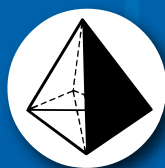
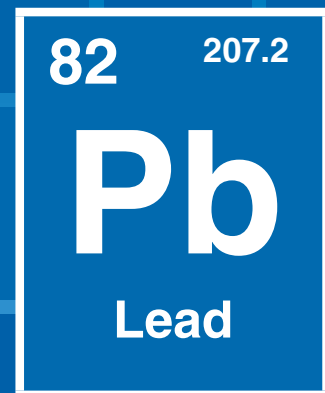
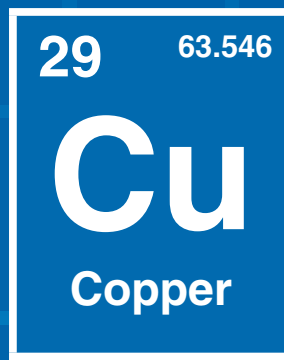
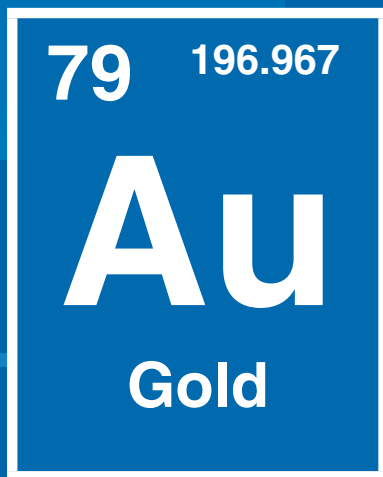


Inorganic Standards



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.

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- Order exactly what you need
- 18 month shelf life on most products
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- 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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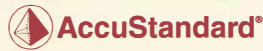
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Certificate of Analysis

Single Element ICP

125 Market Street
New Haven, CT 06513
USA



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www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

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

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

Most Single element standards have a minimum 3 Year expiration period

Directly traceable to NIST SRMs - where available

Density included for conversion to weight/weight applications

GHS safety information



Signal Word: Danger



Impurity Scan for 68 elements in final solution

Certified Concentration: 10000 µg/mL

Trace Elements in µg/mL

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

Concentration verified by two independent methods for added assurance

Uncertainty reported for statistical confidence

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

Highest purity starting materials & matrices used

QC management approval

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

Page 1 of 1 - Rev. 1

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

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



ICP Single Element

- Traceable to NIST Reference Materials
- Formulated from Ultra High Purity Starting Materials and Acids
- 18 Megohm de-ionized Water
- Concentration verified by Wet Chemical and Instrumental Analysis
- Packaged in specially prepared acid leached bottles

3 year minimum shelf life on
Single Element ICP standards

Element	Starting Material	Matrix	1,000 µg/mL		10,000 µg/mL	
			Cat. No.	Unit	Cat. No.	Unit
Aluminum (Al) Al(NO ₃) ₃ • 9H ₂ O		2-5% Nitric acid	---	---	ICP-01N-10X-0.5	50 mL
			ICP-01N-1	100 mL	ICP-01N-10X-1	100 mL
			ICP-01N-5	500 mL	ICP-01N-10X-5	500 mL
Antimony (Sb) Sb		2-5% Nitric acid tr. Tartaric acid	---	---	ICP-02N-10X-0.5	50 mL
			ICP-02N-1	100 mL	ICP-02N-10X-1	100 mL
			ICP-02N-5	500 mL	ICP-02N-10X-5	500 mL
Arsenic (As) As		2-5% Nitric acid	---	---	ICP-03N-10X-0.5	50 mL
			ICP-03N-1	100 mL	ICP-03N-10X-1	100 mL
			ICP-03N-5	500 mL	ICP-03N-10X-5	500 mL
Barium (Ba) Ba(NO ₃) ₂		2-5% Nitric acid	---	---	ICP-04N-10X-0.5	500 mL
			ICP-04N-1	100 mL	ICP-04N-10X-1	100 mL
			ICP-04N-5	500 mL	ICP-04N-10X-5	500 mL
Beryllium (Be) BeO(C ₂ H ₃ O ₂) ₆		2-5% Nitric acid	---	---	ICP-05N-10X-0.5	50 mL
			ICP-05N-1	100 mL	ICP-05N-10X-1	100 mL
			ICP-05N-5	500 mL	contact technical service	500 mL
Bismuth (Bi) Bi		2-10% Nitric acid	---	---	ICP-06N-10X-0.5	50 mL
			ICP-06N-1	100 mL	ICP-06N-10X-1	100 mL
			ICP-06N-5	500 mL	ICP-06N-10X-5	500 mL
Boron (B) H ₃ BO ₃		Water tr. NH ₄ OH	---	---	ICP-07W-10X-0.5	50 mL
			ICP-07W-1	100 mL	ICP-07W-10X-1	100 mL
			ICP-07W-5	500 mL	ICP-07W-10X-5	500 mL
Cadmium (Cd) Cd		2-5% Nitric acid	---	---	ICP-08N-10X-0.5	50 mL
			ICP-08N-1	100 mL	ICP-08N-10X-1	100 mL
			ICP-08N-5	500 mL	ICP-08N-10X-5	500 mL
Calcium (Ca) CaCO ₃		2-5% Nitric acid	---	---	ICP-09N-10X-0.5	50 mL
			ICP-09N-1	100 mL	ICP-09N-10X-1	100 mL
			ICP-09N-5	500 mL	ICP-09N-10X-5	500 mL
Cerium (Ce) Ce(NO ₃) ₃		2-5% Nitric acid	---	---	ICP-11N-10X-0.5	50 mL
			ICP-11N-1	100 mL	ICP-11N-10X-1	100 mL
			ICP-11N-5	500 mL	ICP-11N-10X-5	500 mL
Cesium (Cs) CsNO ₃		2-5% Nitric acid	---	---	ICP-12N-10X-0.5	50 mL
			ICP-12N-1	100 mL	ICP-12N-10X-1	100 mL
			ICP-12N-5	500 mL	ICP-12N-10X-5	500 mL
Chromium (Cr) Cr(NO ₃) ₃ • 9H ₂ O		2-5% Nitric acid	---	---	ICP-13N-R-10X-0.5	50 mL
			ICP-13N-R-1	100 mL	ICP-13N-R-10X-1	100 mL
			ICP-13N-R-5	500 mL	ICP-13N-R-10X-5	500 mL
Cobalt (Co) Co		2-5% Nitric acid	---	---	ICP-14N-10X-0.5	50 mL
			ICP-14N-1	100 mL	ICP-14N-10X-1	100 mL
			ICP-14N-5	500 mL	ICP-14N-10X-5	500 mL
Copper (Cu) Cu		2-5% Nitric acid	---	---	ICP-15N-10X-0.5	50 mL
			ICP-15N-1	100 mL	ICP-15N-10X-1	100 mL
			ICP-15N-5	500 mL	ICP-15N-10X-5	500 mL
Dysprosium (Dy) Dy ₂ O ₃		2-5% Nitric acid	---	---	ICP-16N-10X-0.5	50 mL
			ICP-16N-1	100 mL	ICP-16N-10X-1	100 mL
			ICP-16N-5	500 mL	ICP-16N-10X-5	500 mL
Erbium (Er) Er ₂ O ₃		2-5% Nitric acid	---	---	ICP-17N-10X-0.5	50 mL
			ICP-17N-1	100 mL	ICP-17N-10X-1	100 mL
			ICP-17N-5	500 mL	ICP-17N-10X-5	500 mL
Europium (Eu) Eu ₂ O ₃		2-5% Nitric acid	---	---	ICP-18N-10X-0.5	50 mL
			ICP-18N-1	100 mL	ICP-18N-10X-1	100 mL
			ICP-18N-5	500 mL	contact technical service	500 mL

Single Element ICP continued on next page

ICP

Single Element

Element	Starting Material	Matrix	1,000 µg/mL		10,000 µg/mL	
			Cat. No.	Unit	Cat. No.	Unit
Gadolinium (Gd) Gd ₂ O ₃	2-5% Nitric acid		---	---	ICP-19N-10X-0.5	50 mL
			ICP-19N-1	100 mL	ICP-19N-10X-1	100 mL
			ICP-19N-5	500 mL	ICP-19N-10X-5	500 mL
Gallium (Ga) Ga	2-5% Nitric acid		---	---	ICP-20N-10X-0.5	50 mL
			ICP-20N-1	100 mL	ICP-20N-10X-1	100 mL
			ICP-20N-5	500 mL	ICP-20N-10X-5	500 mL
Germanium (Ge) (NH ₄) ₂ GeF ₆	Water tr. HF		---	---	ICP-21W-10X-0.5	50 mL
			ICP-21W-1	100 mL	ICP-21W-10X-1	100 mL
			ICP-21W-5	500 mL	ICP-21W-10X-5	500 mL
Gold (Au) Au	10% HCl		---	---	contact technical service	50 mL
			ICP-22H-1	100 mL	contact technical service	100 mL
			ICP-22H-5	500 mL	contact technical service	500 mL
Hafnium (Hf) HfO ₂	2-5% Nitric acid tr. HF		---	---	ICP-23N-10X-0.5	50 mL
			ICP-23N-1	100 mL	ICP-23N-10X-1	100 mL
			ICP-23N-5	500 mL	-----	--
Holmium (Ho) Ho ₂ O ₃	2-5% Nitric acid		---	---	ICP-24N-10X-0.5	50 mL
			ICP-24N-1	100 mL	ICP-24N-10X-1	100 mL
			ICP-24N-5	500 mL	ICP-24N-10X-5	500 mL
Indium (In) In	2-5% Nitric acid		---	---	ICP-25N-10X-0.5	50 mL
			ICP-25N-1	100 mL	ICP-25N-10X-1	100 mL
			ICP-25N-5	500 mL	ICP-25N-10X-5	500 mL
Iridium (Ir) IrCl ₃ • 3H ₂ O	10% HCl		---	---	contact technical service	50 mL
			ICP-26H-1	100 mL	contact technical service	100 mL
			ICP-26H-5	500 mL	contact technical service	500 mL
Iron (Fe) Fe(NO ₃) ₃ •9H ₂ O	2-5% Nitric acid		---	---	ICP-27N-10X-0.5	50 mL
			ICP-27N-1	100 mL	ICP-27N-10X-1	100 mL
			ICP-27N-5	500 mL	ICP-27N-10X-5	500 mL
Lanthanum (La) La ₂ O ₃	2-5% Nitric acid		---	---	ICP-28N-10X-0.5	50 mL
			ICP-28N-1	100 mL	ICP-28N-10X-1	100 mL
			ICP-28N-5	500 mL	ICP-28N-10X-5	500 mL
Lead (Pb) Pb(NO ₃) ₂	2-5% Nitric acid		---	---	ICP-29N-10X-0.5	50 mL
			ICP-29N-1	100 mL	ICP-29N-10X-1	100 mL
			ICP-29N-5	500 mL	ICP-29N-10X-5	500 mL
Lithium (Li) Li ₂ CO ₃	2-5% Nitric acid		---	---	ICP-30N-10X-0.5	50 mL
			ICP-30N-1	100 mL	ICP-30N-10X-1	100 mL
			ICP-30N-5	500 mL	ICP-30N-10X-5	500 mL
Lutetium (Lu) Lu ₂ O ₃	2-5% Nitric acid		---	---	ICP-31N-10X-0.5	50 mL
			ICP-31N-1	100 mL	ICP-31N-10X-1	100 mL
			ICP-31N-5	500 mL	contact technical service	500 mL
Magnesium (Mg) Mg(NO ₃) ₂ • 6H ₂ O	2-5% Nitric acid		---	---	ICP-32N-10X-0.5	50 mL
			ICP-32N-1	100 mL	ICP-32N-10X-1	100 mL
			ICP-32N-5	500 mL	ICP-32N-10X-5	500 mL
Manganese (Mn) Mn(C ₂ H ₃ O ₂) ₂	2-5% Nitric acid		---	---	ICP-33N-10X-0.5	50 mL
			ICP-33N-1	100 mL	ICP-33N-10X-1	100 mL
			ICP-33N-5	500 mL	ICP-33N-10X-5	500 mL
Mercury (Hg) Hg	10% Nitric acid		---	---	ICP-34N-10X-0.5	50 mL
			ICP-34N-1	100 mL	ICP-34N-10X-1	100 mL
			ICP-34N-5	500 mL	ICP-34N-10X-5	500 mL
Molybdenum (Mo) (NH ₄) ₂ MoO ₄	Water tr. NH ₄ OH		---	---	ICP-35W-10X-0.5	50 mL
			ICP-35W-1	100 mL	ICP-35W-10X-1	100 mL
			ICP-35W-5	500 mL	ICP-35W-10X-5	500 mL
Neodymium (Nd) Nd ₂ O ₃	2-5% Nitric acid		---	---	ICP-36N-10X-0.5	50 mL
			ICP-36N-1	100 mL	ICP-36N-10X-1	100 mL
			ICP-36N-5	500 mL	ICP-36N-10X-5	500 mL
Nickel (Ni) Ni	2-5% Nitric acid		---	---	ICP-37N-10X-0.5	50 mL
			ICP-37N-1	100 mL	ICP-37N-10X-1	100 mL
			ICP-37N-5	500 mL	ICP-37N-10X-5	500 mL
Niobium (Nb) Nb ₂ O ₅	Water tr. HF		---	---	ICP-38W-10X-0.5	50 mL
			ICP-38W-1	100 mL	ICP-38W-10X-1	100 mL
			ICP-38W-5	500 mL	contact technical service	500 mL

ICP

Single Element

Element	Starting Material	Matrix	1,000 µg/mL		10,000 µg/mL	
			Cat. No.	Unit	Cat. No.	Unit
Palladium (Pd) Pd	10% HCl		---	---	contact technical service	50 mL
			ICP-40H-1	100 mL	contact technical service	100 mL
			ICP-40H-5	500 mL	contact technical service	500 mL
Phosphorus (P) NH ₄ H ₂ PO ₄	Water		---	---	ICP-41W-10X-0.5	50 mL
			ICP-41W-1	100 mL	ICP-41W-10X-1	100 mL
			ICP-41W-5	500 mL	ICP-41W-10X-5	500 mL
Platinum (Pt) Pt	10% HCl		---	---	contact technical service	50 mL
			ICP-42H-1	100 mL	contact technical service	100 mL
			ICP-42H-5	500 mL	contact technical service	500 mL
Potassium (K) KNO ₃	2-5% Nitric acid		---	---	ICP-43N-10X-0.5	50 mL
			ICP-43N-1	100 mL	ICP-43N-10X-1	100 mL
			ICP-43N-5	500 mL	ICP-43N-10X-5	500 mL
Praseodymium (Pr) Pr ₆ O ₁₁	2-5% Nitric acid		---	---	ICP-44N-10X-0.5	50 mL
			ICP-44N-1	100 mL	ICP-44N-10X-1	100 mL
			ICP-44N-5	500 mL	ICP-44N-10X-5	500 mL
Rhenium (Re) Re	Water tr. Nitric acid		---	---	ICP-45W-10X-0.5	50 mL
			ICP-45W-1	100 mL	ICP-45W-10X-1	100 mL
			ICP-45W-5	500 mL	ICP-45W-10X-5	500 mL
Rhodium (Rh) RhCl ₃ • 3H ₂ O	10% HCl		---	---	contact technical service	50 mL
			ICP-46H-1	100 mL	contact technical service	100 mL
			ICP-46H-5	500 mL	contact technical service	500 mL
Rubidium (Rb) RbNO ₃	2-5% Nitric acid		---	---	ICP-47N-10X-0.5	50 mL
			ICP-47N-1	100 mL	ICP-47N-10X-1	100 mL
			ICP-47N-5	500 mL	ICP-47N-10X-5	500 mL
Ruthenium (Ru) RuCl ₃ • 3H ₂ O	10% HCl		---	---	contact technical service	50 mL
			ICP-48H-1	100 mL	contact technical service	100 mL
			ICP-48H-5	500 mL	contact technical service	500 mL
Samarium (Sm) Sm ₂ O ₃	2-5% Nitric acid		---	---	ICP-49N-10X-0.5	50 mL
			ICP-49N-1	100 mL	ICP-49N-10X-1	100 mL
			ICP-49N-5	500 mL	ICP-49N-10X-5	500 mL
Scandium (Sc) Sc ₂ O ₃	2-5% Nitric acid		---	---	ICP-50N-10X-0.5	50 mL
			ICP-50N-1	100 mL	ICP-50N-10X-1	100 mL
			ICP-50N-5	500 mL	ICP-50N-10X-5	500 mL
Selenium (Se) Se	2-5% Nitric acid		---	---	ICP-51N-10X-0.5	50 mL
			ICP-51N-1	100 mL	ICP-51N-10X-1	100 mL
			ICP-51N-5	500 mL	ICP-51N-10X-5	500 mL
Silicon (Si) (NH ₄) ₂ SiF ₆	Water tr. HF		---	---	ICP-52W-10X-0.5	50 mL
			ICP-52W-1	100 mL	ICP-52W-10X-1	100 mL
			ICP-52W-5	500 mL	ICP-52W-10X-5	500 mL
Silver (Ag) AgNO ₃	2-5% Nitric acid		---	---	ICP-53N-10X-0.5	50 mL
			ICP-53N-1	100 mL	ICP-53N-10X-1	100 mL
			ICP-53N-5	500 mL	ICP-53N-10X-5	500 mL
Sodium (Na) NaNO ₃	2-5% Nitric acid		---	---	ICP-54N-10X-0.5	50 mL
			ICP-54N-1	100 mL	ICP-54N-10X-1	100 mL
			ICP-54N-5	500 mL	ICP-54N-10X-5	500 mL
Strontium (Sr) Sr(NO ₃) ₂	2-5% Nitric acid		---	---	ICP-55N-10X-0.5	50 mL
			ICP-55N-1	100 mL	ICP-55N-10X-1	100 mL
			ICP-55N-5	500 mL	ICP-55N-10X-5	500 mL
Sulfur (S) (NH ₄) ₂ SO ₄	Water		---	---	ICP-56W-10X-0.5	50 mL
			ICP-56W-1	100 mL	ICP-56W-10X-1	100 mL
			ICP-56W-5	500 mL	ICP-56W-10X-5	500 mL
Tantalum (Ta) Ta	Water, tr. to 5% HF		---	---	ICP-57W-10X-0.5	50 mL
			ICP-57W-1	100 mL	ICP-57W-10X-1	100 mL
			ICP-57W-5	500 mL	ICP-57W-10X-5	500 mL
Tellurium (Te) TeO ₂	20%-40% HCl		---	---	ICP-58H-10X-0.5	50 mL
			ICP-58H-1	100 mL	ICP-58H-10X-1	100 mL
			ICP-58H-5	500 mL	ICP-58H-10X-5	500 mL

Single Element ICP continued on next page

ICP

Single Element & Calibration and Matrix Blanks

Element Starting Material	Matrix	1,000 µg/mL		10,000 µg/mL	
		Cat. No.	Unit	Cat. No.	Unit
Terbium (Tb) Tb ₄ O ₇	2-5% Nitric acid	---	---	ICP-59N-10X-0.5	50 mL
		ICP-59N-1	100 mL	ICP-59N-10X-1	100 mL
		ICP-59N-5	500 mL	contact technical service	500 mL
Thallium (Tl) TlNO ₃	2-5% Nitric acid	---	---	ICP-60N-10X-0.5	50 mL
		ICP-60N-1	100 mL	ICP-60N-10X-1	100 mL
		ICP-60N-5	500 mL	ICP-60N-10X-5	500 mL
Thorium (Th) Th(NO ₃) ₄ • 4H ₂ O	2-5% Nitric acid	---	---	---	---
		ICP-61N-1	100 mL	---	---
		ICP-61N-5	500 mL	---	---
Thulium (Tm) Tm ₂ O ₃	2-5% Nitric acid	---	---	ICP-62N-10X-0.5	50 mL
		ICP-62N-1	100 mL	ICP-62N-10X-1	100 mL
		ICP-62N-5	500 mL	contact technical service	500 mL
Tin (Sn) Sn	2-5% Nitric acid tr. HF	---	---	ICP-63N-10X-0.5	50 mL
		ICP-63N-1	100 mL	ICP-63N-10X-1	100 mL
		ICP-63N-5	500 mL	contact technical service	500 mL
Titanium (Ti) (NH ₄) ₂ TiF ₆	Water tr. HF	---	---	ICP-64W-10X-0.5	50 mL
		ICP-64W-1	100 mL	ICP-64W-10X-1	100 mL
		ICP-64W-5	500 mL	ICP-64W-10X-5	500 mL
Tungsten (W) (NH ₄) ₂ WO ₄	Water tr. NH ₄ OH	---	---	ICP-65W-10X-0.5	50 mL
		ICP-65W-1	100 mL	ICP-65W-10X-1	100 mL
		ICP-65W-5	500 mL	ICP-65W-10X-5	500 mL
Uranium (U) UO ₂ (NO ₃) ₂ • 6H ₂ O	2-5% Nitric acid	---	---	---	---
		ICP-66N-R-1	100 mL	---	---
		ICP-66N-R-5	500 mL	---	---
Vanadium (V) V ₂ O ₅	2-5% Nitric acid	---	---	ICP-67N-10X-0.5	50 mL
		ICP-67N-1	100 mL	ICP-67N-10X-1	100 mL
		ICP-67N-5	500 mL	ICP-67N-10X-5	500 mL
Ytterbium (Yb) Yb ₂ O ₃	2-5% Nitric acid	---	---	ICP-68N-10X-0.5	50 mL
		ICP-68N-1	100 mL	ICP-68N-10X-1	100 mL
		ICP-68N-5	500 mL	ICP-68N-10X-5	500 mL
Yttrium (Y) Y ₂ O ₃	2-5% Nitric acid	---	---	ICP-69N-10X-0.5	50 mL
		ICP-69N-1	100 mL	ICP-69N-10X-1	100 mL
		ICP-69N-5	500 mL	ICP-69N-10X-5	500 mL
Zinc (Zn) Zn	2-5% Nitric acid	---	---	ICP-70N-10X-0.5	50 mL
		ICP-70N-1	100 mL	ICP-70N-10X-1	100 mL
		ICP-70N-5	500 mL	ICP-70N-10X-5	500 mL
Zirconium (Zr) ZrO(NO ₃) ₂	2-5% Nitric acid	---	---	ICP-71N-10X-0.5	50 mL
		ICP-71N-1	100 mL	ICP-71N-10X-1	100 mL
		ICP-71N-5	500 mL	contact technical service	500 mL

Custom Formulations

Meet your specific needs.

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

Calibration and Matrix Blanks

Nitric Acid Blank

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

5% HNO₃ 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

Mixed Acid Blank

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

5% HCl + 1% HNO₃ 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

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 de-ionized water and ultra pure acids.

- Traceable to NIST Reference Materials
- Formulated from Ultra High Purity Starting Materials and Acids
- 18 Megohm de-ionized Water
- Concentration verified by Wet Chemical and Instrumental Analysis

3 year minimum shelf life on
Single Element ICP-MS standards

Element Matrix	100 µg/mL		1,000 µg/mL		10,000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Aluminum (Al) 2-5% HNO ₃	ICP-MS-01N-0.01X-1	100 mL	ICP-MS-01N-0.1X-1	100 mL	ICP-MS-01N-1	100 mL
Antimony (Sb) 2-5% HNO ₃ tr. Tartaric acid	ICP-MS-02N-0.01X-1	100 mL	ICP-MS-02N-0.1X-1	100 mL	ICP-MS-02N-1	100 mL
Arsenic (As) 2-5% HNO ₃	ICP-MS-03N-0.01X-1	100 mL	ICP-MS-03N-0.1X-1	100 mL	ICP-MS-03N-1	100 mL
Barium (Ba) 2-5% HNO ₃	ICP-MS-04N-0.01X-1	100 mL	ICP-MS-04N-0.1X-1	100 mL	ICP-MS-04N-1	100 mL
Beryllium (Be) 2-5% HNO ₃	ICP-MS-05N-0.01X-1	100 mL	ICP-MS-05N-0.1X-1	100 mL	ICP-MS-05N-1	100 mL
Bismuth (Bi) 2-10% HNO ₃	ICP-MS-06N-0.01X-1	100 mL	ICP-MS-06N-0.1X-1	100 mL	ICP-MS-06N-1	100 mL
Boron (B) Water tr. NH ₄ OH	ICP-MS-07W-0.01X-1	100 mL	ICP-MS-07W-0.1X-1	100 mL	ICP-MS-07W-1	100 mL
Cadmium (Cd) 2-5% HNO ₃	ICP-MS-08N-0.01X-1	100 mL	ICP-MS-08N-0.1X-1	100 mL	ICP-MS-08N-1	100 mL
Calcium (Ca) 2-5% HNO ₃	ICP-MS-09N-0.01X-1	100 mL	ICP-MS-09N-0.1X-1	100 mL	ICP-MS-09N-1	100 mL
Cerium (Ce) 2-5% HNO ₃	ICP-MS-11N-0.01X-1	100 mL	ICP-MS-11N-0.1X-1	100 mL	ICP-MS-11N-1	100 mL
Cesium (Cs) 2-5% HNO ₃	ICP-MS-12N-0.01X-1	100 mL	ICP-MS-12N-0.1X-1	100 mL	ICP-MS-12N-1	100 mL
Chromium (Cr) 2-5% HNO ₃	ICP-MS-13N-R-0.01X-1	100 mL	ICP-MS-13N-R-0.1X-1	1100 mL	ICP-MS-13N-R-1	1100 mL
Cobalt (Co) 2-5% HNO ₃	ICP-MS-14N-0.01X-1	100 mL	ICP-MS-14N-0.1X-1	100 mL	ICP-MS-14N-1	100 mL
Copper (Cu) 2-5% HNO ₃	ICP-MS-15N-0.01X-1	100 mL	ICP-MS-15N-0.1X-1	100 mL	ICP-MS-15N-1	100 mL
Dysprosium (Dy) 2-5% HNO ₃	ICP-MS-16N-0.01X-1	100 mL	ICP-MS-16N-0.1X-1	100 mL	ICP-MS-16N-1	100 mL
Erbium (Er) 2-5% HNO ₃	ICP-MS-17N-0.01X-1	100 mL	ICP-MS-17N-0.1X-1	100 mL	ICP-MS-17N-1	100 mL
Europium (Eu) 2-5% HNO ₃	ICP-MS-18N-0.01X-1	100 mL	ICP-MS-18N-0.1X-1	100 mL	ICP-MS-18N-1	100 mL
Gadolinium (Gd) 2-5% HNO ₃	ICP-MS-19N-0.01X-1	100 mL	ICP-MS-19N-0.1X-1	100 mL	ICP-MS-19N-1	100 mL
Gallium (Ga) 2-5% HNO ₃	ICP-MS-20N-0.01X-1	100 mL	ICP-MS-20N-0.1X-1	100 mL	ICP-MS-20N-1	100 mL
Germanium (Ge) Water tr. HF	ICP-MS-21W-0.01X-1	100 mL	ICP-MS-21W-0.1X-1	100 mL	ICP-MS-21W-1	100 mL
Gold (Au) 10% HCl	ICP-MS-22H-0.01X-1	100 mL	ICP-MS-22H-0.1X-1	100 mL	contact technical service	
Hafnium (Hf) 2-5% HNO ₃ tr. HF	ICP-MS-23N-0.01X-1	100 mL	ICP-MS-23N-0.1X-1	100 mL	ICP-MS-23N-1	100 mL

Single Element ICP-MS continued on next page

ICP-MS

Single Element

Element Matrix	100 µg/mL		1,000 µg/mL		10,000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Holmium (Ho) 2-5% HNO ₃	ICP-MS-24N-0.01X-1	100 mL	ICP-MS-24N-0.1X-1	100 mL	ICP-MS-24N-1	100 mL
Indium (In) 2-5% HNO ₃	ICP-MS-25N-0.01X-1	100 mL	ICP-MS-25N-0.1X-1	100 mL	ICP-MS-25N-1	100 mL
Iridium (Ir) 10% HCl	ICP-MS-26H-0.01X-1	100 mL	ICP-MS-26H-0.1X-1	100 mL	contact technical service	
Iron (Fe) 2-5% HNO ₃	ICP-MS-27N-0.01X-1	100 mL	ICP-MS-27N-0.1X-1	100 mL	ICP-MS-27N-1	100 mL
Lanthanum (La) 2-5% HNO ₃	ICP-MS-28N-0.01X-1	100 mL	ICP-MS-28N-0.1X-1	100 mL	ICP-MS-28N-1	100 mL
Lead (Pb) 2-5% HNO ₃	ICP-MS-29N-0.01X-1	100 mL	ICP-MS-29N-0.1X-1	100 mL	ICP-MS-29N-1	100 mL
Lithium (Li) 2-5% HNO ₃	ICP-MS-30N-0.01X-1	100 mL	ICP-MS-30N-0.1X-1	100 mL	ICP-MS-30N-1	100 mL
Lutetium (Lu) 2-5% HNO ₃	ICP-MS-31N-0.01X-1	100 mL	ICP-MS-31N-0.1X-1	100 mL	ICP-MS-31N-1	100 mL
Magnesium (Mg) 2-5% HNO ₃	ICP-MS-32N-0.01X-1	100 mL	ICP-MS-32N-0.1X-1	100 mL	ICP-MS-32N-1	100 mL
Manganese (Mn) 2-5% HNO ₃	ICP-MS-33N-0.01X-1	100 mL	ICP-MS-33N-0.1X-1	100 mL	ICP-MS-33N-1	100 mL
Mercury (Hg) 5-10% HNO ₃	ICP-MS-34N-0.01X-1	100 mL	ICP-MS-34N-0.1X-1	100 mL	ICP-MS-34N-1	100 mL
Molybdenum (Mo) Water tr. NH ₄ OH	ICP-MS-35W-0.01X-1	100 mL	ICP-MS-35W-0.1X-1	100 mL	ICP-MS-35W-1	100 mL
Neodymium (Nd) 2-5% HNO ₃	ICP-MS-36N-0.01X-1	100 mL	ICP-MS-36N-0.1X-1	100 mL	ICP-MS-36N-1	100 mL
Nickel (Ni) 2-5% HNO ₃	ICP-MS-37N-0.01X-1	100 mL	ICP-MS-37N-0.1X-1	100 mL	ICP-MS-37N-1	100 mL
Niobium (Nb) Water tr. HF	ICP-MS-38W-0.01X-1	100 mL	ICP-MS-38W-0.1X-1	100 mL	ICP-MS-38W-1	100 mL
Palladium (Pd) 10% HCl	ICP-MS-40H-0.01X-1	100 mL	ICP-MS-40H-0.1X-1	100 mL	contact technical service	
Phosphorus (P) Water	ICP-MS-41W-0.01X-1	100 mL	ICP-MS-41W-0.1X-1	100 mL	ICP-MS-41W-1	100 mL
Platinum (Pt) 10% HCl	ICP-MS-42H-0.01X-1	100 mL	ICP-MS-42H-0.1X-1	100 mL	contact technical service	
Potassium (K) 2-5% HNO ₃	ICP-MS-43N-0.01X-1	100 mL	ICP-MS-43N-0.1X-1	100 mL	ICP-MS-43N-1	100 mL
Praseodymium (Pr) 2-5% HNO ₃	ICP-MS-44N-0.01X-1	100 mL	ICP-MS-44N-0.1X-1	100 mL	ICP-MS-44N-1	100 mL
Rhenium (Re) Water tr. HNO ₃	ICP-MS-45W-0.01X-1	100 mL	ICP-MS-45W-0.1X-1	100 mL	ICP-MS-45W-1	100 mL
Rhodium (Rh) 10% HCl	ICP-MS-46H-0.01X-1	100 mL	ICP-MS-46H-0.1X-1	100 mL	contact technical service	
Rubidium (Rb) 2-5% HNO ₃	ICP-MS-47N-0.01X-1	100 mL	ICP-MS-47N-0.1X-1	100 mL	ICP-MS-47N-1	100 mL
Ruthenium (Ru) 10% HCl	ICP-MS-48H-0.01X-1	100 mL	ICP-MS-48H-0.1X-1	100 mL	contact technical service	
Samarium (Sm) 2-5% HNO ₃	ICP-MS-49N-0.01X-1	100 mL	ICP-MS-49N-0.1X-1	100 mL	ICP-MS-49N-1	100 mL
Scandium (Sc) 2-5% HNO ₃	ICP-MS-50N-0.01X-1	100 mL	ICP-MS-50N-0.1X-1	100 mL	ICP-MS-50N-1	100 mL

ICP-MS

Single Element

Element Matrix	100 µg/mL		1,000 µg/mL		10,000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Selenium (Se) 2-5% HNO ₃	ICP-MS-51N-0.01X-1	100 mL	ICP-MS-51N-0.1X-1	100 mL	ICP-MS-51N-1	100 mL
Silicon (Si) H ₂ O tr. HF	ICP-MS-52W-0.01X-1	100 mL	ICP-MS-52W-0.1X-1	100 mL	ICP-MS-52W-1	100 mL
Silver (Ag) 2-5% HNO ₃	ICP-MS-53N-0.01X-1	100 mL	ICP-MS-53N-0.1X-1	100 mL	ICP-MS-53N-1	100 mL
Sodium (Na) 2-5% HNO ₃	ICP-MS-54N-0.01X-1	100 mL	ICP-MS-54N-0.1X-1	100 mL	ICP-MS-54N-1	100 mL
Strontium (Sr) 2-5% HNO ₃	ICP-MS-55N-0.01X-1	100 mL	ICP-MS-55N-0.1X-1	100 mL	ICP-MS-55N-1	100 mL
Sulfur (S) Water	ICP-MS-56W-0.01X-1	100 mL	ICP-MS-56W-0.1X-1	100 mL	ICP-MS-56W-1	100 mL
Tantalum (Ta) Water, tr. to 5% HF	ICP-MS-57W-0.01X-1	100 mL	ICP-MS-57W-0.1X-1	100 mL	ICP-MS-57W-1	100 mL
Tellurium (Te) 10% HCl (min.)	ICP-MS-58H-0.01X-1	100 mL	ICP-MS-58H-0.1X-1	100 mL	ICP-MS-58H-1	100 mL
Terbium (Tb) 2-5% HNO ₃	ICP-MS-59N-0.01X-1	100 mL	ICP-MS-59N-0.1X-1	100 mL	ICP-MS-59N-1	100 mL
Thallium (Tl) 2-5% HNO ₃	ICP-MS-60N-0.01X-1	100 mL	ICP-MS-60N-0.1X-1	100 mL	ICP-MS-60N-1	100 mL
Thorium (Th) 2-5% HNO ₃	ICP-MS-61N-0.01X-1	100 mL	ICP-MS-61N-0.1X-1	100 mL	-----	----
Thulium (Tm) 2-5% HNO ₃	ICP-MS-62N-0.01X-1	100 mL	ICP-MS-62N-0.1X-1	100 mL	ICP-MS-62N-1	100 mL
Tin (Sn) 2-5% HNO ₃ tr. HF	ICP-MS-63N-0.01X-1	100 mL	ICP-MS-63N-0.1X-1	100 mL	ICP-MS-63N-1	100 mL
Titanium (Ti) Water tr. HF	ICP-MS-64W-0.01X-1	100 mL	ICP-MS-64W-0.1X-1	100 mL	ICP-MS-64W-1	100 mL
Tungsten (W) Water tr. NH ₄ OH	ICP-MS-65W-0.01X-1	100 mL	ICP-MS-65W-0.1X-1	100 mL	ICP-MS-65W-1	100 mL
Uranium (U) 2-5% HNO ₃	ICP-MS-66N-0.01X-1	100 mL	ICP-MS-66N-R-0.1X-1	100 mL	-----	----
Vanadium (V) 2-5% HNO ₃	ICP-MS-67N-0.01X-1	100 mL	ICP-MS-67N-0.1X-1	100 mL	ICP-MS-67N-1	100 mL
Ytterbium (Yb) 2-5% HNO ₃	ICP-MS-68N-0.01X-1	100 mL	ICP-MS-68N-0.1X-1	100 mL	ICP-MS-68N-1	100 mL
Yttrium (Y) 2-5% HNO ₃	ICP-MS-69N-0.01X-1	100 mL	ICP-MS-69N-0.1X-1	100 mL	ICP-MS-69N-1	100 mL
Zinc (Zn) 2-5% HNO ₃	ICP-MS-70N-0.01X-1	100 mL	ICP-MS-70N-0.1X-1	100 mL	ICP-MS-70N-1	100 mL
Zirconium (Zr) 2-5% HNO ₃	ICP-MS-71N-0.01X-1	100 mL	ICP-MS-71N-0.1X-1	100 mL	ICP-MS-71N-1	100 mL

Matrix Blanks

Nitric Acid Blank

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

100 mL
500 mL

5% HNO₃ in 18 Megohm ASTM Type I deionized Water

Hydrochloric Acid Blank

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

100 mL
500 mL

5% HCl in 18 Megohm ASTM Type I deionized Water

Water Blank

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

100 mL
500 mL

18 Megohm ASTM Type I deionized Water

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

Single Element and Matrix Modifier & Calibration

Each standard is prepared from high purity starting materials, 18 megohm de-ionized water and high purity acids. Every standard is instrumentally assayed to verify concentration of specified element.

- Traceable to NIST Reference Materials
- Certificate of Analysis included
- 18 megohm de-ionized Water
- 36 Month Shelf Life

3 year minimum shelf life on
Single Element AA standards

Single Element AA

Element Matrix	1,000 µg/mL		Element Matrix	1,000 µg/mL	
	Cat. No.	Unit		Cat. No.	Unit
Aluminum (Al) 2-5% Nitric acid	AA01N-1	100 mL	Molybdenum (Mo) Water tr. NH ₄ OH	AA35W-1	100 mL
Antimony (Sb) 2-5% HNO ₃ tr. Tartaric acid	AA01N-5	500 mL	Nickel (Ni) 2-5% Nitric acid	AA35W-5	500 mL
Arsenic (As) 2-5% Nitric acid	AA02N-1	100 mL	Phosphorus (P) Water	AA37N-1	100 mL
Barium (Ba) 2-5% Nitric acid	AA02N-5	500 mL	Potassium (K) 2-5% Nitric acid	AA37N-5	500 mL
Boron (B) Water tr. NH ₄ OH	AA03N-1	100 mL	Selenium (Se) 2-5% Nitric acid	AA41W-1	100 mL
Cadmium (Cd) 2-5% Nitric acid	AA03N-5	500 mL	Silicon (Si) Water tr. HF	AA41W-5	500 mL
Calcium (Ca) 2-5% Nitric acid	AA04N-1	100 mL	Silver (Ag) 2-5% Nitric acid	AA43N-1	100 mL
Chromium (Cr) 2-5% Nitric acid	AA04N-5	500 mL	Sodium (Na) 2-5% Nitric acid	AA43N-5	500 mL
Cobalt (Co) 2-5% Nitric acid	AA07W-1	100 mL	Strontium (Sr) 2-5% Nitric acid	AA51N-1	100 mL
Copper (Cu) 2-5% Nitric acid	AA07W-5	500 mL	Sulfur (S) Water	AA51N-5	500 mL
Iron (Fe) 2-5% Nitric acid	AA08N-1	100 mL	Thallium (Tl) 2-5% Nitric acid	AA52W-1	100 mL
Lead (Pb) 2-5% Nitric acid	AA08N-5	500 mL	Tin (Sn) 2-5% Nitric acid tr. HF	AA52W-5	500 mL
Lithium (Li) 2-5% Nitric acid	AA09N-1	100 mL	Titanium (Ti) Water tr. HF	AA53N-1	100 mL
Magnesium (Mg) 2-5% Nitric acid	AA09N-5	500 mL	Vanadium (V) 5-10% Nitric acid	AA53N-5	500 mL
Manganese (Mn) 2-5% Nitric acid	AA13N-1	100 mL	Yttrium (Y) 2-5% Nitric acid	AA54N-1	100 mL
Mercury (Hg) 2-5% Nitric acid	AA13N-5	500 mL	Zinc (Zn) 2-5% Nitric acid	AA54N-5	500 mL
	AA14N-1	100 mL		AA55N-1	100 mL
	AA14N-5	500 mL		AA55N-5	500 mL
	AA15N-1	100 mL		AA56W-1	100 mL
	AA15N-5	500 mL		AA56W-5	500 mL
	AA27N-1	100 mL		AA60N-1	100 mL
	AA27N-5	500 mL		AA60N-5	500 mL
	AA29N-1	100 mL		AA63N-1	100 mL
	AA29N-5	500 mL		AA63N-5	500 mL
	AA30N-1	100 mL		AA64W-1	100 mL
	AA30N-5	500 mL		AA64W-5	500 mL
	AA32N-1	100 mL		AA67N-1	100 mL
	AA32N-5	500 mL		AA67N-5	500 mL
	AA33N-1	100 mL		AA69N-1	100 mL
	AA33N-5	500 mL		AA69N-5	500 mL
	AA34N-R1-1	100 mL		AA70N-1	100 mL
	AA34N-R1-5	500 mL		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 40% in Water	NH ₄ H ₂ PO ₄	MOD-02-0.5	50 mL
		MOD-02-1	100 mL
Ammonium nitrate 5% in Water	NH ₄ NO ₃	MOD-03-0.5	50 mL
		MOD-03-1	100 mL
Magnesium nitrate 2% Magnesium in 5% HNO ₃	Mg(NO ₃) ₂	MOD-07-0.5	50 mL
		MOD-07-1	100 mL
Nickel nitrate 5% Nickel in 5% HNO ₃	Ni(NO ₃) ₂	MOD-08-0.5	50 mL
		MOD-08-1	100 mL
Palladium nitrate 0.2% Palladium in 5% HNO ₃	Pd(NO ₃) ₂	MOD-09A-0.5	50 mL
		MOD-09A-1	100 mL

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

Calibration and Matrix Blanks

Nitric Acid Blank

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

5% HNO₃ 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

Mixed Acid Blank

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

5% HCl + 1% HNO₃ 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 de-ionized 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.

Anions - The Singles as the Element

Water Matrix	100 µg/mL		200 µg/mL		1,000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Acetate	IC-ACET-1X-1	100 mL	---	---	IC-ACET-10X-1	100 mL
	IC-ACET-1X-5	500 mL	---	---	IC-ACET-10X-5	500 mL
Bromate	---	---	---	---	IC-BROM-10X-1	100 mL
	---	---	---	---	IC-BROM-10X-5	500 mL
Bromide (Br)	IC-BR-1X-1	100 mL	IC-BR-2X-1	100 mL	IC-BR-10X-1	100 mL
	IC-BR-1X-5	500 mL	IC-BR-2X-5	500 mL	IC-BR-10X-5	500 mL
Citrate	---	---	---	---	IC-CITR-10X-1	100 mL
Chlorate	IC-CHLR-1X-1	100 mL	---	---	IC-CHLR-10X-1	100 mL
	IC-CHLR-1X-5	500 mL	---	---	IC-CHLR-10X-5	500 mL
Chloride (Cl)	IC-CL-1X-1	100 mL	IC-CL-2X-1	100 mL	IC-CL-10X-1	100 mL
	IC-CL-1X-5	500 mL	IC-CL-2X-5	500 mL	IC-CL-10X-5	500 mL
Chlorite	---	---	---	---	IC-CHLT-10X-1	100 mL
Chromate	IC-CHRM-1X-1	100 mL	---	---	IC-CHRM-10X-1	100 mL
	IC-CHRM-1X-5	500 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-10X-1	100 mL
Nitrate (NO₃)	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 (NO₃-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 (NO₂)	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 (NO₂-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 (PO₄)	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 (PO₄-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 (SO₄)	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 (SO₄-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

† Calculated as the element

* The matrix used in this standard might interfere with some analytical methods.

Anion Kits

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

Ion Chromatography

Organic Acid Salt Standard

	100 µg/mL		1,000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit
Formate	IC-FORM-1X-1	100 mL	IC-FORM-10X-1	100 mL
Water Matrix	IC-FORM-1X-5	500 mL	IC-FORM-10X-5	500 mL
Acetate	IC-ACET-1X-1	100 mL	IC-ACET-10X-1	100 mL
Water Matrix	IC-ACET-1X-5	500 mL	IC-ACET-10X-5	500 mL
Oxalate	IC-OXAL-1X-1	100 mL	IC-OXAL-10X-1	100 mL
Water Matrix	IC-OXAL-1X-5	500 mL	IC-OXAL-10X-5	500 mL
Chromate	IC-CHRM-1X-1	100 mL	IC-CHRM-10X-1	100 mL
Water Matrix	IC-CHRM-1X-5	500 mL	IC-CHRM-10X-5	500 mL
Glycolate	-----	--	IC-GLYC-10X-1	100 mL
Water Matrix				
Lactate	-----	--	IC-LACT-10X-1	100 mL
Water Matrix				
Malate	-----	--	IC-MALA-10X-1	100 mL
Water Matrix				
Maleate	-----	--	IC-MALE-10X-1	100 mL
Water Matrix				
Phthalate	-----	--	IC-PHTH-10X-1	100 mL
Water Matrix				
Propionate	-----	--	IC-PROP-10X-1	100 mL
Water Matrix				
Succinate	-----	--	IC-SUCC-10X-1	100 mL
Water Matrix				
Tartrate	-----	--	IC-TART-10X-1	100 mL
Water Matrix				

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 Std.

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 in Water 3 comps.
Chloride Carbonate
Sulfate

Method 314.0

Perchlorate Calibration Set

M-314.0-SET 3 x 100 mL
IC-PER-10X-1 M-314.0-CMCS-1
M-314.0-MCA-250X-1

Ion Chrom Eluents

	50 mL		100 mL	
	Cat. No.	Unit	Cat. No.	Unit
0.5 M Sodium bicarbonate (100X concentrate)	IC-ELU-01-0.5	50 mL	IC-ELU-01-1	100 mL
	IC-ELU-01-0.5-PAK	5 x 50 mL	IC-ELU-01-1-PAK	5 x 100 mL
0.5 M Sodium carbonate (100X concentrate)	IC-ELU-02-0.5	50 mL	IC-ELU-02-1	100 mL
	IC-ELU-02-0.5-PAK	5 x 50 mL	IC-ELU-02-1-PAK	5 x 100 mL
0.18 M Sodium carbonate / 0.17 M Sodium bicarbonate (100X concentrate)	IC-ELU-03-0.5	50 mL	IC-ELU-03-1	100 mL
	IC-ELU-03-0.5-PAK	5 x 50 mL	IC-ELU-03-1-PAK	5 x 100 mL

Technical Note

Ready to dilute concentrates. Open a fresh bottle and dilute the volume (50 mL to 5 L or 100 mL to 10 L) and be assured of a fresh uncontaminated mobile phase.

Ion Chromatography

Anions

Anion Mixes

Anion Mix #1

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

Fluoride (F)	20
Chloride (Cl)	30
Nitrate (NO 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 (NO₂-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) in Water
3 comps.

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) in Water
3 comps.

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) in Water
5 comps.

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) in Water
6 comps.

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

Ion Chromatography

Ion Chrom - Cation Singles

Matrix	100 µg/mL		200 µg/mL		1,000 µg/mL	
	Cat. No.	Unit	Cat. No.	Unit	Cat. No.	Unit
Calcium (Ca)	IC-CA-1X-1	100 mL	IC-CA-2X-1	100 mL	IC-CA-10X-1	100 mL
Water, tr. HNO ₃	IC-CA-1X-5	500 mL	IC-CA-2X-5	500 mL	IC-CA-10X-5	500 mL
Ammonium (NH₄) *	IC-NH4-1X-1	100 mL	IC-NH4-2X-1	100 mL	IC-NH4-10X-1 †	100 mL
Water	IC-NH4-1X-5	500 mL	IC-NH4-2X-5	500 mL	IC-NH4-10X-5 †	500 mL
Ammonium-Nitrogen (NH₄-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-2X-1	100 mL	IC-MG-10X-1	100 mL
Water, tr. HNO ₃	IC-MG-1X-5	500 mL	IC-MG-2X-5	500 mL	IC-MG-10X-5	500 mL
Potassium (K)	IC-K-1X-1	100 mL	IC-K-2X-1	100 mL	IC-K-10X-1	100 mL
Water, tr. HNO ₃	IC-K-1X-5	500 mL	IC-K-2X-5	500 mL	IC-K-10X-5	500 mL
Sodium (Na)	IC-NA-1X-1	100 mL	IC-NA-2X-1	100 mL	IC-NA-10X-1	100 mL
Water, tr. HNO ₃	IC-NA-1X-5	500 mL	IC-NA-2X-5	500 mL	IC-NA-10X-5	500 mL
Lithium (Li)	IC-LI-1X-1	100 mL	IC-LI-2X-1	100 mL	IC-LI-10X-1	100 mL
Water, tr. HNO ₃	IC-LI-1X-5	500 mL	IC-LI-2X-5	500 mL	IC-LI-10X-5	500 mL
Barium (Ba)	IC-BA-1X-1	100 mL	IC-BA-2X-1	100 mL	IC-BA-10X-1	100 mL
Water, tr. HNO ₃	IC-BA-1X-5	500 mL	IC-BA-2X-5	500 mL	IC-BA-10X-5	500 mL
Strontium (Sr)	IC-SR-1X-1	100 mL	IC-SR-2X-1	100 mL	IC-SR-10X-1	100 mL
Water, tr. HNO ₃	IC-SR-1X-5	500 mL	IC-SR-2X-5	500 mL	IC-SR-10X-5	500 mL
Sets of items listed above	8 x 100 mL	IC-CAT-1X-1-SET	IC-CAT-2X-1-SET		IC-CAT-10X-1-SET	
	8 x 500 mL	IC-CAT-1X-5-SET	IC-CAT-2X-5-SET		IC-CAT-10X-5-SET	

* 1,000 µg/mL as Ammonium (NH₄) Other Nitrogen species equivalents are: NH₃ (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 HNO₃ 6 comps.

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

Cation Mix #3

IC-MCA-03-1 100 mL
At stated conc. (µg/mL) in Dilute HNO₃ 4 comps.

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

Cation Mix #5

IC-MCA-05-1 100 mL
At stated conc. (µg/mL) in Dilute HNO₃ 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 HNO₃ 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

Cation Mix #2

IC-MCA-02-1 100 mL
At stated conc. (µg/mL) in Dilute HNO₃ 6 comps.

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

Cation Mix #4

IC-MCA-04-1 100 mL
At stated conc. (µg/mL) in Dilute HNO₃ 4 comps.

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

Traceability to NIST SRM by
Wet Chemical / Gravimetric Assay

Traceability to NIST SRM 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. HNO₃

Ammonium (NH ₄)	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. HNO₃

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 for preparation are calibrated regularly 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 subjected 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 (SiO₂) in Water tr. HF

Sulfate

IC-SO4-10X-1 100 mL
1000 µg/mL Sulfate (SO₄) 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

A stable solution of microspheres in an aqueous matrix can be diluted in turbidity free water for a calibration curve. Do not shake prior to use.

Alkalinity

WC-ALK-10X-1 100 mL
1000 µg/mL CaCO₃ to pH 4.5

Hardness

WC-HARD-10X-1 100 mL
1000 µg/mL equivalent CaCO₃

A combination of Ca and Mg to give an approx. concentration of 1000 µg/mL CaCO₃. Hardness µg/mL equivalent CaCO₃ = 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 sample
2 comps.
1000 ppm TSS (Total Suspended Solids) and 1000 ppm TDS (Total Dissolved Solids) for a 2000 ppm TS (Total Solids).

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

Dissolved Solids

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

Suspended Solids

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

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-1 100 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 of 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-10X-1 100 mL
1000 µg/mL TOC in water, tr. H₂SO₄

Total Inorganic Carbon (TIC)

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

Total Organic Halides (TOX)

WC-TOX-10X-1 1 mL
WC-TOX-10X-1-PAK SAVE 5 x 1 mL
1000 µg/mL in MeOH

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 100 mL
Nitrogen @ 1000 µg/mL

Total Nitrogen Stock Laboratory Control Standard

D-8083-LCS 100 mL
Nitrogen @ 1000 µg/mL

Stock TON Test Solution

D-8083-TON 100 mL
Nitrogen @ 1000 µg/mL

ASTM D8083 Nitrogen Calibration Set

D-8083-SET 3 x 100 mL
D-8083-TN, D-8083-LCS, D-8083-TON

TPH, Oil and Grease

EPA Methods

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

Precision and Recovery (PAR) Spiking Solution

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

Technical Note

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

Method 413.2 & 418.1 Total Petroleum Hydrocarbon Analysis by IR

Oil, Grease & Petroleum Hydrocarbon Concentrates Mix

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

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

M-418				1 x 1 mL
M-418-PAK			SAVE	5 x 1 mL
At stated conc. (mg/mL) in Freon 113				
Chlorobenzene	1.05	Isooctane	1.55	3 comps.
<i>n</i> -Hexadecane	1.55			

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				
Chlorobenzene	0.10	Isooctane	0.15	3 comps.
<i>n</i> -Hexadecane	0.15			

Total Petroleum Hydrocarbon Concentrate Mix

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

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				



Multi-Element ICP and ICP-MS

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Custom Formulations

Meet your specific needs.

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

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% HNO₃ tr. HF 23 comps.

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

QC Standard #2

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

At stated conc. (µg/mL) in 5% HNO₃ tr. HF 7 comps

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

† 1070 µg/mL as SiO₂

QC Standard #2R

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

100 µg/mL each in 5% HNO₃ tr. HF 7 comps.

Aluminum (Al)	Silicon (Si) †
Barium (Ba)	Silver (Ag)
Boron (B)	Sodium (Na)
Potassium (K)	† 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% HNO₃ 15 comps.

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

QC Standard #4

QCS-04-1 100 mL
 At stated conc. (µg/mL) in 5% HNO₃ 19 comps.

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

QC Standard Sets

QCS-1-SET 3 x 100 mL
 QCS-01-1, QCS-02-1, QCS-03-1
QCS-5-SET 3 x 500 mL
 QCS-01-5, QCS-02-5, QCS-03-5

QCS-R1-1-SET 3 x 100 mL
 QCS-01-1, QCS-02-R1-1, QCS-03-1
QCS-R1-5-SET 3 x 500 mL
 QCS-01-5, QCS-02-R1-5, QCS-03-5

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% HNO₃ tr. HF 7 comps.

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

Second Source QC Standard #2

QCS-ASL-21-1 100 mL
QCS-ASL-21-5 500 mL

100 µg/mL each in 2-5% HNO₃ tr. HF 21 comps.

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

Second Source QC Standard #3

QCS-ASL-19-1 100 mL
QCS-ASL-19-5 500 mL

100 µg/mL each in 2-5% HNO₃ tr. HF 19 comps.

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

- NIST Traceable
- Independent Lots
- Exact Match

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

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% HNO₃ tr. HF 33 comps.

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

Semi-Quantitative Standard #2

SQS-02-R1-1 100 mL
10 µg/mL each in 2-5% HNO₃ tr. HCl tr. HF 33 comps.

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

Semi-Quantitative Standard #3

SQS-03-1 100 mL
10 µg/mL each in 2-5% HNO₃ 2 comps.

Mercury (Hg)	Silver (Ag)
--------------	-------------

Semi-Quantitative Standard #4

SQS-04-1 100 mL
10 µg/mL each in 5% HCl

Gold (Au)

Screening Standard Set

SQS-R1-1-SET	4 x 100 mL
SQS-01-1	SQS-02-R1-1
SQS-03-1	SQS-04-1

Technical Note

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

Groundwater & Wastewater Standards

Trace Metals I, II, III

Trace Metals I

WPTM-01-1 100 mL
WPTM-01-5 500 mL
At stated conc. (µg/mL) in 5% HNO₃ 15 comps.

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

Trace Metals II

WPTM-02-1 100 mL
WPTM-02-5 500 mL
At stated conc. (µg/mL) in 5% HNO₃ 3 comps.

Antimony (Sb)	20
Silver (Ag)	10
Thallium (Tl)	20

Trace Metal Sets

WPTM-1-SET	3 x 100 mL
WPTM-01-1	WPTM-02-1
WPTM-03-1	
WPTM-5-SET	3 x 500 mL
WPTM-01-5	WPTM-02-5
WPTM-03-5	

Trace Metals III

WPTM-03-1 100 mL
WPTM-03-5 500 mL
At stated conc. (µg/mL) in 5% HNO₃ tr. HF 6 comps.

Barium (Ba)	500
Calcium (Ca)	500
Magnesium (Mg)	100
Molybdenum (Mo)	500
Potassium (K)	100
Sodium (Na)	500

Alternate Metals for Groundwater and Wastewater Analysis

Alternate Metals I

WPAM-01-1 100 mL
WPAM-01-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ 11 comps.

Aluminum (Al)	20
Antimony (Sb)	5
Beryllium (Be)	5
Cobalt (Co)	10
Copper (Cu)	10
Iron (Fe)	20
Manganese (Mn)	10
Nickel (Ni)	10
Thallium (Tl)	5
Vanadium (V)	20
Zinc (Zn)	10

Alternate Metals III

WPAM-03-1 100 mL
WPAM-03-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ 4 comps.

Calcium (Ca)	500
Magnesium (Mg)	100
Potassium (K)	100
Sodium (Na)	500

Alternate Trace Metal Sets

WPAM-1-SET	2 x 100 mL
WPAM-01-1	WPAM-03-1
WPAM-5-SET	2 x 500 mL
WPAM-01-5	WPAM-03-5

ICP

SDWA (Safe Drinking Water Act) Standards

SDWA Standards

For use in SW-846, Method 1310 and U.S. NPDWR 40CFR Part 141. The three Drinking Water Standards are used for monitoring drinking water and/or ground and surface water.

Primary Drinking Water Metals

SDWA-01-1	100 mL
SDWA-01-5	500 mL
At stated conc. (µg/mL) in 2% HNO ₃ 7 comps.	
Arsenic (As)	10
Barium (Ba)	100
Cadmium (Cd)	5
Chromium (Cr)	10
Lead (Pb)	10
Selenium (Se)	5
Silver (Ag)	10

Secondary Drinking Water Metals

SDWA-02-1	100 mL
SDWA-02-5	500 mL
At stated conc. (µg/mL) in 2-5% HNO ₃ 4 comps.	

Copper (Cu)	100
Iron (Fe)	30
Manganese (Mn)	5
Zinc (Zn)	500

Mercury Solution

SDWA-03-1	100 mL
SDWA-03-5	500 mL
10 µg/mL in 5% HNO ₃	
Mercury (Hg)	

Drinking Water Sets

SDWA-1-SET	3 x 100 mL
SDWA-01-1 SDWA-02-1 SDWA-03-1	
SDWA-5-SET	3 x 500 mL
SDWA-01-5 SDWA-02-5 SDWA-03-5	

Standards for Analytes covered in the Safe Drinking Water Act (SDWA)

Primary Metals for Analysis by ICP

Contains all approved elements	
SDWA-04-1	100 mL
SDWA-04-5	500 mL
At stated conc. (µg/mL) in 2-5% HNO ₃ 9 comps.	
Arsenic (As)	100
Barium (Ba)	10
Beryllium (Be)	10
Cadmium (Cd)	10
Calcium (Ca)	100
Chromium (Cr)	10
Copper (Cu)	10
Nickel (Ni)	10
Sodium (Na)	100

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

Secondary Metals for Analysis by GFAA/ICP/ICP-MS

SDWA-08-1	100 mL
SDWA-08-5	500 mL
At stated conc. (µg/mL) in 2-5% HNO ₃ 5 comps.	
Aluminum (Al)	10
Iron (Fe)	100
Manganese (Mn)	10
Silver (Ag)	10
Zinc (Zn)	10

Primary Metals for Analysis by GFAA

Contains GFAA approved elements	
SDWA-05-1	100 mL
SDWA-05-5	500 mL
10 µg/mL each in 2-5% HNO ₃ 9 comps.	
Antimony (Sb)	Lead (Pb)
Arsenic (As)	Nickel (Ni)
Cadmium (Cd)	Selenium (Se)
Chromium (Cr)	Thallium (Tl)
Copper (Cu)	

Primary Metals for Analysis by GFAA/ICP/ICP-MS

SDWA-07-1	100 mL
SDWA-07-5	500 mL
At stated conc. (µg/mL) in 2% HNO ₃ tr. HF 14 comps.	
Antimony (Sb)	100
Arsenic (As)	100
Barium (Ba)	10
Beryllium (Be)	10
Cadmium (Cd)	10
Calcium (Ca)	100
Chromium (Cr)	10
Copper (Cu)	10
Lead (Pb)	10
Nickel (Ni)	10
Selenium (Se)	10
Silicon (Si) †	100
Sodium (Na)	100
Thallium (Tl)	10

† 214 µg/mL as SiO₂

Primary & Secondary Metals for Analysis by GFAA/ICP/ICP-MS

Contains all Primary & Secondary Metals	
SDWA-09-1	100 mL
SDWA-09-5	500 mL
At stated conc. (µg/mL) in 2% HNO ₃ tr. HF 19 comps.	
Aluminum (Al)	10
Antimony (Sb)	100
Arsenic (As)	100
Barium (Ba)	10
Beryllium (Be)	10
Cadmium (Cd)	10
Calcium (Ca)	100
Chromium (Cr)	10
Copper (Cu)	10
Iron (Fe)	100
Lead (Pb)	10
Manganese (Mn)	10
Nickel (Ni)	10
Selenium (Se)	10
Silicon (Si) †	100
Silver (Ag)	10
Sodium (Na)	100
Thallium (Tl)	10
Zinc (Zn)	10

† 214 µg/mL as SiO₂

ICP

MISA Test Group 29

MISA Test Group 29 Analysis Calibration Standards

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

MISA Standard 1

Rare Earth Metals

MISA-01-1 100 mL
100 µg/mL each in 5% HNO₃ 18 comps.

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

MISA Standard 2

Precious Metals

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

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

MISA Standard 3

Tellurium

MISA-03-1 100 mL
100 µg/mL in 10% HCl

Tellurium (Te)

MISA Standard 4

Alkali, Alkaline Earth, Non-Transition Group

MISA-04-1 100 mL
100 µg/mL each in 10% HNO₃ 16 comps.

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

MISA Standard 5

Fluoride Soluble Group

MISA-05-1 100 mL
100 µg/mL each in 5% HNO₃ tr. HF 15 comps.

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

MISA Standard 6

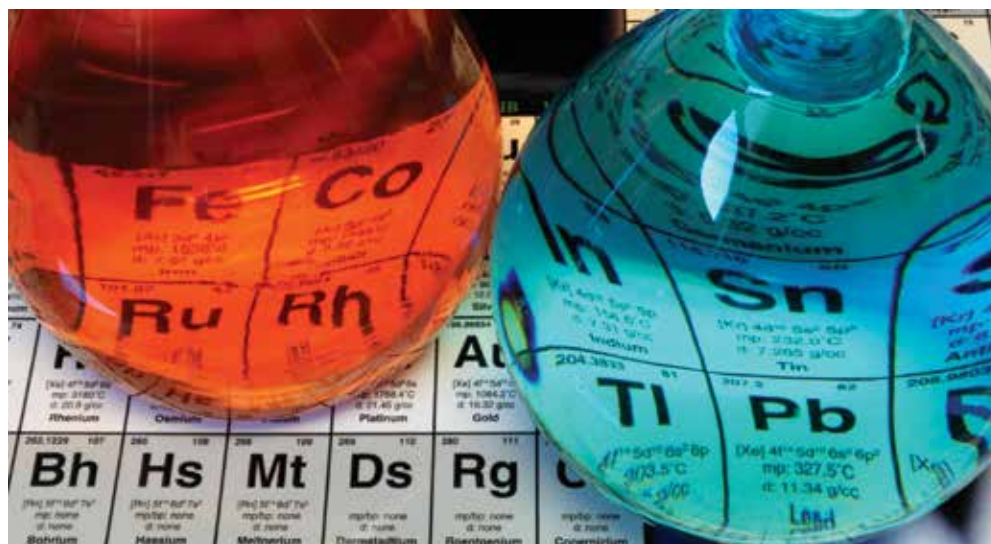
Transition Metals

MISA-06-1 100 mL
100 µg/mL each in 10% HNO₃ 13 comps.

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

MISA Calibration Set

MISA-1-SET	6 x 100 mL	
MISA-01-1	MISA-03-1	MISA-05-1
MISA-02-1	MISA-04-1	MISA-06-1



ICP

Contract Laboratory Program (CLP)

Calibration Check Standards

Calibration Standard #1

CLP-CAL-01-1 **100 mL**
5000 µg/mL each in 5% HNO₃ 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% HNO₃ 5 comps.

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

Calibration Standard #3

CLP-CAL-03-1 **100 mL**
At stated conc. (µg/mL) in 5% HNO₃ 7 comps.

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

Calibration Standard #4

CLP-CAL-04-1 **100 mL**
At stated conc. (µg/mL) in 5% HNO₃ 5 comps.

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

Calibration Standard #5

CLP-CAL-05-1 **100 mL**
600 µg/mL in 2% HNO₃

Antimony (Sb)

Calibration Standard #6

CLP-CAL-06-1 **100 mL**
100 µg/mL in 5% HNO₃

Mercury (Hg)

CLP Calibration Standard Set

CLP-CAL-1-SET		6 x 100 mL
CLP-CAL-01	CLP-CAL-03	CLP-CAL-05
CLP-CAL-02	CLP-CAL-04	CLP-CAL-06

Verification Standards

Initial Calibration Verification

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

At stated conc. (µg/mL) in 5% HNO₃ tr. HF 22 comps.

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

Initial Calibration Verification

CLP-ICV-01-R-1 **100 mL**
CLP-ICV-01-R-5 **500 mL**

At stated conc. (µg/mL) in 5% HNO₃ tr. HF 22 comps.

Aluminum (Al)	200
Antimony (Sb)	60
Arsenic (As)	10
Barium (Ba)	200
Beryllium (Be)	5
Cadmium (Cd)	5
Calcium (Ca)	500
Chromium (Cr)	10
Cobalt (Co)	50
Copper (Cu)	25
Iron (Fe)	100
Lead (Pb)	5
Magnesium (Mg)	500
Manganese (Mn)	15
Nickel (Ni)	40
Potassium (K)	500
Selenium (Se)	5
Silver (Ag)	10
Sodium (Na)	500
Thallium (Tl)	10
Vanadium (V)	50
Zinc (Zn)	20

Technical Note

CLP-ICV-01-R has Ca, Mg, K & Na at 1/10 the concentration of CLP-ICV-01. This improves plasma robustness and often results in superior recoveries.

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

Contract Laboratory Program (CLP)

Interference Check & Analyte Standards

The common interferents checked for CLP requirements and their associated analytes are listed in our primary interferent analyte solutions. Occasionally, additional interferents may cause other analytical problems according to CLP SOW ILM03.0. These additional six elements are available with their respective analytes in the alternate interferent/analyte solutions.

Primary Analytes

CLP-PAN-01-1	100 mL
CLP-PAN-01-5	500 mL
At stated conc. (µg/mL) in 5% HNO ₃ 12 comps.	
Silver (Ag)	100
Barium (Ba)	50
Beryllium (Be)	50
Cadmium (Cd)	100
Cobalt (Co)	50
Chromium (Cr)	50
Copper (Cu)	50
Manganese (Mn)	50
Nickel (Ni)	100
Lead (Pb)	100
Vanadium (V)	50
Zinc (Zn)	100

Alternate Interferents

CLP-PIN-02-1	100 mL
CLP-PIN-02-5	500 mL
1000 µg/mL each in 5% HNO ₃ 6 comps.	

Chromium (Cr)	Nickel (Ni)
Copper (Cu)	Titanium (Ti)
Manganese (Mn)	Vanadium (V)

Alternate Analytes

CLP-PAN-02-1	100 mL
CLP-PAN-02-5	500 mL
At stated conc. (µg/mL) in 5% HNO ₃ tr. HF 12 comps.	

Aluminum (Al)	100
Antimony (Sb)	100
Arsenic (As)	100
Boron (B)	100
Calcium (Ca)	10
Iron (Fe)	10
Magnesium (Mg)	10
Molybdenum (Mo)	100
Selenium (Se)	100
Silicon (Si)	10
Sodium (Na)	100
Thallium (Tl)	100

Interferent / Analyte Sets

CLP-IA-1-SET	4 x 100 mL
CLP-PIN-01-1	CLP-PIN-02-1
CLP-PAN-01-1	CLP-PAN-02-1
CLP-IA-5-SET	4 x 500 mL
CLP-PIN-01-5	CLP-PIN-02-5
CLP-PAN-01-5	CLP-PAN-02-5

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

Detection Limit Standards

Contract Required Detection Limits (CRDL) Standard Solutions. We offer the flexibility of two convenient solutions:

CLP Detection Limits Standard #1

CLP-CRDL-01-1	100 mL
At stated conc. (µg/mL) in 5% HNO ₃ tr. HF 15 comps.	

Antimony (Sb)	120
Arsenic (As)	120
Beryllium (Be)	10
Cadmium (Cd)	10
Chromium (Cr)	20
Cobalt (Co)	100
Copper (Cu)	50
Lead (Pb)	120
Manganese (Mn)	30
Nickel (Ni)	80
Selenium (Se)	120
Silver (Ag)	20
Thallium (Tl)	120
Vanadium (V)	100
Zinc (Zn)	40

Contract Required Detection Limits (CRDL) Set

CLP-CRDL-1-SET	2 x 100 mL
CLP-CRDL-01-1	CLP-CRDL-02-1

CLP Detection Limits Standard #2

CLP-CRDL-02-1	100 mL
At stated conc. (µg/mL) in 5% HNO ₃ tr. HF 15 comps.	

Antimony (Sb)	120
Arsenic (As)	20
Beryllium (Be)	10
Cadmium (Cd)	10
Chromium (Cr)	20
Cobalt (Co)	100
Copper (Cu)	50
Lead (Pb)	6
Manganese (Mn)	30
Nickel (Ni)	80
Selenium (Se)	10
Silver (Ag)	20
Thallium (Tl)	20
Vanadium (V)	100
Zinc (Zn)	40

Technical Note

Standards are prepared to meet the requirements of CLP protocol; Arsenic (As), Lead (Pb), Selenium (Se) and Thallium (Tl) are at a concentration two times the instrument detection limit (IDL) while the remaining elements are at two times the CRDL.

Technical Note

These standards are designed for ICPs equipped with ultrasonic nebulizers and offer the elements of interest at two times the CRDL level.

ICP

EPA Method 200.7

Method 200.7 (Revision 4.4, May 1994) 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% HNO₃ 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% HNO₃ tr. HF
 6 comps.

Lithium (Li) 50	Strontium (Sr) 10
Molybdenum (Mo) 100	Titanium (Ti) 100
Potassium (K) 200	
Sodium (Na) 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% HNO₃ 4 comps.

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

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% HNO₃ 6 comps.

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

Mixed Calibration Stds. Sets

M-200.7-R-1-SET 5 x 100 mL

M-200.7-01-1	M-200.7-04-1
M-200.7-02R-1	M-200.7-05-1
M-200.7-03R-1	

M-200.7-5-R-5-SET 5 x 500 mL

M-200.7-01-5	M-200.7-04-5
M-200.7-02R-5	M-200.7-05-5
M-200.7-03-5R	

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% HNO₃ tr. HF
 5 comps.

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

† 214 µg/mL as SiO₂

Method 200.7 Instrument Performance Standards

Instrument Performance Check Std. #1

M-200.7-IPC-01-1 100 mL
M-200.7-IPC-01-5 500 mL

At stated conc. (µg/mL) in 5% HNO₃ 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) 100
Cadmium (Cd) 20	Potassium (K) 100
Calcium (Ca) 20	Selenium (Se) 20
Cerium (Ce) 20	Silver (Ag) 2.5
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 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% HNO₃ tr. HF
 5 comps.

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

† 214 µg/mL as SiO₂

Method 200.7 Performance Check, Fortifying Solution & Mercury Standard

Laboratory Performance Check Std.

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% HNO₃ 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 SiO₂

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% HNO₃ 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 SiO₂

Technical Note

The analytes Ca, K, Mg, and Na are not included in the stock solution because their concentrations vary widely in environmental samples. You can use CLP-CAL-01-1 to calibrate for these elements.

Laboratory Performance Check Std.

Same above with additional Titanium @ 20 µg/mL

LPCS-01R1-1 100 mL
LPCS-01R1-5 500 mL

At stated conc. (µg/mL) in 5% HNO₃ tr. HF 30 comps.

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% HNO₃

Mercury (Hg)

ICP

EPA Method 200.7

Method 200.7 Fortifying Standards

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% HNO₃ 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% HNO₃ tr. HF 5 comps.

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

Method 200.7 Spiking Standards

Spiking Standard #1R

M-200.7-SP-01-R 50 mL
 At stated conc. (µg/mL) in Water tr. HF 4 comps.

Boron (B)	400
Molybdenum (Mo)	200
Silicon (Si) †	2000
Phosphorus (P)	400
† 4278 µg/mL SiO ₂	

Spiking Standard #2R

M-200.7-SP-02-R 50 mL
M-200.7-SP-02-R-1 100 mL
M-200.7-SP-02-R-5 500 mL
 10,000 µg/mL each in 2% HNO₃ 4 comps.

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

Spiking Standard #3

M-200.7-SP-03 50 mL
 At stated conc. (µg/mL) in 5% HNO₃ 12 comps.

Aluminum (Al)	2000
Barium (Ba)	2000
Beryllium (Be)	50
Chromium (Cr)	200
Cobalt (Co)	500
Copper (Cu)	250
Iron (Fe)	1000
Manganese (Mn)	500
Nickel (Ni)	500
Silver (Ag)	50
Vanadium (V)	500
Zinc (Zn)	500

Spiking Standard #4R

M-200.7-SP-04-R 50 mL
 200 µg/mL in dilute HNO₃

Antimony (Sb)

Spiking Standard #5R

M-200.7-SP-05-R 50 mL
 At stated conc. (µg/mL) in 5% HNO₃ 5 comps.

Arsenic (As)	200
Cadmium (Cd)	100
Lead (Pb)	200
Selenium (Se)	400
Thallium (Tl)	400

Method 200.7 Spiking Set

M-200.7-SP-R-SET 5 x 50 mL
 M-200.7-SP-01-R M-200.7-SP-04-R
 M-200.7-SP-02-R M-200.7-SP-05-R
 M-200.7-SP-03

Method 200.7 Interference Check Standards

For use in testing and verifying the inter-element spectral correction process.

SIC Solution #1

Used to evaluate the spectral interference for the analytes: Al, Sb, Se, Sn, V

SICS-01-1 100 mL
SICS-01-5 500 mL
 50 µg/mL in Water tr. NH₄OH

Molybdenum (Mo)

SIC Solution #2

Used to evaluate the spectral interference for the analytes: Sb, Pb, Zn, Mo, As, Be

SICS-02-1 100 mL
SICS-02-5 500 mL
 At stated conc. (µg/mL) in 2% HNO₃ 5 comps.

Chromium (Cr)	20
Cobalt (Co)	10
Copper (Cu)	40
Manganese (Mn)	20
Vanadium (V)	10

SIC Solution #3

Used to evaluate the spectral interference for the analytes: Sb, Zn, As, Ag, Cr, Mn, V

SICS-03-1 100 mL
SICS-03-5 500 mL
 At stated conc. (µg/mL) in 2% HNO₃ 3 comps.

Aluminum (Al)	30
Iron (Fe)	150
Nickel (Ni)	20

Check Solutions Sets

SIC-1-SET 3 x 100 mL
 SICS-01-1 SICS-03-1
 SICS-02-1
SIC-5-SET 3 x 500 mL
 SICS-01-5 SICS-03-5
 SICS-02-5

ICP

EPA Method 6010

Method 6010B (Rev. 2, from SW-846) Calibration Standards

Mixed Calibration Standard #1

MCS-01-1 100 mL
MCS-01-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ 6 comps.

Beryllium (Be)	50
Cadmium (Cd)	150
Lead (Pb)	500
Manganese (Mn)	100
Selenium (Se)	200
Zinc (Zn)	150

Mixed Calibration Standard #2

MCS-02-1 100 mL
MCS-02-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ 5 comps.

Barium (Ba)	100
Cobalt (Co)	100
Copper (Cu)	100
Iron (Fe)	10,000
Vanadium (V)	100

Mixed Calibration Standard #3R

MCS-03R-1 100 mL
MCS-03R-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ tr. HF 2 comps.

Arsenic (As)	500
Molybdenum (Mo)	100

Mixed Calibration Standard #4R

MCS-04R-1 100 mL
MCS-04R-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ 8 comps.

Aluminum (Al)	200
Calcium (Ca)	1000
Chromium (Cr)	20
Lithium (Li)	100
Nickel (Ni)	20
Potassium (K)	400
Sodium (Na)	200
Strontium (Sr)	10

Mixed Calibration Standard #5R

MCS-05R-1 100 mL
MCS-05R-5 500 mL
At stated conc. (µg/mL) in 2% HNO₃ 4 comps.

Antimony (Sb)	200
Magnesium (Mg)	1000
Silver (Ag)	50
Thallium (Tl)	200

Mixed Calibration Standard 6R

MCS-06R-1 100 mL
MCS-06R-5 500 mL
At stated conc. (µg/mL) in 2-5% HNO₃, tr. HF 5 comps.

Phosphorus (P)	200
Tin (Sn)	200
Titanium (Ti)	100
Boron (B)	50
Silicon (Si) †	100

† 214 µg/mL as SiO₂

Complete Calibration Set Method 6010B, Rev. 2 and 6010C, Rev. 3

MCS-1996-1-SET 7 x 100 mL			MCS-1996-5-SET 7 x 500 mL		
MCS-01-1	MCS-04R-1	MCS-06R-1	MCS-01-5	MCS-04R-5	MCS-06R-5
MCS-02-1	MCS-05R-1	TCLP-02-1	MCS-02-5	MCS-05R-5	TCLP-02-5
MCS-03R-1			MCS-03R-5		

Technical Note

Additional Analyte Calibration Standards

The use of this Standard Solution (MCS-06R), plus a Mercury Standard (TCLP-02), completes the analyte list for 1996 Rev. 2 & 2000 Rev. 3.

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% HNO₃

Mercury (Hg)

Method 6010B Spiking Standards

Three 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% HNO₃ 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)	

Spiking Standard #2

QCS-02-1 100 mL
QCS-02-5 500 mL
At stated conc. (µg/mL) in 5% HNO₃ tr. HF 7 comps.

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

† 1070 µg/mL as SiO₂

QC Standard #2R

QCS-02-R1-1 100 mL
QCS-02-R1-5 500 mL
100 µg/mL each in 5% HNO₃ tr. HF 7 comps.

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

† 214 µg/mL as SiO₂

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% HNO₃

Mercury (Hg)

ICP

EPA Method 6010

Method 6010B (Rev. 2 from SW-846, Dec. 1996) Performance & Interference Check Standards

Laboratory Performance Check Standard

LPCS-01R-1 100 mL
 LPCS-01R-5 500 mL
 At stated conc. (µg/mL) in 5% HNO₃ tr. HF 30 comps.

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

† 214 µg/mL as SiO₂

Primary Interferents

CLP-PIN-01-1 100 mL
 CLP-PIN-01-5 500 mL
 At stated conc. (µg/mL) in 5% HNO₃ 4 comps.

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

Alternate Interferents

CLP-PIN-02-1 100 mL
 CLP-PIN-02-5 500 mL
 1000 µg/mL each in 5% HNO₃ 6 comps.

Chromium (Cr)	Nickel (Ni)
Copper (Cu)	Titanium (Ti)
Manganese (Mn)	Vanadium (V)

Set-up Solution

Nebulizer Adjustment Solution

ICP-69N-1 100 mL
 1000 µg/mL in 2% HNO₃
 Yttrium (Y)



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)	4 comps.
2-5% HNO ₃	
Arsenic (As)	15
Cadmium (Cd)	5
Lead (Pb)	5
Mercury (Hg)	30

USP 232 Oral Impurities Mix 2

USP-232-02-1	100 mL
At stated conc. (µg/mL)	6 comps.
2-5% HNO ₃	
Cobalt (Co)	50
Nickel (Ni)	200
Selenium (Se)	150
Silver (Ag)	150
Thallium (Tl)	8
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)	
Iridium (Ir)	
Osmium (Os)	
Palladium (Pd)	
Platinum (Pt)	
Rhodium (Rh)	
Ruthenium (Ru)	

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
Barium (Ba)	140
Chromium (Cr)	1100
Copper (Cu)	300
Lithium (Li)	55
Molybdenum (Mo)	300
Tin (Sn)	600

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 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)	

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
Germanium (Ge)	5
Indium (In)	5
Lutetium (Lu)	5
Scandium (Sc)	10
Tellurium (Te)	25



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. The standards below 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. ($\mu\text{g/mL}$) 4 comps
2-5% Nitric acid

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

Cannabis Metals 2

CP-MET-02-1 100 mL
At stated conc. ($\mu\text{g/mL}$) 4 comps
2-5% Nitric acid

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

Cannabis Metals Low & High Level Calibration Standards

CP-MET-CAL-LOW-1 100 mL
At stated conc. ($\mu\text{g/mL}$) 2-5% Nitric acid 4 comps

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

CP-MET-CAL-HIGH-1 100 mL
At stated conc. ($\mu\text{g/mL}$) 2-5% Nitric acid 4 comps

Arsenic (As)	100
Cadmium (Cd)	100
Lead (Pb)	100
Mercury (Hg)	100



Electronic Cigarette Analysis

Trace Metals Standards

EC-MET-01-1 100 mL
10 $\mu\text{g/mL}$ each in 2% Nitric Acid 4 comps.

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

EC-MET-02-1 100 mL
10 $\mu\text{g/mL}$ each in 2% Nitric Acid 5 comps.

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



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	Starting Material	Matrix	1,000 $\mu\text{g/mL}$ Cat. No.	Unit
Aluminum (Al)	$\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	2-5% Nitric acid	ICP-01N-1	100 mL
			ICP-01N-5	500 mL
Arsenic (As)	As	2-5% Nitric acid	ICP-03N-1	100 mL
			ICP-03N-5	500 mL
Cadmium (Cd)	Cd	2-5% Nitric acid	ICP-08N-1	100 mL
			ICP-08N-5	500 mL
Chromium (Cr)	$\text{Cr}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	2-5% Nitric acid	ICP-13N-R-1	100 mL
			ICP-13N-R-5	500 mL
Iron (Fe)	$\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$	2-5% Nitric acid	ICP-27N-1	100 mL
			ICP-27N-5	500 mL
Lead (Pb)	$\text{Pb}(\text{NO}_3)_2$	2-5% Nitric acid	ICP-29N-1	100 mL
			ICP-29N-5	500 mL
Mercury (Hg)	Hg	10% Nitric acid	ICP-34N-1	100 mL
			ICP-34N-5	500 mL
Molybdenum (Mo)	$(\text{NH}_4)_2\text{MoO}_4$	Water tr. NH_4OH	ICP-35W-1	100 mL
			ICP-35W-5	500 mL

Element	Starting Material	Matrix	1,000 $\mu\text{g/mL}$ Cat. No.	Unit
Nickel (Ni)	Ni	2-5% Nitric acid	ICP-37N-1	100 mL
			ICP-37N-5	500 mL
Potassium (K)	KNO_3	2-5% Nitric acid	ICP-43N-1	100 mL
			ICP-43N-5	500 mL
Sodium (Na)	NaNO_3	2-5% Nitric acid	ICP-54N-1	100 mL
			ICP-54N-5	500 mL
Thallium (Tl)	TlNO_3	2-5% Nitric acid	ICP-60N-1	100 mL
			ICP-60N-5	500 mL
Thorium (Th)	$\text{Th}(\text{NO}_3)_4 \cdot 4\text{H}_2\text{O}$	2-5% Nitric acid	ICP-61N-1	100 mL
			ICP-61N-5	500 mL
Uranium (U)	$\text{UO}_2(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$	2-5% Nitric acid	ICP-66N-R-1	100 mL
			ICP-66N-R-5	500 mL
Vanadium (V)	V_2O_5	2-5% Nitric acid	ICP-67N-1	100 mL
			ICP-67N-5	500 mL

See the single element section for additional elements and standards for ICP-MS

ICP Alternate Source

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.

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Instrument	AccuStandard Cat. No.	Instrument	AccuStandard Cat. No.	Instrument	AccuStandard Cat. No.
Agilent		Perkin Elmer		HORIBA Jobin Yvon	
5183-4681	AG-INT	N9300215	PE-WPAM3 ◊	JYICP-MIXHM	JY-CALHM ◊
5183-4682	AG-VER1	N9300216	PE-SDWA1 ◊	JYICP-MIXMAJ	JY-CAL
5183-4687	AG-SPIKE	N9300217	PE-SDWA2 ◊	JYICP-MIX7HSI	JY-QC7
5183-4688	AG-CAL	N9300218	PE-CAL4	JYICP-MIX9	JY-CHK ◊
5188-6524	AG-TUN	N9300219	PE-CAL5 ◊	JYICP-MIX21	JY-QC21
5188-6525	AG-INTSTD	N9300220	PE-CAL6 ◊	JYICP-MIX23	JY-QC23
5188-6526	AG-INTFR2-6020 ◊	N9300221	PE-CAL7 ◊	JYICP-QC1	JY-CHK1 ◊
5188-6527	AG-INTFR2-6020 ◊	N9300224	PE-CRDL1 * ◊		
5188-6564	AG-TUNSTOCK	N9300225	PE-CRDL2 ◊	Teledyne	AccuStandard
5190-0465	AG-TUNSTOCK1	N9300226	PE-INTA ◊	601-3110	TELE-CHK1 *
8500-6940	AG-MECAL2A	N9300227	PE-ANAB ◊	601-4101	TELE-CHK2 * ◊
8500-6942	AG-MECAL4	N9300228	PE-ALTINTA ◊	601-4102	TELE-CHK3 * ◊
8500-6944	AG-MECAL1	N9300229	PE-ALTB ◊	602-00065	TELE-CHK4 ◊
8500-6948	AG-MECAL3	N9300230	PE-SPIKE ◊	602-00067	TELE-CHK4 ◊
190024400	VAR-TUN ◊	N9300231	PE-MECAL1	602-00068	TELE-CHK5 ◊
190064800	AG-INTFA ◊	N9300232	PE-MECAL2	602-00070	TELE-CHK5 ◊
190024900	AG-ICV7	N9300233	PE-MECAL3	602-00071	TELE-CHK6 ◊
190025000	AG-QCS27	N9300234	PE-MECAL4	602-00073	TELE-CHK6 ◊
190025100	AG-ANALTB	N9300235	PE-MECAL5	620-403	TELE-CHK7 ◊
6610030000	AG-WAVECAL-10X	N9300280	PE-QC7	602-00125	TELE-CHK8-0.1X * ◊
6610030100	AG-WAVECAL	N9300281	PE-QC21		
6610030400	AG-INT2	N9301720	PE-MECAL3	Merck	AccuStandard
6610030500	AG-CAL1	N9301721	PE-CAL2	1.09032	MES-IC-05 see page 11
6610030600	AG-CAL2	N9302946	PE-VISWAVE	1.09036	MES-IC-06 see page 12
6610030700	AG-CALMAJOR	N9303816	PE-CAL1	1.09410	MES-23 ◊
		N9303818	PE-CAL3	1.09411	MES-24
		N9303821	PE-CHK1	1.09480	MES-13 *
		N9303822	PE-CHK3	1.09481	MES-14
		N9303823	PE-CHK4 ◊	1.09482	MES-15 ◊
		N9303824	PE-CHK5 ◊	1.09487	MES-16
		N9303825	PE-VER1	1.09490	MES-12 *
		N9303826	PE-VER2	1.09491	MES-11 * ◊
		N9303827	PE-INTFRA ◊	1.09492	MES-08 *
		N9303828	PE-INTFR1 ◊	1.09493	MES-10 *
		N9303829	PE-INTFRB ◊	1.09494	MES-09 *
		N9303830	PE-INTFR2 ◊	1.09495	MES-17
		N9303831	PE-INTFRC ◊	1.09496	MES-19 * ◊
		N9303832	PE-INT	1.09497	MES-20 * ◊
		N9303834	PE-MEINT ◊	1.09498	MES-21 ◊
		N9303835	PE-MEM1 ◊	1.09499	MES-22 *
		N9303836	PE-MEM2 ◊	1.09500	MES-18
		N9303839	PE-SPIKE1 ◊	1.10322	MES-IC-07 see page 12
		N9303840	PE-SPIKE2 ◊	1.10580	MES-06 *
		N9303841	PE-SPIKE3 ◊	1.10714	MES-05 * ◊
		N9303843	PE-TUNSOL	1.11355	MES-04
		N9307113	PE-MES1 ◊	1.15474	MES-01 ◊
		N9307114	PE-MES2 ◊	1.11437	MES-AN-01 see page 11
		N9307115	PE-MES3 ◊	1.11448	MES-AN-02 see page 11
		N9307116	PE-MES4 ◊	1.15626	MES-03 ◊
				1.15708	MES-02 ◊
				1.11448	MES-AN-02
				1.70398	MES-IC-01 see page 11

* Similar formulation
◊ Custom Products

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

ICP-MS Stock Tuning Solution

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

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

Internal Standard Mix for ICP-MS

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

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

QCSTD-27 Quality Control Std

AG-QCS27-ASL-1	100 mL
AG-QCS27-ASL-5	500 mL
100 µg/mL in 5% HNO ₃ , tr. HF	27 comps.

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

7500 Series PA Tuning 1

AG-TUN1-ASL-1	100 mL
AG-TUN1-ASL-5	500 mL
At stated conc. (µg/mL) in 5% HNO 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

PA Tuning Solution Sets

AG-TUN-ASL-1-SET **2 x 100 mL**

AG-TUN1-ASL-1 AG-TUN2-ASL-1

AG-TUN-ASL-5-SET **2 x 500 mL**

AG-TUN1-ASL-5 AG-TUN2-ASL-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

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

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

ICP Alternate Source

Agilent / Teledyne

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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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)	

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

Teledyne

Check Mate 1

TELE-CHK1-ASL-1-SET 2 x 100 mL
TELE-CHK1-ASL-5-SET 2 x 500 mL

TELE-CHK1-ASL

At stated conc. (µg/mL) in 5% HCl, 1% HNO₃ tr. HF 24 comps.

Calcium (Ca)	100
Potassium (K)	100
Magnesium (Mg)	100
Sodium (Na)	100
Aluminum (Al)	10
Arsenic (As)	10
Boron (B)	10
Barium (Ba)	10
Beryllium (Be)	10
Cadmium (Cd)	10
Cobalt (Co)	10
Chromium (Cr)	10
Copper (Cu)	10
Iron (Fe)	10
Manganese (Mn)	10
Molybdenum (Mo)	10
Nickel (Ni)	10
Lead (Pb)	10
Antimony (Sb)	10
Selenium (Se)	10
Silicon (Si)	10
Thallium (Tl)	10
Vanadium (V)	10
Zinc (Zn)	10

TELE-CHK1-AG-ASL

1000 µg/mL in 2% HNO₃

Silver (Ag)

Supplied separately for better product stability.

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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 4 comps.

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

Custom Formulations

Meet your specific needs.

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

Instrument Check Standard 1

PE-CHK1-ASL-1 100 mL
PE-CHK1-ASL-5 500 mL
 10 µg/mL each in 2% HNO₃ tr. HF, tr. Tartaric acid
 17 comps.

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

Instrument Check Standard 3

PE-CHK3-ASL-1 100 mL
PE-CHK3-ASL-5 500 mL
 200 µg/mL each in 2% HNO₃ 5 comps.

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

Interference Check Standard 5

PE-ICSS-ASL-1 100 mL
PE-ICSS-ASL-5 500 mL
 At stated conc. (µg/mL) in 5% HNO₃ 5 comps.

Calcium (Ca)	6000
Iron (Fe)	5000
Magnesium (Mg)	3000
Aluminum (Al)	1200
Sodium (Na)	1000

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% HNO₃ 16 comps.

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

PE-ICS18-HG-ASL

100 µg/mL in 5% HNO₃

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% HNO₃ 7 comps.

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

Multi-Element Calibration Std 1

PE-MECAL1-ASL-1 100 mL
PE-MECAL1-ASL-5 500 mL
 10 µg/mL each in 2% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃

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% HNO₃ 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% HNO₃ tr. HF
 7 comps.

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

QC Standard 21 Elements

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

100 µg/mL each in 5% HNO₃, 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)	

SmartTune Solution for ELAN/DRC-e

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

1 µg/mL each in 2% HNO₃ tr. HCl 9 comps.

Barium (Ba)	Lead (Pb)
Beryllium (Be)	Magnesium (Mg)
Cerium (Ce)	Rhodium (Rh)
Cobalt (Co)	Uranium (U)
Indium (In)	

Supplied as a 100X concentrate for better stability.

SmartTune Solution for DRC/DRC^{Plus}/DRC II

PE-SMTUNE2-ASL-1 100 mL
PE-SMTUNE2-ASL-5 500 mL

At stated conc. (µg/mL) in 0.5% HNO₃ 10 comps.

Barium (Ba)	10
Beryllium (Be)	1
Cerium (Ce)	1
Cobalt (Co)	1
Indium (In)	1
Iron (Fe)	1
Lead (Pb)	1
Magnesium (Mg)	1
Thorium (Th)	1
Uranium (U)	1

Supplied as a 1000X concentrate for better stability.

Tuning Solution I

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

10 µg/mL each in 2% HNO₃, 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)

VIS Wavecal Solution

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

At stated conc. (µg/mL) in 2% HNO₃ 8 comps.

Potassium (K)	50
Lanthanum (La)	10
Lithium (Li)	10
Manganese (Mn)	10
Sodium (Na)	10
Strontium (Sr)	10
Barium (Ba)	1
Calcium (Ca)	1

Initial Calibration Verification Standard 1

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

At stated conc. (µg/mL) in 5% HNO₃ tr. Tartaric acid 26 comps.

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

Initial Calibration Verification Standard 2

PE-VER2-ASL-R1-1 100 mL
PE-VER2-ASL-R1-5 500 mL

10 µg/mL each in 2% HNO₃ tr. HF 2 comps.

Tin (Sn)	Titanium (Ti)
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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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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)	

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

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 HNO₃
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
HNO₃ 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 11-12

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 HNO₃
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 HNO₃
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 HNO₃
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
HNO₃ 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.
HNO₃, 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% HNO₃
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% HNO₃
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% HNO₃ tr. HF
21 comps.

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

ICP Multi-Element Standard Solution XVII

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

100 µg/mL each in 15% HCl tr.
HNO₃ 7 comps.

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

ICP Multi-Element GF AAS Standard Solution XVIII

MES-18-R1-1 100 mL
MES-18-R1-5 500 mL

At stated conc. (µg/mL) in 5%
HNO₃ 16 comps.

Silver (Ag)	10
Aluminum (Al)	100
Arsenic (As)	100
Barium (Ba)	50
Beryllium (Be)	5
Cadmium (Cd)	5
Cobalt (Co)	50
Chromium (Cr)	20
Copper (Cu)	50
Iron (Fe)	20
Manganese (Mn)	20
Nickel (Ni)	50
Lead (Pb)	100
Antimony (Sb)	100
Selenium (Se)	100
Thallium (Tl)	100

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% HNO₃
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% HNO₃
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%
HNO₃ 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

Multi-Element Standards

■ Ultra Pure Matrix ■ Traceability to NIST

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 de-ionized water and ultra pure acids. After both wet chemical and instrumental analysis, the standards are packaged in acid leached HDPE containers to provide required protection.

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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃

Element	Most Abundant Isotope
Mercury (Hg)	202

Calibration Standard Set

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

Matrix Blanks

Nitric Acid Blank

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

5% HNO₃ 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, 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

Multi-Element Standards

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% HNO₃ 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% HNO₃ 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% HNO₃ 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% HNO₃ 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

Interference Check Standard Set

ICP-MS-INT-1-SET 2 x 100 mL

ICP-MS-INTA-1 ICP-MS-INTB-1

Memory Check Solution

Memory Check Solution Sets

ICP-MS-MEMCHKA-R1-SET

2 x 100 mL

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

ICP-MS-MEMCHK-R1-SET

3 x 100 mL

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

Solution A

ICP-MS-MEMCHKA1-R1 100 mL
At stated conc. (µg/mL) in 2% HNO₃ 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% HNO₃

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

Multi-Element Standards

Spiking Standards

Spiking Standard for Water

ICP-MS-SPIKE-W-1 100 mL

At stated conc. (µg/mL) in 5% HNO₃ 17 comps.

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

Spiking Standard for Soil

ICP-MS-SPIKE-S-1 100 mL

At stated conc. (µg/mL) in 5% HNO₃ 15 comps.

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

Spiking Standard Set

ICP-MS-SPIKE-1-SET 2 x 100 mL
ICP-MS-SPIKE-W-1 ICP-MS-SPIKE-S-1

Quality Control

Sample 1

ICP-MS-QC1-1 100 mL

10 µg/mL each in 2% HNO₃ 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% HNO₃ 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% HNO₃ tr. HF 21 comps.

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

Internal Standards

Single Internal Standards at 2 concentrations

Element	Matrix	10 µg/mL		100 µg/mL	
		Cat. No.	Unit	Cat. No.	Unit
Bismuth	2-5% HNO	ICP-MS-IS-BI-1	100 mL	ICP-MS-IS-BI-10X-1	100 mL
Holmium	2-5% HNO	ICP-MS-IS-HO-1	100 mL	ICP-MS-IS-HO-10X-1	100 mL
Indium	2-5% HNO 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% HNO₃ 7 comps.

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

ICP-MS

EPA Method 200.8 & 6020

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

Calibration Standards

Calibration Standard #1 (1991 Version)

ICP-MS-200.8-CAL1-1 100 mL
10 µg/mL each in 5% HNO₃ tr. HF 18 comps.

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

Calibration Standard #2

ICP-MS-200.8-CAL2-1 100 mL
10 µg/mL each in 2% HNO₃ 2 comps.

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

Calibration Standard #1R (1994 Version)

ICP-MS-200.8-CAL1R-1 100 mL
At stated conc. (µg/mL) in 2% HNO₃ tr. HF 18 comps.

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

Calibration Standard #3

ICP-MS-200.8-CAL3-1 100 mL
1 component in 5% HNO₃

Element	µg/mL	Isotope
Mercury (Hg)	5	202

Internal Standards

Internal Standard #1

ICP-MS-200.8-IS-1 100 mL
100 µg/mL each in 2% HNO₃ 5 comps.

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

Internal Standard #2

ICP-MS-200.8-IS2-1 100 mL
100 µg/mL in 2% HNO₃

Element	Isotope
Gold (Au)	197

See previous page for
Single-Element Internal Standards

Tuning Standard

ICP-MS-200.8-TUN-1 100 mL
10 µg/mL each in 2% HNO₃ 5 comps.

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

Method 6020 Standards for Inductively Coupled Mass Spectrometry

Calibration Standard

ICP-MS-6020-CAL-R-1 100 mL
10 µg/mL each in 2% HNO₃ 22 comps.

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

Interference Check Standard #1

ICP-MS-6020-INT1-1 100 mL
At stated conc. (µg/mL) in 2% HNO₃ 12 comps.

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

Interference Check Standard #2

ICP-MS-6020-INT2-1 100 mL
2 µg/mL each in 5% HNO₃ tr. HF 9 comps.

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

Tuning Standard

ICP-MS-6020-TUN-1 100 mL
10 µg/mL each in 2% HNO₃ 4 comps.

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

Inorganic ASTM Methods

ASTM D3230 Determination of Salts in Crude Oil

Mixed Salt Solution

D-3230-89-1	100 mL
D-3230-89-5	500 mL

At stated conc. (µg/mL) in Alcohol Solution (1-butanol : MeOH) (ratio 63:37) 3 comps.

Calcium chloride	10	Sodium chloride	70
Magnesium chloride	20		

ASTM D3237 Lead in Gasoline by AA Spectroscopy

Lead Standard Calibration Curve

D-3237-CAL-SET 4 x 100 mL
Set includes the following Catalog Numbers:

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

Technical Note

D3237 Meets EPA guidelines for RFG Analysis

ASTM D3605 Trace Metals in Gas Turbine Fuels by AA & Flame Emission & Spectroscopy

Trace Metals Standard

D-3605-91-R1-1	1 x 100 mL
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250 µg/mL each in 75 cSt Hydrocarbon oil 4 comps.

Sodium (Na)	Calcium (Ca)
Lead (Pb)	Vanadium (V)

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

D-3831-R1-1	1 x 100 mL
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400 mg/L in Methyl isobutyl ketone

Manganese

ASTM D5184 Aluminum and Silicon in Fuel Oils by Ashing, Fusion, ICP-AES Spectrometry & AA Spectrometry

Tartaric Acid / Hydrochloric Acid Solution

D-5184-91-TA-5	1 x 500 mL
----------------	------------

Tartaric acid @ 0.5% w/v in 4% HCl

Aluminum Standard Solution

D-5184-91-AL-1	1 x 100 mL
D-5184-91-AL-5	1 x 500 mL

Aluminum @ 1000 µg/mL in 5 % HCl

Silicon Standard Solution

D-5184-91-SI-1	1 x 100 mL
D-5184-91-SI-5	1 x 500 mL

Silicon @ 1000 µg/mL in water tr. NaOH tr. HF

ASTM D8083 Nitrogen in Water

Total Nitrogen Stock Calibration Standard

D-8083-TN	100 mL
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Nitrogen @ 1000 µg/mL

Total Nitrogen Stock Laboratory Control Standard

D-8083-LCS	100 mL
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Nitrogen @ 1000 µg/mL

Stock TON Test Solution

D-8083-TON	100 mL
------------	--------

Nitrogen @ 1000 µg/mL

ASTM D8083 Nitrogen Calibration Set

D-8083-SET	3 x 100 mL
------------	------------

D-8083-TN, D-8083-LCS, D-8083-TON

Organometallic Standards

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Custom Formulations Meet your specific needs.

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

Organometallic standards do not generally require a hazardous shipping fee.



Organometallic Standards

AA, ICP, DCP & XRF Analysis

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

- Single & Multi Element Standards
- Prepared Calibration Curves
- Formulated from Ultra High Purity Organometallic starting materials & matrices
- Certificate of Analysis

Single Element Organometallic

Element	1,000 µg/g in 75 cSt base oil		5,000 µg/g in 75 cSt base oil	
	Cat. No.	Unit	Cat. No.	Unit
Aluminum (Al)	WM-75CST-01	50 grams	WM-75CST-01-5X	50 grams
Antimony (Sb)	WM-75CST-02	50 grams	WM-75CST-02-5X	50 grams
Arsenic (As)	WM-75CST-03	50 grams	-----	----
Barium (Ba)	WM-75CST-04	50 grams	WM-75CST-04-5X	50 grams
Beryllium (Be)	WM-75CST-05	50 grams	-----	----
Bismuth (Bi)	WM-75CST-06	50 grams	-----	----
Boron (B)	WM-75CST-07	50 grams	WM-75CST-07-5X	50 grams
Cadmium (Cd)	WM-75CST-08	50 grams	WM-75CST-08-5X	50 grams
Calcium (Ca)	WM-75CST-09	50 grams	WM-75CST-09-5X	50 grams
Cerium (Ce)	WM-75CST-11	50 grams	WM-75CST-11-5X	50 grams
Chromium (Cr)	WM-75CST-13	50 grams	WM-75CST-13-5X	50 grams
Cobalt (Co)	WM-75CST-14	50 grams	WM-75CST-14-5X	50 grams
Copper (Cu)	WM-75CST-15	50 grams	WM-75CST-15-5X	50 grams
Indium (In)	WM-75CST-25	50 grams	WM-75CST-25-5X	50 grams
Iron (Fe)	WM-75CST-27	50 grams	WM-75CST-27-5X	50 grams
Lanthanum (La)	-----	----	WM-75CST-28-5X	50 grams
Lead (Pb)	WM-75CST-29	50 grams	WM-75CST-29-5X	50 grams
Lithium (Li)	WM-75CST-30	50 grams	WM-75CST-30-5X	50 grams
Magnesium (Mg)	WM-75CST-32	50 grams	WM-75CST-32-5X	50 grams
Manganese (Mn)	WM-75CST-33	50 grams	WM-75CST-33-5X	50 grams
Mercury (Hg)	WM-75CST-34	50 grams	-----	----
Molybdenum (Mo)	WM-75CST-35	50 grams	WM-75CST-35-5X	50 grams
Nickel (Ni)	WM-75CST-37	50 grams	WM-75CST-37-5X	50 grams
Phosphorus (P)	WM-75CST-41	50 grams	WM-75CST-41-5X	50 grams
Potassium (K)	WM-75CST-43	50 grams	WM-75CST-43-5X	50 grams
Scandium (Sc)	WM-75CST-50	50 grams	-----	----
Selenium (Se)	WM-75CST-51	50 grams	-----	----
Silicon (Si)	WM-75CST-52	50 grams	WM-75CST-52-5X	50 grams
Silver (Ag)	WM-75CST-53	50 grams	WM-75CST-53-5X	50 grams
Sodium (Na)	WM-75CST-54	50 grams	WM-75CST-54-5X	50 grams
Strontium (Sr)	WM-75CST-55	50 grams	WM-75CST-55-5X	50 grams
Sulfur (S)	WM-75CST-56	50 grams	WM-75CST-56-5X	50 grams
Thallium (Tl)	WM-75CST-60	50 grams	-----	----
Tin (Sn)	WM-75CST-63	50 grams	WM-75CST-63-5X	50 grams
Titanium (Ti)	WM-75CST-64	50 grams	WM-75CST-64-5X	50 grams
Tungsten (W)	WM-75CST-65	50 grams	WM-75CST-65-5X	50 grams
Vanadium (V)	WM-75CST-67	50 grams	WM-75CST-67-5X	50 grams
Yttrium (Y)	WM-75CST-69	50 grams	WM-75CST-69-5X	50 grams
Zinc (Zn)	WM-75CST-70	50 grams	WM-75CST-70-5X	50 grams
Zirconium (Zr)	WM-75CST-71	50 grams	WM-75CST-71-5X	50 grams

See our Table of Contents for complete list of Organometallic standards containing < 1 ppm sulfur or phosphorus

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 Organo-metallic Standards when diluting into solvents such as Kerosene. Add 0.6% by weight.

Metals Additives

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

900 µg/g each in Base oil

MA-1000-100G 100 grams
MA-1000-200G 200 grams

1000 µg/g each in Base oil

MA-3000-100G 100 grams
MA-3000-200G 200 grams

3000 µg/g each in Base oil

MA-5000-100G 100 grams
MA-5000-200G 200 grams

5000 µg/g each in Base oil

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

Organometallic Standards

AA, ICP, DCP & XRF Analysis

21 Wear Metal Multi-Element

100 gram Set WM-21-100G-SET 7 x 100 grams
200 gram Set WM-21-200G-SET 7 x 200 grams

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

22 Wear Metal Multi-Element

100 gram Set WM-22-100G-SET 7 x 100 grams
200 gram Set WM-22-200G-SET 7 x 200 grams

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

23 Wear Metal Multi-Element

100 gram Set WM-23-100G-SET 7 x 100 grams
200 gram Set WM-23-200G-SET 7 x 200 grams

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

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



Organometallic Standards

Premium Sulfur-Free

Organometallic Single Element Stock Standards

Element	1,000 µg/g		5,000 µg/g	
	Cat. No.	Unit	Cat. No.	Unit
Aluminum (Al)	WM-NMS-01	50 mL	WM-NMS-01-5X	50 mL
Antimony (Sb)	WM-NMS-02	50 mL	WM-NMS-02-5X	50 mL
Arsenic (As)	WM-NMS-03	50 mL	WM-NMS-03-5X	50 mL
Barium (Ba)	WM-NMS-04	50 mL	WM-NMS-04-5X	50 mL
Beryllium (Be)	WM-NMS-05	50 mL	WM-NMS-05-5X	50 mL
Boron (B)	WM-NMS-07	50 mL	WM-NMS-07-5X	50 mL
Cadmium (Cd)	WM-NMS-08	50 mL	WM-NMS-08-5X	50 mL
Calcium (Ca)	WM-NMS-09	50 mL	WM-NMS-09-5X	50 mL
Cerium (Ce)	WM-NMS-11	50 mL	WM-NMS-11-5X	50 mL
Chromium (Cr)	WM-NMS-13	50 mL	WM-NMS-13-5X	50 mL
Cobalt (Co)	WM-NMS-14	50 mL	WM-NMS-14-5X	50 mL
Copper (Cu)	WM-NMS-15	50 mL	WM-NMS-15-5X	50 mL
Gold (Au)	WM-NMS-22	50 mL	-----	----
Iron (Fe)	WM-NMS-27	50 mL	WM-NMS-27-5X	50 mL
Lead (Pb)	WM-NMS-29	50 mL	WM-NMS-29-5X	50 mL
Lithium (Li)	WM-NMS-30	50 mL	WM-NMS-30-5X	50 mL
Magnesium (Mg)	WM-NMS-32	50 mL	WM-NMS-32-5X	50 mL
Manganese (Mn)	WM-NMS-33	50 mL	WM-NMS-33-5X	50 mL
Mercury (Hg)	WM-NMS-34	50 mL	WM-NMS-34-5X	50 mL
Molybdenum (Mo)	WM-NMS-35	50 mL	WM-NMS-35-5X	50 mL
Palladium (Pd)	WM-NMS-40	50 mL	WM-NMS-40-5X	50 mL
Phosphorus (P)	WM-NMS-41	50 mL	WM-NMS-41-5X	50 mL
Platinum (Pt)	WM-NMS-42	50 mL	WM-NMS-42-5X	50 mL
Potassium (K)	WM-NMS-43	50 mL	WM-NMS-43-5X	50 mL
Selenium (Se)	WM-NMS-51	50 mL	WM-NMS-51-5X	50 mL
Silicon (Si)	WM-NMS-52	50 mL	WM-NMS-52-5X	50 mL
Silver (Ag)	WM-NMS-53	50 mL	WM-NMS-53-5X	50 mL
Sodium (Na)	WM-NMS-54	50 mL	WM-NMS-54-5X	50 mL
Strontium (Sr)	WM-NMS-55	50 mL	WM-NMS-55-5X	50 mL
Thallium (Tl)	WM-NMS-60	50 mL	WM-NMS-60-5X	50 mL
Tin (Sn)	WM-NMS-63	50 mL	WM-NMS-63-5X	50 mL
Titanium (Ti)	WM-NMS-64	50 mL	WM-NMS-64-5X	50 mL
Vanadium (V)	WM-NMS-67	50 mL	WM-NMS-67-5X	50 mL
Yttrium (Y)	WM-NMS-69	50 mL	WM-NMS-69-5X	50 mL
Zinc (Zn)	WM-NMS-70	50 mL	WM-NMS-70-5X	50 mL
Zirconium (Zr)	WM-NMS-71	50 mL	WM-NMS-71-5X	50 mL

- Stabilized
- Ready for Use

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

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

Technical Note

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

21 Wear Metal Multi-Element

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

100 mL Set WM-21-NMS-1-SET 7 x 100 mL

21 Wear Metal in Mineral oil at the stated concentration.

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

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

Technical Note

For analysis by XRF, AA, ICP or AE for applications for which sulfur interference is undesirable. Prepared with sulfur-free organometallics that do not contain metallic sulfonates. Solutions are stabilized with proprietary chelation and stabilization solution and are ready for use. Additional stabilizers may be required in some cases. For additional information contact Technical Service.

Recommended Internal Standard

Organometallic (Internal Std) Cobalt (Sulfur free)

WM-NMS-14	1000 µg/g	50 mL
WM-NMS-14-5X	5000 µg/g	50 mL

Organometallic Standards

AA, ICP, DCP & XRF Analysis

Sulfur and Metals in Oil

Test Method A - ICP with an Organic Solvent Specimen Solution

Sulfur and Metals in Mineral Oil

Designed for ASTM D5708					
ASTM-P-0102-SET 12 x 100 mL					
Cat. No.	Sulfur (Wt. %)	Iron (µg/g)	Nickel (µg/g)	Vanadium (µg/g)	Unit
ASTM-P-0102-01	0.00	0.00	0.00	0.00	100 mL
ASTM-P-0102-02	0.50	300	10.0	500	100 mL
ASTM-P-0102-03	1.00	500	100	25.0	100 mL
ASTM-P-0102-04	0.00	100	80.0	250	100 mL
ASTM-P-0102-05	2.00	200	40.0	100	100 mL
ASTM-P-0102-06	2.50	400	5.00	400	100 mL
ASTM-P-0102-07	3.00	0.00	60.0	300	100 mL
ASTM-P-0102-08	3.50	500	0.00	200	100 mL
ASTM-P-0102-09	0.00	100	100	0.00	100 mL
ASTM-P-0102-10	4.50	300	50.0	250	100 mL
ASTM-P-0102-11	5.00	200	20.0	500	100 mL
ASTM-P-0102-12	5.50	50.0	100	50.0	100 mL

Sulfur and Metals in Residual Fuel Oil

Designed for ASTM D5708					
ASTM-P-0103-SET 12 x 100 mL					
Cat. No.	Sulfur (Wt. %)	Iron (µg/g)	Nickel (µg/g)	Vanadium (µg/g)	Unit
ASTM-P-0103-01	0.00	0.00	0.00	0.00	100 mL
ASTM-P-0103-02	0.50	300	10.0	500	100 mL
ASTM-P-0103-03	1.00	500	100	25.0	100 mL
ASTM-P-0103-04	0.00	100	80.0	250	100 mL
ASTM-P-0103-05	2.00	200	40.0	100	100 mL
ASTM-P-0103-06	2.50	400	5.00	400	100 mL
ASTM-P-0103-07	3.00	0.00	60.0	300	100 mL
ASTM-P-0103-08	3.50	500	0.00	200	100 mL
ASTM-P-0103-09	0.00	100	100	0.00	100 mL
ASTM-P-0103-10	4.50	300	50.0	250	100 mL
ASTM-P-0103-11	5.00	200	20.0	500	100 mL
ASTM-P-0103-12	5.50	50	100	50.0	100 mL

Stock Multi-Element Standard in Mineral Oil

D-5863-95B-10X-1 100 mL
At stated conc. (µg/g) in 20 cst Mineral Oil
3 comps.

Sodium (Na)	50	Vanadium (V)	150
Nickel (Ni)	200		

Stock Multi-Element Standard in Mineral Oil

D-5863-00A-10X-1 100 mL
At stated conc. (µg/g) in 20 cst Mineral Oil
3 comps.

Nickel (Na)	100	Iron (Fe)	10
Vanadium (V)	500	Sodium (Na)	20

ISO/CD 14597 Vanadium and Nickel Standards with Manganese (Internal Standard)

Vanadium Standards - Low Range for ISO/CD 14597 with 0.05% Manganese Internal Standard in Xylene-Mineral Oil

ASTM-P-0104-SET 9 x 100 mL		
Cat. No.	Vanadium Conc. (Wt.%)	Unit
ASTM-P-0104-01	0.0005	100 mL
ASTM-P-0104-02	0.0025	100 mL
ASTM-P-0104-03	0.0050	100 mL
ASTM-P-0104-04	0.0075	100 mL
ASTM-P-0104-05	0.0100	100 mL
ASTM-P-0104-06	0.0125	100 mL
ASTM-P-0104-07	0.0150	100 mL
ASTM-P-0104-08	0.0175	100 mL
ASTM-P-0104-09	0.0200	100 mL

Vanadium Standards - High Range for ISO/CD 14597 with 0.05% Manganese Internal Standard in Xylene-Mineral Oil

ASTM-P-0105-SET 7 x 100 mL		
Cat. No.	Vanadium Conc. (Wt.%)	Unit
ASTM-P-0105-01	0.0000	100 mL
ASTM-P-0105-02	0.0300	100 mL
ASTM-P-0105-03	0.0400	100 mL
ASTM-P-0105-04	0.0500	100 mL
ASTM-P-0105-05	0.0600	100 mL
ASTM-P-0105-06	0.0800	100 mL
ASTM-P-0105-07	0.1000	100 mL

Nickel Standards for ISO/CD 14597 with 0.05% Manganese Internal Standard in Xylene-Mineral Oil

ASTM-P-0106-SET 7 x 100 mL		
Cat. No.	Nickel Conc. (Wt.%)	Unit
ASTM-P-0106-01	0.0000	100 mL
ASTM-P-0106-02	0.0005	100 mL
ASTM-P-0106-03	0.0010	100 mL
ASTM-P-0106-04	0.0025	100 mL
ASTM-P-0106-05	0.0050	100 mL
ASTM-P-0106-06	0.0075	100 mL
ASTM-P-0106-07	0.0100	100 mL

Internal Standard

ASTM-P-0107-5 500 mL
Manganese @ 0.05 Wt. % in Xylene-Mineral Oil

Standards of Interest

Concentrations for the sets on pages 44-47 are targets. Actual production lots may vary.

Organometallic Standards

AA, ICP, DCP & XRF Analysis

Lubricating Oil Standards (continued)

Elements in Lubricating Oil

ASTM-P-0114-SET

17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No.	Ca (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0114-01	0.005	0.005	0.050	0.050
ASTM-P-0114-02	0.600	0.000	0.000	0.000
ASTM-P-0114-03	0.000	0.300	0.000	0.000
ASTM-P-0114-04	1.000	0.000	1.000	0.000
ASTM-P-0114-05	0.000	0.000	0.000	0.300
ASTM-P-0114-06	0.005	0.250	0.800	0.300
ASTM-P-0114-07	0.500	0.150	0.500	0.150
ASTM-P-0114-08	0.010	0.200	0.100	0.250
ASTM-P-0114-09	0.050	0.010	0.400	0.075
ASTM-P-0114-10	0.100	0.150	0.200	0.200
ASTM-P-0114-11	0.200	0.200	0.800	0.100
ASTM-P-0114-12	0.400	0.005	0.800	0.300
ASTM-P-0114-13	0.600	0.100	0.500	0.050
ASTM-P-0114-14	0.800	0.010	0.050	0.100
ASTM-P-0114-15	1.000	0.300	1.000	0.150
ASTM-P-0114-16	0.400	0.050	0.600	0.250
ASTM-P-0114-17	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0115-SET

17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No.	Ca (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0115-01	0.005	0.100	0.005	0.050	0.050
ASTM-P-0115-02	0.600	0.150	0.000	0.000	0.000
ASTM-P-0115-03	0.000	0.350	0.300	0.000	0.000
ASTM-P-0115-04	1.000	0.225	0.000	1.000	0.000
ASTM-P-0115-05	0.000	0.450	0.000	0.000	0.300
ASTM-P-0115-06	0.005	0.500	0.250	0.800	0.300
ASTM-P-0115-07	0.500	0.325	0.150	0.500	0.150
ASTM-P-0115-08	0.010	0.250	0.200	0.100	0.250
ASTM-P-0115-09	0.050	0.050	0.010	0.400	0.075
ASTM-P-0115-10	0.100	0.400	0.150	0.200	0.200
ASTM-P-0115-11	0.200	0.300	0.200	0.800	0.100
ASTM-P-0115-12	0.400	0.200	0.005	0.800	0.300
ASTM-P-0115-13	0.600	0.375	0.100	0.500	0.050
ASTM-P-0115-14	0.800	0.175	0.010	0.050	0.100
ASTM-P-0115-15	1.000	0.425	0.300	1.000	0.150
ASTM-P-0115-16	0.400	0.275	0.050	0.600	0.250
ASTM-P-0115-17	0.000	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0116-SET

11 x 100 mL

Designed for ASTM D6481

Cat. No.	Ca (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0116-01	0.500	1.000	0.500	0.500
ASTM-P-0116-02	2.000	1.000	2.500	2.000
ASTM-P-0116-03	2.000	1.250	1.000	1.500
ASTM-P-0116-04	5.000	0.000	0.000	0.000
ASTM-P-0116-05	4.000	0.500	1.250	0.500
ASTM-P-0116-06	2.500	0.750	4.000	1.000
ASTM-P-0116-07	3.500	0.000	1.500	1.000
ASTM-P-0116-08	0.500	2.000	5.000	1.000
ASTM-P-0116-09	1.000	0.750	2.000	1.500
ASTM-P-0116-10	2.500	1.200	3.000	0.500
ASTM-P-0116-11	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0117-SET

10 x 100 mL

Designed for ASTM D6443

Cat. No.	Ca (Wt.%)	Cl (Wt.%)	Cu (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0117-01	0.020	0.030	0.010	0.200	0.250	1.000	0.020
ASTM-P-0117-02	0.020	0.020	0.050	0.200	0.020	0.020	0.250
ASTM-P-0117-03	0.020	0.200	0.010	0.040	0.250	0.150	0.250
ASTM-P-0117-04	0.020	0.200	0.050	0.040	0.020	1.000	0.020
ASTM-P-0117-05	0.400	0.020	0.010	0.040	0.020	1.000	0.250
ASTM-P-0117-06	0.400	0.020	0.050	0.040	0.250	0.020	0.020
ASTM-P-0117-07	0.400	0.200	0.010	0.200	0.020	0.020	0.050
ASTM-P-0117-08	0.400	0.200	0.050	0.200	0.250	1.000	0.250
ASTM-P-0117-09	0.200	0.100	0.025	0.080	0.150	0.500	0.100
ASTM-P-0117-10	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0118-SET

10 x 100 mL

Designed for ASTM D4628, D4927, D4951, D6443

Cat. No.	Ba (Wt.%)	Ca (Wt.%)	Cl (Wt.%)	Cu (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0118-01	0.020	0.020	0.030	0.010	0.200	0.250	1.000	0.020
ASTM-P-0118-02	0.250	0.020	0.020	0.050	0.200	0.020	0.020	0.250
ASTM-P-0118-03	0.020	0.020	0.200	0.010	0.040	0.250	0.150	0.250
ASTM-P-0118-04	0.250	0.020	0.200	0.050	0.040	0.020	1.000	0.020
ASTM-P-0118-05	0.020	0.400	0.020	0.010	0.040	0.020	1.000	0.250
ASTM-P-0118-06	0.250	0.400	0.020	0.050	0.040	0.250	0.020	0.020
ASTM-P-0118-07	0.020	0.400	0.200	0.010	0.200	0.020	0.020	0.050
ASTM-P-0118-08	0.250	0.400	0.200	0.050	0.200	0.250	1.000	0.250
ASTM-P-0118-09	0.130	0.200	0.100	0.025	0.080	0.150	0.500	0.100
ASTM-P-0118-10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Organometallic Standards

AA, ICP, DCP & XRF Analysis

Lubricating Oil Standards (continued)

Elements in Lubricating Oil

ASTM-P-0119-SET

22 x 100 mL

Designed for ASTM D4927, D6443, D6481 & D7751

Cat. No. Nominal Value	Ca (Wt.%)	Cl (Wt.%)	Cu (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0119-01	0.300	0.080	0.030	0.060	0.060	0.275	0.060
ASTM-P-0119-02	0.250	0.100	0.000	0.010	0.150	0.000	0.150
ASTM-P-0119-03	0.500	0.000	0.035	0.160	0.150	0.000	0.020
ASTM-P-0119-04	0.350	0.010	0.000	0.120	0.080	0.200	0.000
ASTM-P-0119-05	0.110	0.000	0.015	0.100	0.100	0.300	0.050
ASTM-P-0119-06	0.200	0.100	0.000	0.200	0.050	0.250	0.150
ASTM-P-0119-07	0.000	0.050	0.025	0.000	0.000	0.450	0.020
ASTM-P-0119-08	0.150	0.030	0.000	0.100	0.030	0.400	0.040
ASTM-P-0119-09	0.250	0.150	0.010	0.160	0.000	0.350	0.080
ASTM-P-0119-10	0.110	0.150	0.040	0.005	0.030	0.750	0.150
ASTM-P-0119-11	0.260	0.050	0.000	0.000	0.000	0.750	0.000
ASTM-P-0119-12	0.200	0.000	0.005	0.140	0.080	0.500	0.080
ASTM-P-0119-13	0.000	0.000	0.005	0.020	0.020	0.200	0.020
ASTM-P-0119-14	0.070	0.150	0.020	0.080	0.140	0.650	0.150
ASTM-P-0119-15	0.050	0.000	0.000	0.000	0.150	0.000	0.000
ASTM-P-0119-16	0.400	0.000	0.001	0.080	0.000	0.500	0.020
ASTM-P-0119-17	0.180	0.020	0.020	0.000	0.020	0.600	0.060
ASTM-P-0119-18	0.400	0.010	0.001	0.010	0.020	0.000	0.000
ASTM-P-0119-19	0.010	0.020	0.040	0.010	0.020	0.200	0.100
ASTM-P-0119-20	0.050	0.005	0.050	0.000	0.008	0.000	0.120
ASTM-P-0119-21	0.200	0.050	0.020	0.080	0.050	0.275	0.050
ASTM-P-0119-22	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Standards of Interest

Concentrations for the sets on pages 44-47 are targets. Actual production lots may vary.

Metal Working Fluids

ASTM-P-0121-SET

13 x 100 mL

Cat. No. Nominal Value	Cl (Wt.%)	P (Wt.%)	S (Wt.%)
ASTM-P-0121-01	0.000	0.000	0.000
ASTM-P-0121-02	0.750	0.025	0.500
ASTM-P-0121-03	0.050	0.100	3.000
ASTM-P-0121-04	1.000	0.500	2.500
ASTM-P-0121-05	0.100	0.005	2.000
ASTM-P-0121-06	1.500	0.200	1.000
ASTM-P-0121-07	2.000	0.005	3.000
ASTM-P-0121-08	1.000	0.050	0.100
ASTM-P-0121-09	0.500	0.400	0.000
ASTM-P-0121-10	2.000	0.200	1.500
ASTM-P-0121-11	0.000	0.500	1.500
ASTM-P-0121-12	1.250	0.010	0.050
ASTM-P-0121-13	0.050	0.300	0.050

Elements in Lubricating Oil

ASTM-P-0120-SET

23 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ba (Wt.%)	Ca (Wt.%)	Cl (Wt.%)	Cu (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0120-01	0.100	0.300	0.080	0.030	0.060	0.060	0.275	0.060
ASTM-P-0120-02	0.175	0.250	0.100	0.000	0.010	0.150	0.000	0.150
ASTM-P-0120-03	0.040	0.500	0.000	0.035	0.160	0.150	0.000	0.020
ASTM-P-0120-04	0.020	0.350	0.010	0.000	0.120	0.080	0.200	0.000
ASTM-P-0120-05	0.150	0.110	0.000	0.015	0.100	0.100	0.300	0.050
ASTM-P-0120-06	0.000	0.200	0.100	0.000	0.200	0.050	0.250	0.150
ASTM-P-0120-07	0.200	0.000	0.050	0.025	0.000	0.000	0.450	0.020
ASTM-P-0120-08	0.000	0.150	0.030	0.000	0.100	0.030	0.400	0.040
ASTM-P-0120-09	0.000	0.250	0.150	0.010	0.160	0.000	0.350	0.080
ASTM-P-0120-10	0.000	0.110	0.150	0.040	0.005	0.030	0.750	0.150
ASTM-P-0120-11	0.100	0.260	0.050	0.000	0.000	0.000	0.750	0.000
ASTM-P-0120-12	0.050	0.200	0.000	0.005	0.140	0.080	0.500	0.080
ASTM-P-0120-13	0.000	0.000	0.000	0.005	0.020	0.020	0.200	0.020
ASTM-P-0120-14	0.080	0.070	0.150	0.020	0.080	0.140	0.650	0.150
ASTM-P-0120-15	0.010	0.050	0.000	0.000	0.000	0.150	0.000	0.000
ASTM-P-0120-16	0.000	0.400	0.000	0.001	0.080	0.000	0.500	0.020
ASTM-P-0120-17	0.000	0.180	0.020	0.020	0.000	0.020	0.600	0.060
ASTM-P-0120-18	0.000	0.400	0.010	0.001	0.010	0.020	0.000	0.000
ASTM-P-0120-19	0.150	0.010	0.020	0.040	0.010	0.020	0.200	0.100
ASTM-P-0120-20	0.005	0.050	0.005	0.050	0.000	0.008	0.000	0.120
ASTM-P-0120-21	0.100	0.200	0.050	0.020	0.080	0.050	0.275	0.050
ASTM-P-0120-22	0.120	0.200	0.000	0.000	0.000	0.000	0.750	0.000
ASTM-P-0120-23	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

ICP-15N-10X-1 **100 mL** **Lot: 222015122**
Exp: Jan 31, 2027
Copper
 10000 µg/mL Copper
 2% Nitric acid

Plasma Emission Standards (ICP)

Storage Condition:
 Ambient (>5 C)

Date Opened:

Traceable to National Institute of Standards and Technology

Signal Word
Danger

Refer to SDS for Safety Information

7440-50-8 Copper
 7732-18-5 Water
 7697-37-2 Nitric acid

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 Inorganic products in water generally do not.

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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

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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.
- 5 x 100 mL or 1 x 500 mL minimum purchase.

Periodic Table poster available, contact 203-786-5290 or email orders@accustandard.com

Periodic Table of Elements

The poster features a detailed periodic table with element symbols, atomic numbers, and names. A magnifying glass is positioned over the element Gold (Au). Below the main table are two reference tables:

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