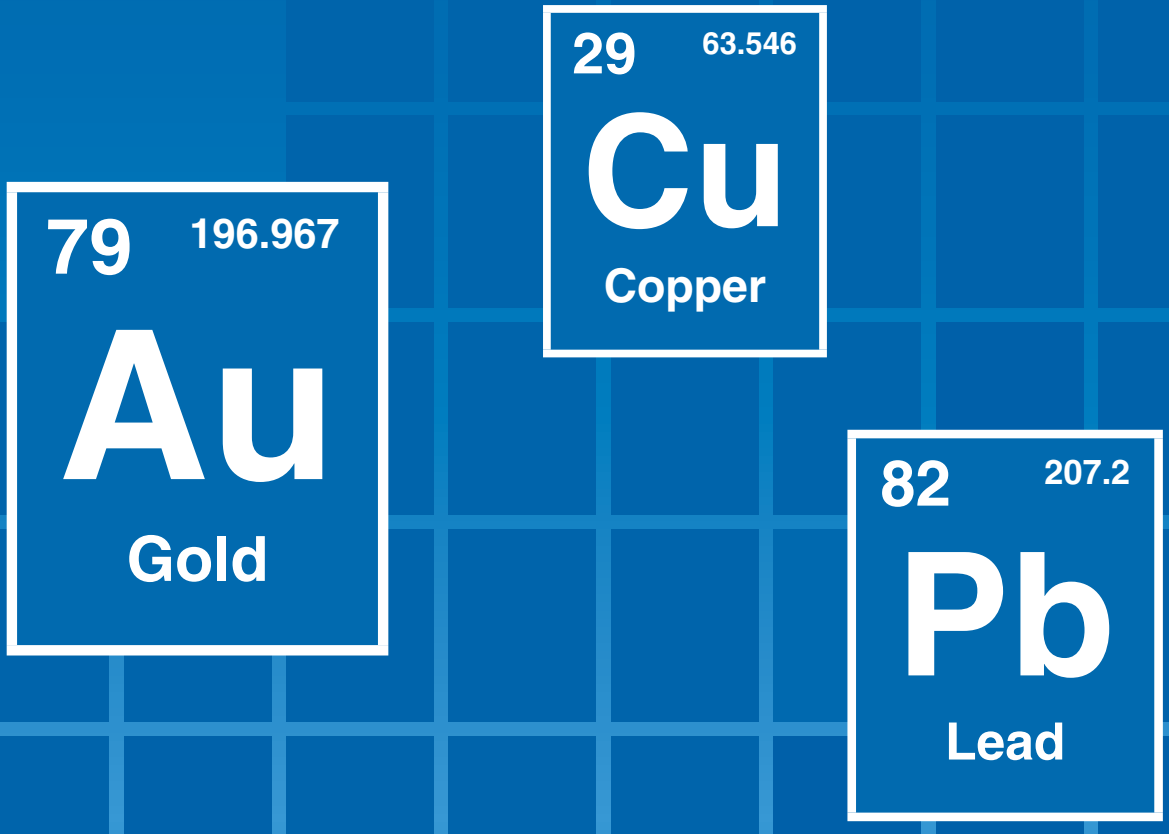
Inorganic Standards



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

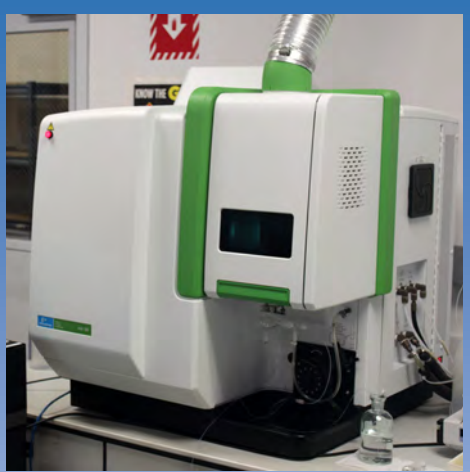
Custom formulations may be requested by contacting Inorganic Technical Service at inotech@accustandard.com or by visiting our website https://www.accustandard.com/custom-quote-request

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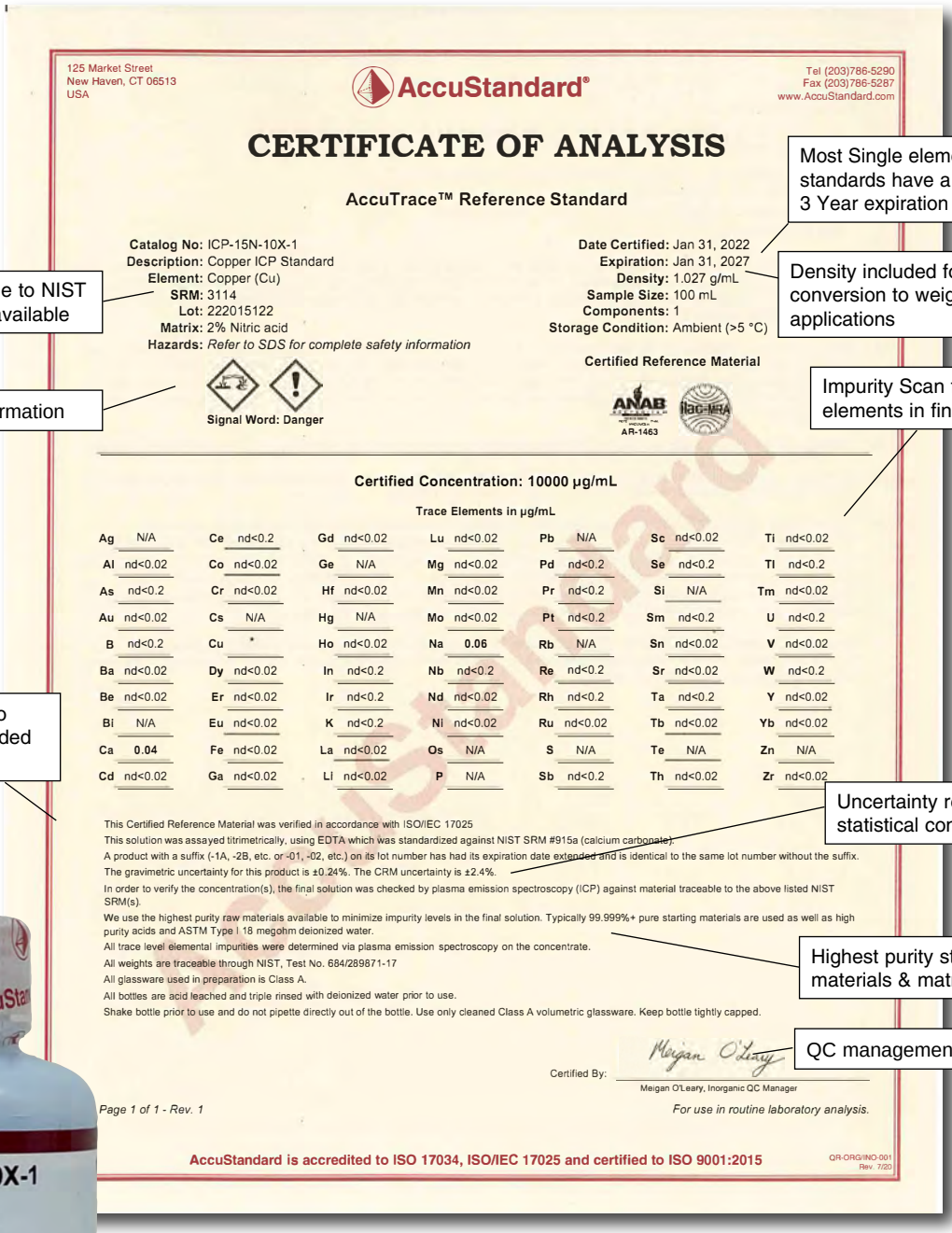
Inorganic products containing acid generally require a hazardous fee for air shipments. Inorganic products in water generally do not.

Packaging, Shipping and Custom Formulations see back of catalog

Certificate of Analysis

Single Element ICP



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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*

Signal Word: Danger

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)

Certified Reference Material

ANAB AR-1463 ilac-MRA

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		

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 I 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

Page 1 of 1 - Rev. 1

For use in routine laboratory analysis.

AccuStandard is accredited to ISO 17034, ISO/IEC 17025 and certified to ISO 9001:2015

QR-ORG/INO-001
Rev. 7/20

Most Single element standards have a minumum 3 Year expiration period

Directly traceable to NIST SRMs - where available

Density included for conversion to weight/weight applications

GHS safety information

Impurity Scan for 68 elements in final solution

Concentration verified by two independent methods for added assurance

Uncertainty reported for statistical confidence

Highest purity starting materials & matrices used

QC management approval

ICP
Single Element

- Traceable to NIST reference materials
- Ultra high purity starting materials and acids
- Specially prepared acid leached bottles
- 18 Megohm deionized water
- Mimimum 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
Al Aluminum		ICP-01N-10X-0.5	50 mL	**Ge Germanium**		ICP-21W-10X-0.5	50 mL
$Al(NO_3)_3 \bullet 9H_2O$	ICP-01N-1	ICP-01N-10X-1	100 mL	$(NH_4)_2GeF_6$	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
Sb Antimony		ICP-02N-10X-0.5	50 mL	**Au Gold**		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
As Arsenic		ICP-03N-10X-0.5	50 mL	**Hf Hafnium**		ICP-23N-10X-0.5	50 mL
As	ICP-03N-1	ICP-03N-10X-1	100 mL	HfO_2	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	
Ba Barium		ICP-04N-10X-0.5	50 mL	**Ho Holmium**		ICP-24N-10X-0.5	50 mL
$Ba(NO_3)_2$	ICP-04N-1	ICP-04N-10X-1	100 mL	Ho_2O_3	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
Be Beryllium		contact us	50 mL	**In Indium**		ICP-25N-10X-0.5	50 mL
$BeO(C_2H_3O_2)_6$	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
Bi Bismuth		ICP-06N-10X-0.5	50 mL	**Ir Iridium**		contact us	50 mL
Bi	ICP-06N-1	ICP-06N-10X-1	100 mL	$IrCl_3 \bullet 3H_20$	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 Boron		ICP-07W-10X-0.5	50 mL	**Fe Iron**		ICP-27N-10X-0.5	50 mL
H_3BO_3	ICP-07W-1	ICP-07W-10X-1	100 mL	$Fe(NO_3)3{\cdot}9H_2O$	ICP-27N-1	ICP-27N-10X-1	100 mL
Water tr. NH_4OH	ICP-07W-5	ICP-07W-10X-5	500 mL	2-5% Nitric acid	ICP-27N-5	ICP-27N-10X-5	500 mL
Cd Cadmium		ICP-08N-10X-0.5	50 mL	**La Lanthanum**		ICP-28N-10X-0.5	50 mL
Cd	ICP-08N-1	ICP-08N-10X-1	100 mL	La_2O_3	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
Ca Calcium		ICP-09N-10X-0.5	50 mL	**Pb Lead**		ICP-29N-10X-0.5	50 mL
$CaCO_3$	ICP-09N-1	ICP-09N-10X-1	100 mL	$Pb(NO_3)_2$	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
Ce Cerium		ICP-11N-10X-0.5	50 mL	**Li Lithium**		ICP-30N-10X-0.5	50 mL
$Ce(NO_3)_3$	ICP-11N-1	ICP-11N-10X-1	100 mL	Li_2CO_3	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
Cs Cesium		ICP-12N-10X-0.5	50 mL	**Lu Lutetium**		ICP-31N-10X-0.5	50 mL
$CsNO_3$	ICP-12N-1	ICP-12N-10X-1	100 mL	Lu_2O_3	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
Cr Chromium		ICP-13N-R-10X-0.5	50 mL	**Mg Magnesium**		ICP-32N-10X-0.5	50 mL
$Cr(NO_3)3 \bullet 9H_2O$	ICP-13N-R-1	ICP-13N-R-10X-1	100 mL	$Mg(NO_3)_2 \bullet 6H_2O$	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
Co Cobalt		ICP-14N-10X-0.5	50 mL	**Mn Manganese**		ICP-33N-10X-0.5	50 mL
Co	ICP-14N-1	ICP-14N-10X-1	100 mL	$Mn(C_2H_3O_2)_2$	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
Cu Copper		ICP-15N-10X-0.5	50 mL	**Hg Mercury**		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
Dy Dysprosium		ICP-16N-10X-0.5	50 mL	**Mo Molybdenum**		ICP-35W-10X-0.5	50 mL
Dy_2O_3	ICP-16N-1	ICP-16N-10X-1	100 mL	$(NH_4)_2MoO_4$	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_4OH	ICP-35W-5	ICP-35W-10X-5	500 mL
Er Erbium		ICP-17N-10X-0.5	50 mL	**Nd Neodymium**		ICP-36N-10X-0.5	50 mL
Er_2O_3	ICP-17N-1	ICP-17N-10X-1	100 mL	Nd_2O_3	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
Eu Europium		ICP-18N-10X-0.5	50 mL	**Ni Nickel**		ICP-37N-10X-0.5	50 mL
Eu_2O_3	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
Gd Gadolinium		ICP-19N-10X-0.5	50 mL	**Nb Niobium**		ICP-38W-10X-0.5	50 mL
Gd_2O_3	ICP-19N-1	ICP-19N-10X-1	100 mL	Nb_2O_5	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
Ga Gallium		ICP-20N-10X-0.5	50 mL	**Pd Palladium**		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
P Phosphorus		ICP-41W-10X-0.5	50 mL
$NH_4H_2PO_4$	ICP-41W-1	ICP-41W-10X-1	100 mL
Water	ICP-41W-5	ICP-41W-10X-5	500 mL
Pt Platinum		contact us	50 mL
Pt	ICP-42H-1	contact us	100 mL
10% HCl	ICP-42H-5	contact us	500 mL
K Potassium		ICP-43N-10X-0.5	50 mL
KNO_3	ICP-43N-1	ICP-43N-10X-1	100 mL
2-5% Nitric acid	ICP-43N-5	ICP-43N-10X-5	500 mL
Pr Praseodymium		ICP-44N-10X-0.5	50 mL
Pr_6O_{11}	ICP-44N-1	ICP-44N-10X-1	100 mL
2-5% Nitric acid	ICP-44N-5	ICP-44N-10X-5	500 mL
Re Rhenium		ICP-45W-10X-0.5	50 mL
Re	ICP-45W-1	ICP-45W-10X-1	100 mL
Water tr. Nitric acid	ICP-45W-5	ICP-45W-10X-5	500 mL
Rh Rhodium		contact us	50 mL
$RhCl_3 \bullet 3H_2O$	ICP-46H-1	contact us	100 mL
10% HCl	ICP-46H-5	contact us	500 mL
Rb Rubidium		ICP-47N-10X-0.5	50 mL
$RbNO_3$	ICP-47N-1	ICP-47N-10X-1	100 mL
2-5% Nitric acid	ICP-47N-5	ICP-47N-10X-5	500 mL
Ru Ruthenium		contact us	50 mL
$RuCl_3 \bullet 3H_2O$	ICP-48H-1	contact us	100 mL
10% HCl	ICP-48H-5	contact us	500 mL
Sm Samarium		ICP-49N-10X-0.5	50 mL
Sm_2O_3	ICP-49N-1	ICP-49N-10X-1	100 mL
2-5% Nitric acid	ICP-49N-5	ICP-49N-10X-5	500 mL
Sc Scandium		ICP-50N-10X-0.5	50 mL
Sc_2O_3	ICP-50N-1	ICP-50N-10X-1	100 mL
2-5% Nitric acid	ICP-50N-5	ICP-50N-10X-5	500 mL
Se Selenium		ICP-51N-10X-0.5	50 mL
Se	ICP-51N-1	ICP-51N-10X-1	100 mL
2-5% Nitric acid	ICP-51N-5	ICP-51N-10X-5	500 mL
Si Silicon		ICP-52W-10X-0.5	50 mL
$(NH_4)2SiF_6$	ICP-52W-1	ICP-52W-10X-1	100 mL
Water tr. HF	ICP-52W-5	ICP-52W-10X-5	500 mL
Ag Silver		ICP-53N-10X-0.5	50 mL
$AgNO_3$	ICP-53N-1	ICP-53N-10X-1	100 mL
2-5% Nitric acid	ICP-53N-5	ICP-53N-10X-5	500 mL
Na Sodium		ICP-54N-10X-0.5	50 mL
$NaNO_3$	ICP-54N-1	ICP-54N-10X-1	100 mL
2-5% Nitric acid	ICP-54N-5	ICP-54N-10X-5	500 mL
Sr Strontium		ICP-55N-10X-0.5	50 mL
$Sr(NO_3)_2$	ICP-55N-1	ICP-55N-10X-1	100 mL
2-5% Nitric acid	ICP-55N-5	ICP-55N-10X-5	500 mL
S Sulfur		ICP-56W-10X-0.5	50 mL
$(NH_4)_2SO_4$	ICP-56W-1	ICP-56W-10X-1	100 mL
Water	ICP-56W-5	ICP-56W-10X-5	500 mL

Starting Material Matrix	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.	Unit
Ta Tantalum		ICP-57W-10X-0.5	50 mL
Ta	ICP-57W-1	ICP-57W-10X-1	100 mL
Water, tr. to 5% HF	ICP-57W-5	ICP-57W-10X-5	500 mL
Te Tellurium		ICP-58H-10X-0.5	50 mL
TeO_2	ICP-58H-1	ICP-58H-10X-1	100 mL
20%-40% HCl	ICP-58H-5	ICP-58H-10X-5	500 mL
Tb Terbium		ICP-59N-10X-0.5	50 mL
Tb_4O_7	ICP-59N-1	ICP-59N-10X-1	100 mL
2-5% Nitric acid	ICP-59N-5	contact us	500 mL
Tl Thallium		ICP-60N-10X-0.5	50 mL
$TlNO_3$	ICP-60N-1	ICP-60N-10X-1	100 mL
2-5% Nitric acid	ICP-60N-5	ICP-60N-10X-5	500 mL
Th Thorium			
$Th(NO_3)4 \bullet 4H_2O$	ICP-61N-1		100 mL
2-5% Nitric acid	ICP-61N-5		500 mL
Tm Thulium		ICP-62N-10X-0.5	50 mL
Tm_2O_3	ICP-62N-1	ICP-62N-10X-1	100 mL
2-5% Nitric acid	ICP-62N-5	contact us	500 mL
Sn Tin		ICP-63N-10X-0.5	50 mL
Sn	ICP-63N-1	ICP-63N-10X-1	100 mL
2-5% Nitric acid tr. HF	ICP-63N-5	contact us	500 mL
Ti Titanium		ICP-64W-10X-0.5	50 mL
$(NH_4)_2TiF_6$	ICP-64W-1	ICP-64W-10X-1	100 mL
Water tr. HF	ICP-64W-5	ICP-64W-10X-5	500 mL
W Tungsten		ICP-65W-10X-0.5	50 mL
$(NH_4)_2WO_4$	ICP-65W-1	ICP-65W-10X-1	100 mL
Water tr. NH_4OH	ICP-65W-5	ICP-65W-10X-5	500 mL
U Uranium			
$UO_2(NO_3)2 \bullet 6H_2O$	ICP-66N-R-1		100 mL
2-5% Nitric acid	ICP-66N-R-5		500 mL
V Vanadium		ICP-67N-10X-0.5	50 mL
V_2O_5	ICP-67N-1	ICP-67N-10X-1	100 mL
2-5% Nitric acid	ICP-67N-5	ICP-67N-10X-5	500 mL
Yb Ytterbium		ICP-68N-10X-0.5	50 mL
Yb_2O_3	ICP-68N-1	ICP-68N-10X-1	100 mL
2-5% Nitric acid	ICP-68N-5	ICP-68N-10X-5	500 mL
Y Yttrium		ICP-69N-10X-0.5	50 mL
Y_2O_3	ICP-69N-1	ICP-69N-10X-1	100 mL
2-5% Nitric acid	ICP-69N-5	ICP-69N-10X-5	500 mL
Zn Zinc		ICP-70N-10X-0.5	50 mL
Zn	ICP-70N-1	ICP-70N-10X-1	100 mL
2-5% Nitric acid	ICP-70N-5	ICP-70N-10X-5	500 mL
Zr Zirconium		ICP-71N-10X-0.5	50 mL
$ZrO(NO_3)_2$	ICP-71N-1	ICP-71N-10X-1	100 mL
2-5% Nitric acid	ICP-71N-5	contact us	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_3 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

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
- Ultra high purity starting materials and acids
- 18 Megohm deionized water
- Mimimum 3 year shelf life
- ppb level contaminants reported on Certificate of Analysis
- 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_3	ICP-MS-01N-0.01X-1	ICP-MS-01N-0.1X-1	ICP-MS-01N-1	100 mL
Sb Antimony	2-5% HNO_3 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_3	ICP-MS-03N-0.01X-1	ICP-MS-03N-0.1X-1	ICP-MS-03N-1	100 mL
Ba Barium	2-5% HNO_3	ICP-MS-04N-0.01X-1	ICP-MS-04N-0.1X-1	ICP-MS-04N-1	100 mL
Be Beryllium	2-5% HNO_3	ICP-MS-05N-0.01X-1	ICP-MS-05N-0.1X-1	contact us	100 mL
Bi Bismuth	2-10% HNO_3	ICP-MS-06N-0.01X-1	ICP-MS-06N-0.1X-1	ICP-MS-06N-1	100 mL
B Boron	Water tr. NH_4OH	ICP-MS-07W-0.01X-1	ICP-MS-07W-0.1X-1	ICP-MS-07W-1	100 mL
Cd Cadmium	2-5% HNO_3	ICP-MS-08N-0.01X-1	ICP-MS-08N-0.1X-1	ICP-MS-08N-1	100 mL
Ca Calcium	2-5% HNO_3	ICP-MS-09N-0.01X-1	ICP-MS-09N-0.1X-1	ICP-MS-09N-1	100 mL
Ce Cerium	2-5% HNO_3	ICP-MS-11N-0.01X-1	ICP-MS-11N-0.1X-1	ICP-MS-11N-1	100 mL
Cs Cesium	2-5% HNO_3	ICP-MS-12N-0.01X-1	ICP-MS-12N-0.1X-1	ICP-MS-12N-1	100 mL
Cr Chromium	2-5% HNO_3	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_3	ICP-MS-14N-0.01X-1	ICP-MS-14N-0.1X-1	ICP-MS-14N-1	100 mL
Cu Copper	2-5% HNO_3	ICP-MS-15N-0.01X-1	ICP-MS-15N-0.1X-1	ICP-MS-15N-1	100 mL
Dy Dysprosium	2-5% HNO_3	ICP-MS-16N-0.01X-1	ICP-MS-16N-0.1X-1	ICP-MS-16N-1	100 mL
Er Erbium	2-5% HNO_3	ICP-MS-17N-0.01X-1	ICP-MS-17N-0.1X-1	ICP-MS-17N-1	100 mL
Eu Europium	2-5% HNO_3	ICP-MS-18N-0.01X-1	ICP-MS-18N-0.1X-1	ICP-MS-18N-1	100 mL
Gd Gadolinium	2-5% HNO_3	ICP-MS-19N-0.01X-1	ICP-MS-19N-0.1X-1	ICP-MS-19N-1	100 mL
Ga Gallium	2-5% HNO_3	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_3 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_3	ICP-MS-24N-0.01X-1	ICP-MS-24N-0.1X-1	ICP-MS-24N-1	100 mL
In Indium	2-5% HNO_3	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_3	ICP-MS-27N-0.01X-1	ICP-MS-27N-0.1X-1	ICP-MS-27N-1	100 mL
La Lanthanum	2-5% HNO_3	ICP-MS-28N-0.01X-1	ICP-MS-28N-0.1X-1	ICP-MS-28N-1	100 mL
Pb Lead	2-5% HNO_3	ICP-MS-29N-0.01X-1	ICP-MS-29N-0.1X-1	ICP-MS-29N-1	100 mL
Li Lithium	2-5% HNO_3	ICP-MS-30N-0.01X-1	ICP-MS-30N-0.1X-1	ICP-MS-30N-1	100 mL
Lu Lutetium	2-5% HNO_3	ICP-MS-31N-0.01X-1	ICP-MS-31N-0.1X-1	ICP-MS-31N-1	100 mL
Mg Magnesium	2-5% HNO_3	ICP-MS-32N-0.01X-1	ICP-MS-32N-0.1X-1	ICP-MS-32N-1	100 mL
Mn Manganese	2-5% HNO_3	ICP-MS-33N-0.01X-1	ICP-MS-33N-0.1X-1	ICP-MS-33N-1	100 mL
Hg Mercury	5-10% HNO_3	ICP-MS-34N-0.01X-1	ICP-MS-34N-0.1X-1	ICP-MS-34N-1	100 mL
Mo Molybdenum	Water tr. NH_4OH	ICP-MS-35W-0.01X-1	ICP-MS-35W-0.1X-1	ICP-MS-35W-1	100 mL
Nd Neodymium	2-5% HNO_3	ICP-MS-36N-0.01X-1	ICP-MS-36N-0.1X-1	ICP-MS-36N-1	100 mL
Ni Nickel	2-5% HNO_3	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_3	ICP-MS-43N-0.01X-1	ICP-MS-43N-0.1X-1	ICP-MS-43N-1	100 mL
Pr Praseodymium	2-5% HNO_3	ICP-MS-44N-0.01X-1	ICP-MS-44N-0.1X-1	ICP-MS-44N-1	100 mL
Re Rhenium	Water tr. HNO_3	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_3	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_3	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_3	ICP-MS-50N-0.01X-1	ICP-MS-50N-0.1X-1	ICP-MS-50N-1	100 mL
Se Selenium	2-5% HNO_3	ICP-MS-51N-0.01X-1	ICP-MS-51N-0.1X-1	ICP-MS-51N-1	100 mL
Si Silicon	H_2O 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_3	ICP-MS-53N-0.01X-1	ICP-MS-53N-0.1X-1	ICP-MS-53N-1	100 mL
Na Sodium	2-5% HNO_3	ICP-MS-54N-0.01X-1	ICP-MS-54N-0.1X-1	ICP-MS-54N-1	100 mL
Sr Strontium	2-5% HNO_3	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_3	ICP-MS-59N-0.01X-1	ICP-MS-59N-0.1X-1	ICP-MS-59N-1	100 mL
Tl Thallium	2-5% HNO_3	ICP-MS-60N-0.01X-1	ICP-MS-60N-0.1X-1	ICP-MS-60N-1	100 mL
Th Thorium	2-5% HNO_3	ICP-MS-61N-0.01X-1	ICP-MS-61N-0.1X-1	----------	100 mL
Tm Thulium	2-5% HNO_3	ICP-MS-62N-0.01X-1	ICP-MS-62N-0.1X-1	ICP-MS-62N-1	100 mL
Sn Tin	2-5% HNO_3 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_4OH	ICP-MS-65W-0.01X-1	ICP-MS-65W-0.1X-1	ICP-MS-65W-1	
U Uranium	2-5% HNO_3	ICP-MS-66N-R-0.01X-1	ICP-MS-66N-R-0.1X-1	----------	100 mL
V Vanadium	2-5% HNO_3	ICP-MS-67N-0.01X-1	ICP-MS-67N-0.1X-1	ICP-MS-67N-1	100 mL
Yb Ytterbium	2-5% HNO_3	ICP-MS-68N-0.01X-1	ICP-MS-68N-0.1X-1	ICP-MS-68N-1	100 mL
Y Yttrium	2-5% HNO_3	ICP-MS-69N-0.01X-1	ICP-MS-69N-0.1X-1	ICP-MS-69N-1	100 mL
Zn Zinc	2-5% HNO_3	ICP-MS-70N-0.01X-1	ICP-MS-70N-0.1X-1	ICP-MS-70N-1	100 mL
Zr Zirconium	2-5% HNO_3	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	100 mL
ICP-MS-BLN-5	500 mL

5% HNO_3 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

Water Blank

ICP-MS-BLW-1	100 mL
ICP-MS-BLW-5	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
- Mimimum 3 year shelf life

Single Element AA

Element Matrix	1000 µg/mL Cat. No.	 Unit	Element Matrix	1000 µg/mL Cat. No.	 Unit
Al Aluminum	AA01N-1	100 mL	**Mo Molybdenum**	AA35W-1	100 mL
2-5% Nitric acid	AA01N-5	500 mL	Water tr. NH_4OH	AA35W-5	500 mL
Sb Antimony	AA02N-1	100 mL	**Ni Nickel**	AA37N-1	100 mL
2-5% HNO_3 tr.Tartaric acid	AA02N-5	500 mL	2-5% Nitric acid	AA37N-5	500 mL
As Arsenic	AA03N-1	100 mL	**P Phosphorus**	AA41W-1	100 mL
2-5% Nitric acid	AA03N-5	500 mL	Water	AA41W-5	500 mL
Ba Barium	AA04N-1	100 mL	**K Potassium**	AA43N-1	100 mL
2-5% Nitric acid	AA04N-5	500 mL	2-5% Nitric acid	AA43N-5	500 mL
B Boron	AA07W-1	100 mL	**Se Selenium**	AA51N-1	100 mL
Water tr. NH_4OH	AA07W-5	500 mL	2-5% Nitric acid	AA51N-5	500 mL
Cd Cadmium	AA08N-1	100 mL	**Si Silicon**	AA52W-1	100 mL
2-5% Nitric acid	AA08N-5	500 mL	Water tr. HF	AA52W-5	500 mL
Ca Calcium	AA09N-1	100 mL	**Ag Silver**	AA53N-1	100 mL
2-5% Nitric acid	AA09N-5	500 mL	2-5% Nitric acid	AA53N-5	500 mL
Cr Chromium	AA13N-1	100 mL	**Na Sodium**	AA54N-1	100 mL
2-5% Nitric acid	AA13N-5	500 mL	2-5% Nitric acid	AA54N-5	500 mL
Co Cobalt	AA14N-1	100 mL	**Sr Strontium**	AA55N-1	100 mL
2-5% Nitric acid	AA14N-5	500 mL	2-5% Nitric acid	AA55N-5	500 mL
Cu Copper	AA15N-1	100 mL	**S Sulfur**	AA56W-1	100 mL
2-5% Nitric acid	AA15N-5	500 mL	Water	AA56W-5	500 mL
Fe Iron	AA27N-1	100 mL	**Tl Thallium**	AA60N-1	100 mL
2-5% Nitric acid	AA27N-5	500 mL	2-5% Nitric acid	AA60N-5	500 mL
Pb Lead	AA29N-1	100 mL	**Sn Tin**	AA63N-1	100 mL
2-5% Nitric acid	AA29N-5	500 mL	2-5% Nitric acid tr. HF	AA63N-5	500 mL
Li Lithium	AA30N-1	100 mL	**Ti Titanium**	AA64W-1	100 mL
2-5% Nitric acid	AA30N-5	500 mL	Water tr. HF	AA64W-5	500 mL
Mg Magnesium	AA32N-1	100 mL	**V Vanadium**	AA67N-1	100 mL
2-5% Nitric acid	AA32N-5	500 mL	5-10% Nitric acid	AA67N-5	500 mL
Mn Manganese	AA33N-1	100 mL	**Y Yttrium**	AA69N-1	100 mL
2-5% Nitric acid	AA33N-5	500 mL	2-5% Nitric acid	AA69N-5	500 mL
Hg Mercury	AA34N-R-1	100 mL	**Zn Zinc**	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
Ammonium dihydrogen phosphate	$NH_4H_2PO_4$	MOD-02-0.5	50 mL
40% in Water		MOD-02-1	100 mL
Ammonium nitrate	NH_4NO_3	MOD-03-0.5	50 mL
5% in Water		MOD-03-1	100 mL
Magnesium nitrate	$Mg(NO_3)_2$	MOD-07-0.5	50 mL
2% Magnesium in 5% HNO_3		MOD-07-1	100 mL
Nickel nitrate	$Ni(NO_3)_2$	MOD-08-0.5	50 mL
5% Nickel in 5% HNO_3		MOD-08-1	100 mL
Palladium nitrate	$Pd(NO_3)_2$	MOD-09A-0.5	50 mL
0.2% Palladium in 5% HNO_3		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_3 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

	100 µg/mL		200 µg/mL		1000 µg/mL	
Water Matrix	**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_3)	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_3-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_2)	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_2-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_4)	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_4-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_4)	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_4-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	---	---	---	---	IC-SULF-10X-20ML	20 mL
Dilute NaOH, stabilizer *	---	---	---	---	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

IC-AN-1X-1-SET **7 x 100 mL**
IC-AN-1X-5-SET **7 x 500 mL**
Each at 100 µg/mL in Water

IC-AN-2X-1-SET **7 x 100 mL**
IC-AN-2X-5-SET **7 x 500 mL**
Each at 200 µg/mL in Water

IC-AN-10X-1-SET **7 x 100 mL**
IC-AN-10X-5-SET **7 x 500 mL**
Each at 1000 µg/mL in Water

- Fluoride (F)
- Chloride (Cl)
- Nitrite (NO_2)
- Nitrate (NO_3)
- Bromide (Br)
- Phosphate (PO_4)
- Sulfate (SO_4)

IC-AN-R-10X-1-SET **7 x 100 mL**
IC-AN-R-10X-5-SET **7 x 500 mL**
Each at 1000 µg/mL

- Fluoride (F)
- Chloride (Cl)
- Nitrite-Nitrogen (NO_2-N)
- Nitrate-Nitrogen (NO_3-N)
- Bromide (Br)
- Phosphate-Phosphorus (PO_4-P)
- Sulfate-Sulfur (SO_4-S)

Organic Acid Salt Standards

	100 µg/mL				1000 µg/mL			
Water Matrix	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Formate	IC-FORM-1X-1	100 mL	IC-FORM-1X-5	500 mL	IC-FORM-10X-1	100 mL	IC-FORM-10X-5	500 mL
Acetate	IC-ACET-1X-1	100 mL	IC-ACET-1X-5	500 mL	IC-ACET-10X-1	100 mL	IC-ACET-10X-5	500 mL
Oxalate	IC-OXAL-1X-1	100 mL	IC-OXAL-1X-5	500 mL	IC-OXAL-10X-1	100 mL	IC-OXAL-10X-5	500 mL
Chromate	----------	----	----------	----	IC-CHRM-10X-1	100 mL	IC-CHRM-10X-5	500 mL
Glycolate	----------	----	----------	----	IC-GLYC-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	----------	----
Phthalate	----------	----	----------	----	IC-PHTH-10X-1	100 mL	----------	----
Propionate	----------	----	----------	----	IC-PROP-10X-1	100 mL	----------	----
Succinate	----------	----	----------	----	IC-SUCC-10X-1	100 mL	----------	----
Tartrate	----------	----	----------	----	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
- Sulfate
- Carbonate

Ion Chromatography Eluents

	Cat. No.	Unit		Cat. No.	Unit
0.5 M Sodium bicarbonate (100X concentrate)	IC-ELU-01-1	100 mL	**0.5 M Sodium carbonate** (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

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_3)	100
Phosphate (PO_4)	150
Sulfate (SO_4)	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_3)	400
Phosphate (PO_4)	600
Sulfate (SO_4)	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_4)	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_3)	100
Phosphate (PO_4)	100
Sulfate (SO_4)	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_3)	5
Phosphate (PO_4)	5
Sulfate (SO_4)	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_3)	10
Phosphate (PO_4)	10
Sulfate (SO_4)	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_3)	20
Phosphate (PO_4)	20
Sulfate (SO_4)	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_3)	40
Phosphate (PO_4)	40
Sulfate (SO_4)	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_3)	50
Phosphate (PO_4)	50
Sulfate (SO_4)	50

Technical Note

To enhance the shelf life and stability of IC products, Nitrite 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_3)	1000
Phosphate (PO_4)	1000
Sulfate (SO_4)	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_3)	15
Phosphate (PO_4)	15
Sulfate (SO_4)	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_4)	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_3-N)	100
Phosphorus-Phosphate (PO_4-P)	150
Sulfate (SO_4)	150

Nitrite
IC-NO2-N-1X-1 **100 mL**
Nitrite (NO_2-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_3)	100
Phosphate (PO_4)	150
Sulfate (SO_4)	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_3)	100
Phosphate (PO_4)	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_3)	100
Phosphate (PO_4)	100
Sulfate (SO_4)	100

Technical Note

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

Nitrite
IC-NO2-10X-1 **100 mL**
Nitrite (NO_2) 1000 µg/mL

IC-NO2-1X-1 **100 mL**
Nitrite (NO_2) 100 µg/mL

IC-NO2-0.1X-1 **100 mL**
Nitrite (NO_2) 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_4)	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_3)	1000
Sulfate (SO_4)	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_3)	500
Sulfate (SO_4)	500
Phosphate (PO_4)	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_3)	50
Phosphate (PO_4)	50
Chloride (Cl)	100
Sulfate (SO_4)	200

Ion Chromatography
Cations

Ion Chrom - Cation Singles

Matrix	100 µg/mL Cat. No.	Unit	1000 µg/mL Cat. No.	Unit
Calcium (Ca)	IC-CA-1X-1	100 mL	IC-CA-10X-1	100 mL
Water, tr. HNO_3	IC-CA-1X-5	500 mL	IC-CA-10X-5	500 mL
Ammonium (NH_4) *	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
Ammonium-Nitrogen (NH_4-N) †	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
Magnesium (Mg)	IC-MG-1X-1	100 mL	IC-MG-10X-1	100 mL
Water, tr. HNO_3	IC-MG-1X-5	500 mL	IC-MG-10X-5	500 mL
Potassium (K)	IC-K-1X-1	100 mL	IC-K-10X-1	100 mL
Water, tr. HNO_3	IC-K-1X-5	500 mL	IC-K-10X-5	500 mL
Sodium (Na)	IC-NA-1X-1	100 mL	IC-NA-10X-1	100 mL
Water, tr. HNO_3	IC-NA-1X-5	500 mL	IC-NA-10X-5	500 mL
Lithium (Li)	IC-LI-1X-1	100 mL	IC-LI-10X-1	100 mL
Water, tr. HNO_3	IC-LI-1X-5	500 mL	IC-LI-10X-5	500 mL
Barium (Ba)	IC-BA-1X-1	100 mL	IC-BA-10X-1	100 mL
Water, tr. HNO_3	IC-BA-1X-5	500 mL	IC-BA-10X-5	500 mL
Strontium (Sr)	IC-SR-1X-1	100 mL	IC-SR-10X-1	100 mL
Water, tr. HNO_3	IC-SR-1X-5	500 mL	IC-SR-10X-5	500 mL
Sets of items listed above	IC-CAT-1X-1-SET	**8 x 100 mL**	IC-CAT-10X-1-SET	**8 x 100 mL**
	IC-CAT-1X-5-SET	**8 x 500 mL**	IC-CAT-10X-5-SET	**8 x 500 mL**

* 1,000 µg/mL as Ammonium (NH_4) Other Nitrogen species equivalents are: NH_3 (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_3 6 comps.

Calcium (Ca)	1000
Ammonium (NH_4)	400
Magnesium (Mg)	200
Potassium (K)	200
Sodium (Na)	200
Lithium (Li)	50

Cation Mix #2
IC-MCA-02-1 **100 mL**
At stated conc. (µg/mL) in Dilute HNO_3 6 comps.

Calcium (Ca)	100
Ammonium (NH_4)	100
Magnesium (Mg)	100
Potassium (K)	100
Sodium (Na)	100
Lithium (Li)	100

Cation Mix #3
IC-MCA-03-1 **100 mL**
At stated conc. (µg/mL) in Dilute HNO_3 4 comps.

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

Cation Mix #4
IC-MCA-04-1 **100 mL**
At stated conc. (µg/mL) in Dilute HNO_3 4 comps.

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

Cation Mix #5
IC-MCA-05-1 **100 mL**
At stated conc. (µg/mL) in Dilute HNO_3 4 comps.

Ammonium (NH_4)	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_3 6 comps.

Calcium (Ca)	2
Ammonium (NH_4)	1.5
Magnesium (Mg)	2
Potassium (K)	2.5
Sodium (Na)	1.5
Lithium (Li)	0.2

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_3

Ammonium (NH4)	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_3

Ammonium (NH_4)	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" [1] 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_3-N (Nitrate-Nitrogen)	100
PO_4-P (Phosphate-Phosphorus)	150
SO_4 (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_2) in Water tr. HF

Sulfate
IC-SO4-10X-1 — **100 mL**
1000 µg/mL Sulfate (SO_4) in Water

Hexavalent Chromium (Cr^{+6})
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 $CaCO_3$ to pH 4.5

Hardness
WC-HARD-10X-1 — **100 mL**
1000 µg/mL equivalent $CaCO_3$

A combination of Ca and Mg to give an approx. concentration of 1000 µg/mL $CaCO_3$. Hardness µg/mL equivalent $CaCO_3$ = 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 Disolved 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_2SO_4

WC-TOC-5X-1 **100 mL**
500 µg/mL TOC in water, tr. H_2SO_4

WC-TOC-10X-1 **100 mL**
1000 µg/mL TOC in water, tr. H_2SO_4

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 Precison 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

M-1664-5ML **1 x 5 mL**
M-1664-5ML-PAK ***SAVE*** **5 x 5 mL**
4.0 mg/mL each in Acetone 2 comps.

n-Hexadecane Stearic acid

M-1664-20ML **1 x 20 mL**
M-1664-20ML-PAK ***SAVE*** **5 x 20 mL**
4.0 mg/mL each in Acetone 2 comps.

n-Hexadecane Stearic acid

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

Oil, Grease & Petroleum Hydrocarbon Concentrates Mix

M-418-CON **1 x 1 mL**
At stated Vol.% 3 comps.

Chlorobenzene	25.0	*n*-Hexadecane	37.5
Isooctane	37.5		

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

M-418-R1 **1 x 1 mL**
M-418-R1-PAK ***SAVE*** **5 x 1 mL**
Total 4.13 mg/mL in Freon 113

Method 8440 Total Petroleum Hydrocarbon Analysis

Total Recoverable Petroleum Hydrocarbon Mix

M-8440 **1 x 1 mL**
M-8440-PAK ***SAVE*** **5 x 1 mL**
At stated Wt.% in Tetrachloroethene 3 comps.

Chlorobenzene	0.10	Isooctane	0.15
n-Hexadecane	0.15		

Silica Gel Cleanup Calibration Solution

M-8440-SGC **1 x 1 mL**
M-8440-SGC-PAK ***SAVE*** **5 x 1 mL**
10.0 mg/mL in Tetrachloroethene

Corn Oil

Total Petroleum Hydrocarbon Concentrate Mix

M-8440-CON **1 x 1 mL**
M-8440-CON-PAK ***SAVE*** **5 x 1 mL**
At stated Vol.% 3 comps.

Chlorobenzene	25.0	Isooctane	37.5
n-Hexadecane	37.5		

Multi-Element ICP and ICP-MS

Table of Contents

Custom Formulations

Meet your specific needs.

Request a custom formulation on our website or contact our Inorganic Technical Service Department email: 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_3 tr. HF 23 comps.

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

QC Standard #2

QCS-02-1 **100 mL**
QCS-02-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 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_2

QC Standard #2R

QCS-02-R1-1 **100 mL**
QCS-02-R1-5 **500 mL**
100 µg/mL each in 5% HNO_3 tr. HF 7 comps.

- Aluminum (Al)
- Barium (Ba)
- Boron (B)
- Potassium (K)
- Silicon (Si) †
- Silver (Ag)
- Sodium (Na)

† 214 µg/mL as SiO_2

QC Standard #3

QCS-03-1 **100 mL**
QCS-03-5 **500 mL**
100 µg/mL each in 5% HNO_3 15 comps.

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

QC Standard #4

QCS-04-1 **100 mL**
At stated conc. (µg/mL) in 5% HNO_3 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_3 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		

- **NIST Traceable**
- **Independent Lots**
- **Exact Match**

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_3 tr. HF 21 comps.

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

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

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_3 tr. HF 19 comps.

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

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_3 tr. HF 33 comps.

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

Semi-Quantitative Standard #2

SQS-02-R1-1 **100 mL**

10 µg/mL each in 2-5% HNO_3 tr. HCl tr. HF 33 comps.

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

Semi-Quantitative Standard #3

SQS-03-1 **100 mL**

10 µg/mL each in 2-5% HNO_3 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_3 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_3

- 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_3 11 comps.

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

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_3 — 18 comps.

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

MISA Standard 2

Precious Metals

MISA-02-1 — **100 mL**

100 µg/mL each in 10% HCl — 6 comps.

- Gold (Au)
- Iridium (Ir)
- Palladium (Pd)
- Platinum (Pt)
- Rhodium (Rh)
- 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_3 — 16 comps.

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

MISA Standard 5

Fluoride Soluble Group

MISA-05-1 — **100 mL**

100 µg/mL each in 5% HNO_3 tr. HF — 15 comps.

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

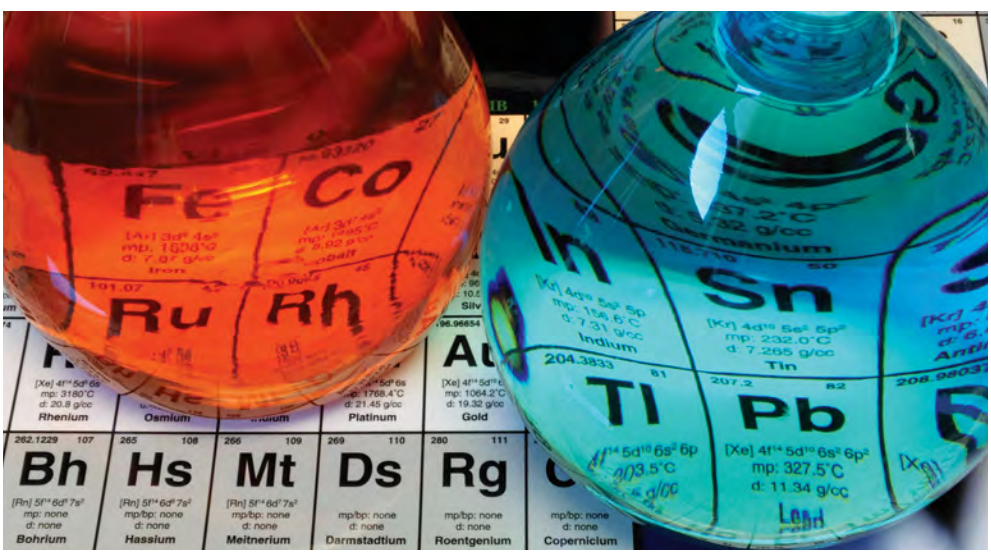
MISA Standard 6

Transition Metals

MISA-06-1 — **100 mL**

100 µg/mL each in 10% HNO_3 — 13 comps.

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



Calibration Check Standards

Calibration Standard #1

CLP-CAL-01-1 — **100 mL**

5000 µg/mL each in 5% HNO_3 — 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_3 — 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_3 — 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_3 — 5 comps.

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

Interferents Standards

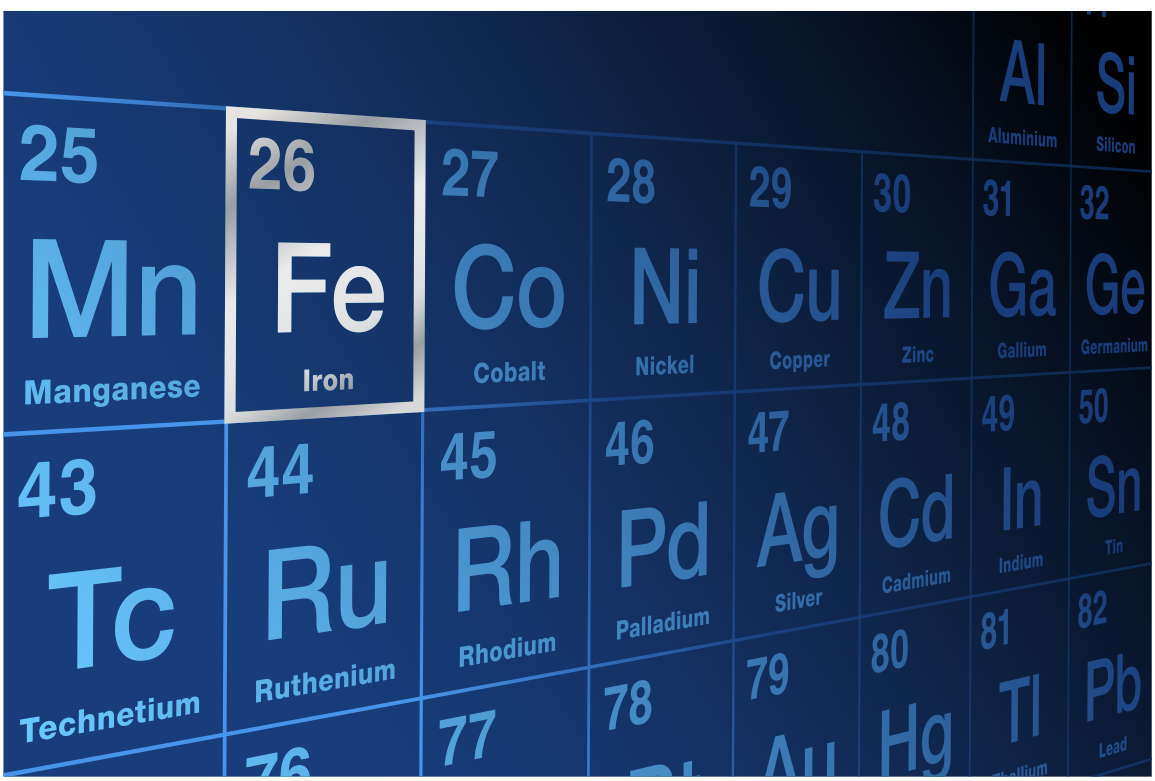
Primary Interferents

CLP-PIN-01-1 — **100 mL**

CLP-PIN-01-5 — **500 mL**

At stated conc. (µg/mL) in 5% HNO_3 — 4 comps.

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



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_3 10 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_3 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_3 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_3 tr. HF 5 comps.

Aluminum (Al)	100	Tin (Sn)	40
Chromium (Cr)	50	Zinc (Zn)	50
Silicon (Si) †	100		

† 214 µg/mL as SiO_2

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_3 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 **100 mL**
M-200.7-IPC-01-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 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 **100 mL**
M-200.7-IPC-02-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 5 comps.

Antimony (Sb)	20	Silicon (Si) †	100	Titanium (Ti)	20
Molybdenum (Mo)	20	Tin (Sn)	20		

† 214 µg/mL as SiO_2

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_3 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_2

Laboratory Performance Check Standard
Same as LPCS-01 with additonal Titanium
LPCS-01R-1 **100 mL**
LPCS-01R-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 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		
Manganese (Mn)	20		

† 214 µg/mL as SiO_2

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_3

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.

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_3 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_2

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_3 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_3 tr. HF 5 comps.

Antimony (Sb)	Tin (Sn)
Molybdenum (Mo)	Titanium (Ti)
Silicon (Si) †	

† 42.78 µg/mL as SiO_2

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 in 2% HNO_3 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 in 2% HNO_3 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 in 2% HNO_3 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_3 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_3

Mercury (Hg)

Spiking Standard #2

QCS-02-1 **100 mL**
QCS-02-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 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_2

QC Standard #2R

QCS-02-R1-1 **100 mL**
QCS-02-R1-5 **500 mL**
100 µg/mL each in 5% HNO_3 tr. HF 7 comps.

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

† 214 µg/mL as SiO_2

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_3 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_2

Primary Interferents

CLP-PIN-01-1 **100 mL**
CLP-PIN-01-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 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_3

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

USP-232-01-1 **100 mL**

At stated conc. (µg/mL) 2-5% HNO_3 4 comps.

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

USP 232 Oral Impurities Mix 2

USP-232-02-1 **100 mL**

At stated conc. (µg/mL) 2-5% HNO_3 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

USP-232-03-1 **100 mL**

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

USP-232-04-1 **100 mL**

At stated conc. (µg/mL) 7 comps

5% HNO_3 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

USP-232-CAL-LOW-A-1 **100 mL**

10 µg/mL each in 5% HNO_3, 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

USP-232-CAL-LOW-B-1 **100 mL**

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

USP-232-CAL-LOW-C-1 **100 mL**

10 µg/mL in 5% HNO_3

Mercury (Hg)

USP 232 Internal Standard

USP-232-05-1 **100 mL**

At stated conc. (µg/mL) 6 comps.

2-5% HNO_3 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

USP-232-CAL-HIGH-A-1 **100 mL**

100 µg/mL each in 5% HNO_3, 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

USP-232-CAL-HIGH-B-1 **100 mL**

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

USP-232-CAL-HIGH-C-1 **100 mL**

100 µg/mL in 5% HNO_3

Mercury (Hg)

IP 501 - Determination of Metals in Residual Fuels

IP-501 Mix 1

IP-501-01-1 **100 mL**

IP-501-01-5 **500 mL**

500 µg/mL each 2-5% Nitric Acid, tr. HF, except Vanadium in 1000 µg/mL 13 comps

Aluminum (Al)	Phosphorus (P)
Calcium (Ca)	Potassium (K)
Copper (Cu)	Silicon (Si)
Iron (Fe)	Sodium (Na)
Lead (Pb)	Vanadium (V(
Magnesium (Mg)	Zinc (Zn)
Nickel (Ni)	

IP-501 Mix 2

IP-501-02-1 **100 mL**

IP-501-02-5 **500 mL**

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

IP-501-03-1 **100 mL**

IP-501-03-5 **500 mL**

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 aci

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
Aluminum (Al)	2-5% Nitric acid	ICP-01N-1	100 mL	**Nickel (Ni)**	2-5% Nitric acid	ICP-37N-1	100 mL
$Al(NO_3)_3 \bullet 9H_2O$		ICP-01N-5	500 mL	Ni		ICP-37N-5	500 mL
Arsenic (As)	2-5% Nitric acid	ICP-03N-1	100 mL	**Potassium (K)**	2-5% Nitric acid	ICP-43N-1	100 mL
As		ICP-03N-5	500 mL	KNO_3		ICP-43N-5	500 mL
Cadmium (Cd)	2-5% Nitric acid	ICP-08N-1	100 mL	**Sodium (Na)**	2-5% Nitric acid	ICP-54N-1	100 mL
Cd		ICP-08N-5	500 mL	$NaNO_3$		ICP-54N-5	500 mL
Chromium (Cr)	2-5% Nitric acid	ICP-13N-R-1	100 mL	**Thallium (Tl)**	2-5% Nitric acid	ICP-60N-1	100 mL
$Cr(NO_3)3 \bullet 9H_2O$		ICP-13N-R-5	500 mL	$TlNO_3$		ICP-60N-5	500 mL
Iron (Fe)	2-5% Nitric acid	ICP-27N-1	100 mL	**Thorium (Th)**	2-5% Nitric acid	ICP-61N-1	100 mL
$Fe(NO_3)3 \bullet 9H_2O$		ICP-27N-5	500 mL	$Th(NO_3)4 \bullet 4H_2O$		ICP-61N-5	500 mL
Lead (Pb)	2-5% Nitric acid	ICP-29N-1	100 mL	**Uranium (U)**	2-5% Nitric acid	ICP-66N-R-1	100 mL
$Pb(NO_3)_2$		ICP-29N-5	500 mL	$UO_2(NO_3)2 \bullet 6H_2O$		ICP-66N-R-5	500 mL
Mercury (Hg)	10% Nitric acid	ICP-34N-1	100 mL	**Vanadium (V)**	2-5% Nitric acid	ICP-67N-1	100 mL
Hg		ICP-34N-5	500 mL	V_2O_5		ICP-67N-5	500 mL
Molybdenum (Mo)	Water tr. NH_4OH	ICP-35W-1	100 mL				
$(NH_4)_2MoO_4$		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 **100 mL**
10 µg/mL each in 2% Nitric Acid 4 comps.

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

EC-MET-02-1 **100 mL**
10 µg/mL each in 2% Nitric Acid 5 comps.

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

ICP Alternate Source

ICP Alternate Source Contents

The Alternate Source Line (ASL) formulations match products from instrument manufacturers. These calibration and testing standards have been formulated to be used for specific instrument setup and verification. Contact our Inorganic Technical Service Dept. for additional formulations not found on these pages or to cross reference part numbers.

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

Cross Reference Part No. Index

Instrument	Cat. No.
Agilent	**AccuStandard**
5183-4681	AG-INT
5183-4682	AG-VER1-R1
5183-4687	AG-SPIKE
5183-4688	AG-CAL
5188-6524	AG-TUN
5188-6525	AG-INTSTD
5188-6526	AG-INTFR-6020 ◊
5188-6527	AG-INTFR2-6020 ◊
5188-6564	AG-TUNSTOCK
5190-0465	AG-TUNSTOCK1
5190-8599	AG-INTFA ◊
8500-6940	AG-MECAL2A
8500-6942	AG-MECAL4
8500-6944	AG-MECAL1
8500-6948	AG-MECAL3
190024400	VAR-TUN ◊
190024900	AG-ICV7
190025000	AG-QCS27
190025100	AG-ANALTB
6610030000	AG-WAVECAL-10X
6610030100	AG-WAVECAL
6610030400	AG-INT2
6610030500	AG-CAL1
6610030600	AG-CAL2
6610030700	AG-CALMAJOR
Perkin Elmer	
N0582152	PE-UVWAVE ◊
N0691579	PE-MCS ◊
N0691580	PE-UV ◊
N8122014	PE-SETUP2 *◊
N8122017	PE-CRDL3 * ◊
N8125030	PE-STAB ◊*
N8125031	PE-CRDL4 * ◊
N8125032	PE-SETUP1 ◊*
N8125034	PE-SENS ◊*
N8125040	PE-SMTUNE *◊
N8125041	PE-SMTUNE2 *◊
N9300200	PE-MCS1 ◊
N9300201	PE-MCS2 ◊
N9300202	PE-MCS3 ◊
N9300203	PE-MCS4 ◊
N9300204	PE-MCS5 ◊
N9300205	PE-ICS18
N9300208	PE-ICS5 ◊
N9300214	PE-WPAM1 ◊

Instrument	Cat. No.
Perkin Elmer	**AccuStandard**
N9300215	PE-WPAM3 ◊
N9300216	PE-SDWA1 ◊
N9300217	PE-SDWA2 ◊
N9300218	PE-CAL4
N9300219	PE-CAL5 ◊
N9300220	PE-CAL6 ◊
N9300221	PE-CAL7 ◊
N9300224	PE-CRDL1 *◊
N9300225	PE-CRDL2 ◊
N9300226	PE-INTA ◊
N9300227	PE-ANAB ◊
N9300228	PE-ALTINTA ◊
N9300229	PE-ALTB ◊
N9300230	PE-SPIKE ◊
N9300231	PE-MECAL1
N9300232	PE-MECAL2
N9300233	PE-MECAL3
N9300234	PE-MECAL4
N9300235	PE-MECAL5
N9300280	PE-QC7
N9300281	PE-QC21
N9301720	PE-MECAL3
N9301721	PE-CAL2
N9302946	PE-VISWAVE ◊
N9303816	PE-CAL1
N9303818	PE-CAL3
N9303821	PE-CHK1
N9303822	PE-CHK3
N9303823	PE-CHK4 ◊
N9303824	PE-CHK5 ◊
N9303825	PE-VER1
N9303826	PE-VER2 ◊
N9303827	PE-INTFRA ◊
N9303828	PE-INTFR1 ◊
N9303829	PE-INTFRB ◊
N9303830	PE-INTFR2 ◊
N9303831	PE-INTFRC ◊
N9303832	PE-INT
N9303834	PE-MEINT ◊
N9303835	PE-MEM1 ◊
N9303836	PE-MEM2 ◊
N9303839	PE-SPIKE1 ◊
N9303840	PE-SPIKE2 ◊
N9303841	PE-SPIKE3 ◊
N9303843	PE-TUNSOL
N9307113	PE-MES1 ◊
N9307114	PE-MES2 ◊
N9307116	PE-MES4 ◊

Instrument	Cat. No.	
HORIBA Jobin Yvon		
JYICP-MIXHM	JY-CALHM ◊	
JYICP-MIXMAJ	JY-CAL	
JYICP-MIX7HSI	JY-QC7	
JYICP-MIX9	JY-CHK ◊	
JYICP-MIX21	JY-QC21	
JYICP-MIX23	JY-QC23	
JYICP-QC1	JY-CHK1 ◊	
Merck	**AccuStandard**	
1.09032	MES-IC-05	see page 8
1.09036	MES-IC-06	see page 9
1.09410	MES-23 ◊	
1.09411	MES-24	
1.09480	MES-13 *	
1.09481	MES-14	
1.09482	MES-15 ◊	
1.09487	MES-16	
1.09490	MES-12 *	
1.09491	MES-11 * ◊	
1.09492	MES-08 *	
1.09493	MES-10 *	
1.09494	MES-09 *	
1.09495	MES-17	
1.09496	MES-19 *◊	
1.09497	MES-20 *◊	
1.09498	MES-21	
1.09499	MES-22 *◊	
1.09500	MES-18 ◊	
1.10322	MES-IC-07	see page 9
1.10580	MES-06 *	
1.10714	MES-05 *◊	
1.11355	MES-04	
1.15474	MES-01 ◊	
1.11437	MES-AN-01	see page 8
1.11448	MES-AN-02	see page 8
1.15626	MES-03 ◊	
1.15708	MES-02 ◊	
1.11448	MES-AN-02	
1.70398	MES-IC-01	see page 8

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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_3 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_3 5 comps.

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

ICP-MS Stock Tuning Solution

AG-TUNSTOCK1-ASL-1 **100 mL**
AG-TUNSTOCK1-ASL-5 **500 mL**
10 µg/mL in 2% HNO_3 6 comps.

Lithium (Li)
Magnesium (Mg)
Yttrium (Y)
Cerium (Ce)
Thallium (Tl)
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_3, tr. HCl 8 comps.

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

QCSTD-27 Quality Control Std

AG-QCS27-ASL-1 **100 mL**
AG-QCS27-ASL-5 **500 mL**
100 µg/mL in 5% HNO_3, tr. HF 27 comps.

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

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_3 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_3 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

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_3 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

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_3 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_3 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

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_3 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

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

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_3 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_3 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_3 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_3 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_3 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_3 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_3 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_3 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_3 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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ICP Alternate Source
Perkin Elmer

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_3 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_3 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_3 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_3 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_3 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_3 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_3

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_3 7 comps.

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

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Multi-Element Calibration Std 1
PE-MECAL1-ASL-1 **100 mL**
PE-MECAL1-ASL-5 **500 mL**
10 µg/mL each in 2% HNO_3 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_3 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_3 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_3

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_3 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)

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_3 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_3, 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_3, 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_3 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_3 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_3 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_3 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_3 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_3
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_3 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_3
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_3
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_3
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_3
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_3, 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_3
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_3
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_3 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)	

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ICP Multi-Element Standard Solution XVII

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

100 µg/mL each in in 15% HCl tr. HNO_3
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_3
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_3
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_3
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
Manganese (Mn)	50
Molybdenum (Mo)	50
Nickel (Ni)	50
Lead (Pb)	50
Selenium (Se)	50
Strontium (Sr)	50
Zinc (Zn)	50

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

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_3 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_3 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_3 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_3

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-CAL2-1
ICP-MS-CAL3-R-1
ICP-MS-CAL4-1
ICP-MS-CAL5-1

Matrix Blanks

Nitric Acid Blank

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

5% HNO_3 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_3 — 8 comps.

Element	Most Abundant Isotope
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_3 — 13 comps.

Element	Most Abundant Isotope
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_3 — 12 comps.

Element	µg/mL	Most Abundant Isotope
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_3 — 11 comps.

Element	µg/mL	Most Abundant Isotope
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_3 — 11 comps.

Element	µg/mL	Most Abundant Isotope
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_3 — 24 comps.

Element	µg/mL	Most Abundant Isotope
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 — **100 mL**
20 µg/mL In 2% HNO_3

Element	Most Abundant Isotope
Silver (Ag)	107

Solution B

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

Element	µg/mL	Most Abundant Isotope
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_3 17 comps.

Element	µg/mL	Most Abundant 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_3 15 comps.

Element	µg/mL	Most Abundant 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_3 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_3 25 comps

Element	Most Abundant 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
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_3 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 Cat. No.	10 µg/mL Unit	100 µg/mL Cat. No.	100 µg/mL 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_3	ICP-MS-IS-IN-1	100 mL	ICP-MS-IS-IN-10X-1	100 mL
Lutetium	2-5% HNO_3	ICP-MS-IS-LU-1	100 mL	ICP-MS-IS-LU-10X-1	100 mL
Lithium-6	2-5% HNO_3	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_3	ICP-MS-IS-SC-1	100 mL	ICP-MS-IS-SC-10X-1	100 mL
Terbium	2-5% HNO_3	ICP-MS-IS-TB-1	100 mL	ICP-MS-IS-TB-10X-1	100 mL
Yttrium	2-5% HNO_3	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_3 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

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_3 tr. HF — 18 comps.

Element	Most Abundant 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_3 — 2 comps.

Element	Most Abundant 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_3 tr. HF — 18 comps.

Element	µg/mL	Most Abundant 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_3

Element	µg/mL	Most Abundant 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_3 — 5 comps.

Element	Most Abundant 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_3

Element	Most Abundant 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_3 — 5 comps.

Element	Most Abundant 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_3 — 22 comps.

Element	Most Abundant 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_3 — 12 comps.

Element	µg/mL	Most Abundant 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_3 tr. HF — 9 comps.

Element	Most Abundant 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_3 — 4 comps.

Element	Most Abundant 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% Aliquat 336 / MIBK	D-3237-02	100 mL
0.05 g Pb / gal (13.2 mg Pb/ L) in 1% Aliquat 336 / MIBK	D-3237-03	100 mL
0.10 g Pb / gal (26.4 mg Pb/ L) in 1% Aliquat 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

Organometallic Contents

Single Element Organometallic

Element	1000 µg/g in 75 cSt base oil Cat. No.	Unit	5000 µg/g in 75 cSt base oil 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

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.

AccuStandard is accredited to ISO 17034, 17025, and certified to ISO 9001

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

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

Metals Additives

MA-900-100G **100 grams**
MA-900-200G **200 grams**
900 µg/g each in Base oil

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

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

	1000 µg/g		5000 µg/g	
Element	**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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Website AccuStandard.com

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Fax: 877-786-5287 (USA)
203-786-5287 (International)

Email: orders@accustandard.com

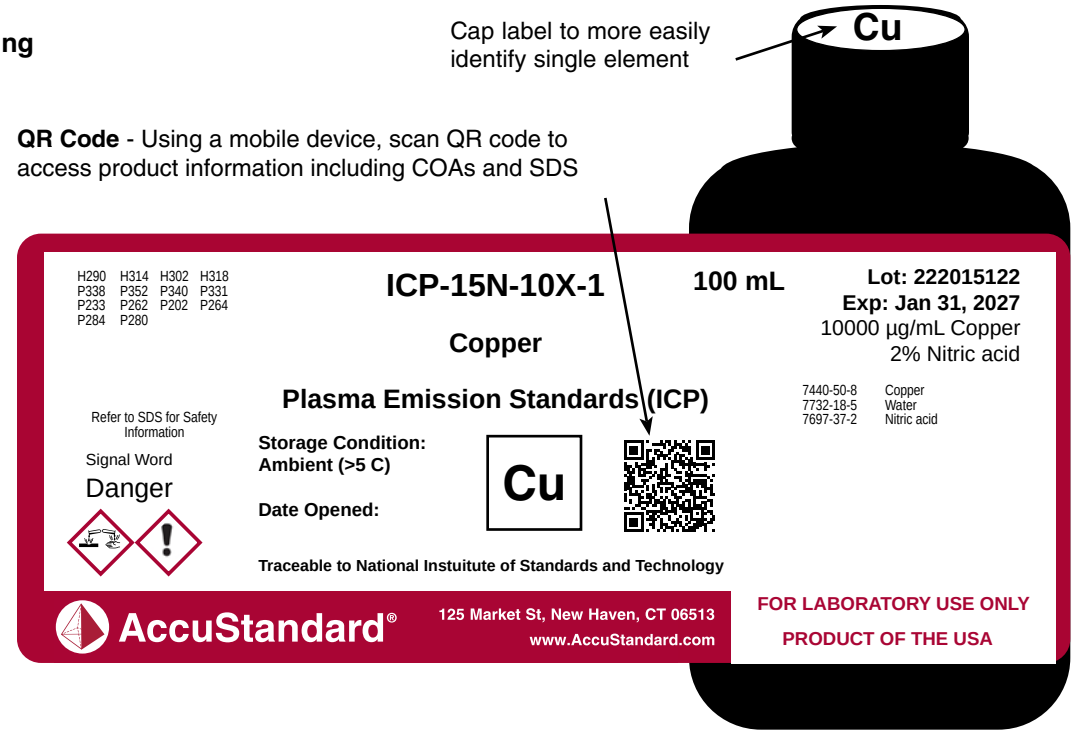
Mail: AccuStandard, Inc.
125 Market Street
New Haven, CT 06513
USA

Packaging and Shipping

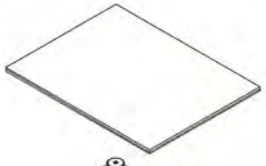
Product labeling

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



Packaging and Shipping



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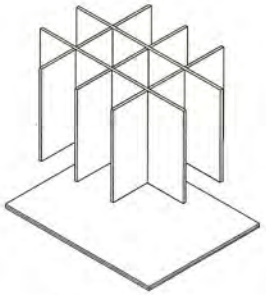
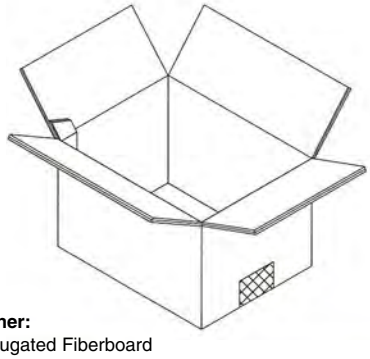
Natural Kraft
Corrugated Fiberboard





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.

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
- Vertified 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 or by visiting our website https://www.accustandard.com/custom-quote-request

Certification

- Concentrations are certified gravimetrically and QC verified instrumentally.
- Traceable to NIST wherever possible.
- Certificate of Analysis documents the certified gravimetric values.
- 18 month expiration period for most products.

Preparation

- Balances used are calibrated against NIST traceable weights.
- Solutions diluted to volume using Class A glassware.
- Highest purity raw materials and acids used.
- Packaged in pre-cleaned bottles.

Packaging Options

- Discounted pricing for bulk quantities.
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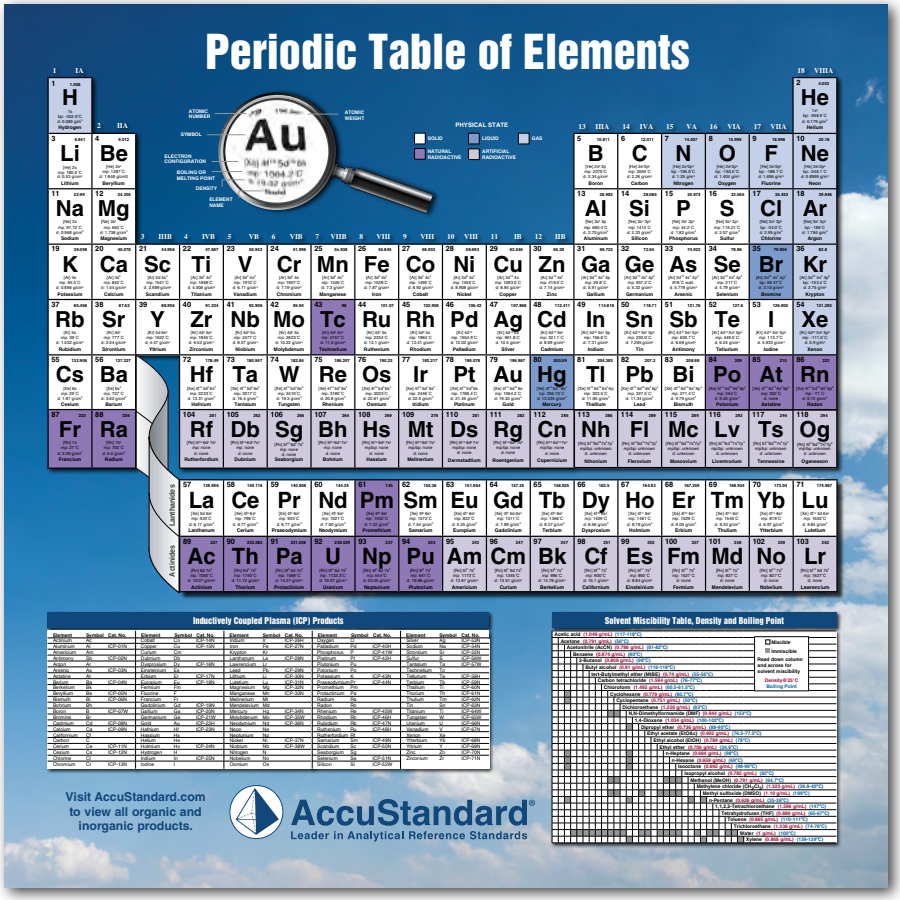
Periodic Table poster available, contact 203-786-5290 or email orders@accustandard.com



(20 x 20 inch laminated poster)

With references, such as unit conversions, general constants, element symbols, atomic weights and solvent miscibility table with densities and boiling points.

AccuStandard®

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