Inorganic Standards

- ✔ Traceability to NIST SRM by Wet Chemical / Gravimetric Assay
- ✔ Traceability to NIST SRM by Instrumental Analysis
- ✔ Reference to NIST Traceability during product preparation

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3 Year Minimum Shelf Life on Single Element ICP, ICP/MS and AA Standards

Certificate of Analysis

Sample: Single Element ICP

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AccuStandard® Inc.

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: ICP-14N-1
Description: Cobalt ICP Standard
Element: Cobalt (Co)
SRM: 3113
Lot: 217015124
Matrix: 2-5% Nitric acid
Hazards: *Refer to SDS for complete safety information*

Signal Word: Danger

Date Certified: Feb 8, 2017
Expiration: Feb 8, 2022
Density: 1.015 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Certified Concentration: 1000 µg/mL

Trace Elements in µg/mL

Ag	nd<0.02	**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**	*	**Ge**	nd<0.2	**Mg**	nd<0.02	**Pd**	N/A	**Se**	N/A	**Tl**	N/A
As	N/A	**Cr**	N/A	**Hf**	nd<0.02	**Mn**	nd<0.02	**Pr**	nd<0.2	**Si**	nd<0.2	**Tm**	N/A
Au	N/A	**Cs**	N/A	**Hg**	N/A	**Mo**	nd<0.02	**Pt**	nd<0.2	**Sm**	nd<0.2	**U**	N/A
B	nd<0.2	**Cu**	nd<0.02	**Ho**	nd<0.02	**Na**	nd<0.02	**Rb**	N/A	**Sn**	N/A	**V**	N/A
Ba	nd<0.02	**Dy**	nd<0.02	**In**	nd<0.2	**Nb**	nd<0.2	**Re**	nd<0.2	**Sr**	N/A	**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**	N/A	**Y**	N/A
Bi	N/A	**Eu**	nd<0.02	**K**	nd<0.2	**Ni**	N/A	**Ru**	nd<0.02	**Tb**	nd<0.02	**Yb**	nd<0.02
Ca	nd<0.02	**Fe**	N/A	**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**	N/A	**Th**	nd<0.02	**Zr**	nd<0.02

This solution was assayed titrimetrically, using EDTA which was standardized against NIST SRM #928 (lead nitrate).
The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.
All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
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.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

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For use in routine laboratory analysis.

OR-ORG/INO-001
Rev. 7/11

Directly traceable to NIST SRM's - where available

GHS safety information

Most Single element standards have a minumum 3 Year expiration period.

Density included for easy conversion to weight/ weight applications

Impurity Scan for 68 elements in final solution.

Concentration verified by two independent methods for added assurance.

Uncertainty reported for statistical confidence.

QC management approval

Highest purity starting materials & matrices used.

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

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

Single Element ICP

Element Starting Material	Matrix	Unit	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Aluminum (Al) $Al(NO_3)_3 \bullet 9H_2O$	2-5% Nitric acid	50 mL	--------- --	ICP-01N-10X-0.5
		100 mL	ICP-01N-1	ICP-01N-10X-1
		500 mL	ICP-01N-5	ICP-01N-10X-5
Antimony (Sb) Sb	2-5% Nitric acid tr. Tartaric acid	50 mL	--------- --	ICP-02N-10X-0.5
		100 mL	ICP-02N-1	ICP-02N-10X-1
		500 mL	ICP-02N-5	ICP-02N-10X-5
Arsenic (As) As	2-5% Nitric acid	50 mL	--------- --	ICP-03N-10X-0.5
		100 mL	ICP-03N-1	ICP-03N-10X-1
		500 mL	ICP-03N-5	ICP-03N-10X-5
Barium (Ba) $Ba(NO_3)_2$	2-5% Nitric acid	50 mL	--------- --	ICP-04N-10X-0.5
		100 mL	ICP-04N-1	ICP-04N-10X-1
		500 mL	ICP-04N-5	ICP-04N-10X-5
Beryllium (Be) $BeO(C_2H_3O_2)_6$	2-5% Nitric acid	50 mL	--------- --	ICP-05N-10X-0.5
		100 mL	ICP-05N-1	ICP-05N-10X-1
		500 mL	ICP-05N-5	ICP-05N-10X-5
Bismuth (Bi) Bi	2-10% Nitric acid	50 mL	--------- --	ICP-06N-10X-0.5
		100 mL	ICP-06N-1	ICP-06N-10X-1
		500 mL	ICP-06N-5	ICP-06N-10X-5
Boron (B) H_3BO_3	Water tr. NH_4OH	50 mL	--------- --	ICP-07W-10X-0.5
		100 mL	ICP-07W-1	ICP-07W-10X-1
		500 mL	ICP-07W-5	ICP-07W-10X-5
Cadmium (Cd) Cd	2-5% Nitric acid	50 mL	--------- --	ICP-08N-10X-0.5
		100 mL	ICP-08N-1	ICP-08N-10X-1
		500 mL	ICP-08N-5	ICP-08N-10X-5
Calcium (Ca) $CaCO_3$	2-5% Nitric acid	50 mL	--------- --	ICP-09N-10X-0.5
		100 mL	ICP-09N-1	ICP-09N-10X-1
		500 mL	ICP-09N-5	ICP-09N-10X-5
Cerium (Ce) $Ce(NO_3)_3$	2-5% Nitric acid	50 mL	--------- --	ICP-11N-10X-0.5
		100 mL	ICP-11N-1	ICP-11N-10X-1
		500 mL	ICP-11N-5	ICP-11N-10X-5
Cesium (Cs) $CsNO_3$	2-5% Nitric acid	50 mL	--------- --	ICP-12N-10X-0.5
		100 mL	ICP-12N-1	ICP-12N-10X-1
		500 mL	ICP-12N-5	ICP-12N-10X-5
Chromium reduced to (+3) state $(NH_4)_2Cr_2O_7$	2-5% Nitric acid	50 mL	--------- --	ICP-13N-10X-0.5
		100 mL	ICP-13N-1	ICP-13N-10X-1
		500 mL	ICP-13N-5	ICP-13N-10X-5
Cobalt (Co) Co	2-5% Nitric acid	50 mL	--------- --	ICP-14N-10X-0.5
		100 mL	ICP-14N-1	ICP-14N-10X-1
		500 mL	ICP-14N-5	ICP-14N-10X-5
Copper (Cu) Cu	2-5% Nitric acid	50 mL	--------- --	ICP-15N-10X-0.5
		100 mL	ICP-15N-1	ICP-15N-10X-1
		500 mL	ICP-15N-5	ICP-15N-10X-5
Dysprosium (Dy) Dy_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-16N-10X-0.5
		100 mL	ICP-16N-1	ICP-16N-10X-1
		500 mL	ICP-16N-5	ICP-16N-10X-5
Erbium (Er) Er_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-17N-10X-0.5
		100 mL	ICP-17N-1	ICP-17N-10X-1
		500 mL	ICP-17N-5	ICP-17N-10X-5
Europium (Eu) Eu_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-18N-10X-0.5
		100 mL	ICP-18N-1	ICP-18N-10X-1
		500 mL	ICP-18N-5	ICP-18N-10X-5
Gadolinium (Gd) Gd_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-19N-10X-0.5
		100 mL	ICP-19N-1	ICP-19N-10X-1
		500 mL	ICP-19N-5	ICP-19N-10X-5
Gallium (Ga) Ga	2-5% Nitric acid	50 mL	--------- --	ICP-20N-10X-0.5
		100 mL	ICP-20N-1	ICP-20N-10X-1
		500 mL	ICP-20N-5	ICP-20N-10X-5

Single Element ICP continued on next page

Single Element ICP

Element Starting Material	Matrix	Unit	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Germanium (Ge) $(NH_4)_2GeF_6$	Water tr. HF	50 mL	--------- --	ICP-21W-10X-0.5
		100 mL	ICP-21W-1	ICP-21W-10X-1
		500 mL	ICP-21W-5	ICP-21W-10X-5
Gold (Au) Au	10% HCl	50 mL	--------- --	ICP-22H-10X-0.5
		100 mL	ICP-22H-1	ICP-22H-10X-1
		500 mL	ICP-22H-5	---------- --
Hafnium (Hf) HfO_2	2-5% Nitric acid tr. HF	50 mL	--------- --	ICP-23N-10X-0.5
		100 mL	ICP-23N-1	ICP-23N-10X-1
		500 mL	ICP-23N-5	ICP-23N-10X-5
Holmium (Ho) Ho_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-24N-10X-0.5
		100 mL	ICP-24N-1	ICP-24N-10X-1
		500 mL	ICP-24N-5	ICP-24N-10X-5
Indium (In) In	2-5% Nitric acid	50 mL	--------- --	ICP-25N-10X-0.5
		100 mL	ICP-25N-1	ICP-25N-10X-1
		500 mL	ICP-25N-5	ICP-25N-10X-5
Iridium (Ir) $IrCl_3 \bullet 3H_20$	10% HCl	50 mL	--------- --	ICP-26H-10X-0.5
		100 mL	ICP-26H-1	ICP-26H-10X-1
		500 mL	ICP-26H-5	---------- --
Iron (Fe) Fe	2-5% Nitric acid	50 mL	--------- --	ICP-27N-10X-0.5
		100 mL	ICP-27N-1	ICP-27N-10X-1
		500 mL	ICP-27N-5	ICP-27N-10X-5
Lanthanum (La) La_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-28N-10X-0.5
		100 mL	ICP-28N-1	ICP-28N-10X-1
		500 mL	ICP-28N-5	ICP-28N-10X-5
Lead (Pb) $Pb(NO_3)_2$	2-5% Nitric acid	50 mL	--------- --	ICP-29N-10X-0.5
		100 mL	ICP-29N-1	ICP-29N-10X-1
		500 mL	ICP-29N-5	ICP-29N-10X-5
Lithium (Li) Li_2CO_3	2-5% Nitric acid	50 mL	--------- --	ICP-30N-10X-0.5
		100 mL	ICP-30N-1	ICP-30N-10X-1
		500 mL	ICP-30N-5	ICP-30N-10X-5
Lutetium (Lu) Lu_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-31N-10X-0.5
		100 mL	ICP-31N-1	ICP-31N-10X-1
		500 mL	ICP-31N-5	---------- --
Magnesium (Mg) $Mg(NO_3)_2 \bullet 6H_2O$	2-5% Nitric acid	50 mL	--------- --	ICP-32N-10X-0.5
		100 mL	ICP-32N-1	ICP-32N-10X-1
		500 mL	ICP-32N-5	ICP-32N-10X-5
Manganese (Mn) $Mn(C_2H_3O_2)_2$	2-5% Nitric acid	50 mL	--------- --	ICP-33N-10X-0.5
		100 mL	ICP-33N-1	ICP-33N-10X-1
		500 mL	ICP-33N-5	ICP-33N-10X-5
Mercury (Hg) Hg	10% Nitric acid	50 mL	--------- --	ICP-34N-10X-0.5
		100 mL	ICP-34N-1	ICP-34N-10X-1
		500 mL	ICP-34N-5	ICP-34N-10X-5
Molybdenum (Mo) $(NH_4)_2MoO_4$	Water tr. NH_4OH	50 mL	--------- --	ICP-35W-10X-0.5
		100 mL	ICP-35W-1	ICP-35W-10X-1
		500 mL	ICP-35W-5	ICP-35W-10X-5
Neodymium (Nd) Nd_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-36N-10X-0.5
		100 mL	ICP-36N-1	ICP-36N-10X-1
		500 mL	ICP-36N-5	ICP-36N-10X-5
Nickel (Ni) Ni	2-5% Nitric acid	50 mL	--------- --	ICP-37N-10X-0.5
		100 mL	ICP-37N-1	ICP-37N-10X-1
		500 mL	ICP-37N-5	ICP-37N-10X-5
Niobium (Nb) Nb_2O_5	Water tr. HF	50 mL	--------- --	ICP-38W-10X-0.5
		100 mL	ICP-38W-1	ICP-38W-10X-1
		500 mL	ICP-38W-5	ICP-38W-10X-5
Palladium (Pd) Pd	10% HCl	50 mL	--------- --	ICP-40H-10X-0.5
		100 mL	ICP-40H-1	ICP-40H-10X-1
		500 mL	ICP-40H-5	---------- --
Phosphorus (P) $NH_4H_2PO_4$	Water	50 mL	--------- --	ICP-41W-10X-0.5
		100 mL	ICP-41W-1	ICP-41W-10X-1
		500 mL	ICP-41W-5	ICP-41W-10X-5
Platinum (Pt) Pt	10% HCl	50 mL	--------- --	ICP-42H-10X-0.5
		100 mL	ICP-42H-1	ICP-42H-10X-1
		500 mL	ICP-42H-5	---------- --

- 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

Single Element ICP

Element Starting Material	Matrix	Unit	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Potassium (K) KNO_3	2-5% Nitric acid	50 mL	--------- --	ICP-43N-10X-0.5
		100 mL	ICP-43N-1	ICP-43N-10X-1
		500 mL	ICP-43N-5	ICP-43N-10X-5
Praseodymium (Pr) Pr_6O_{11}	2-5% Nitric acid	50 mL	--------- --	ICP-44N-10X-0.5
		100 mL	ICP-44N-1	ICP-44N-10X-1
		500 mL	ICP-44N-5	ICP-44N-10X-5
Rhenium (Re) Re	Water tr. Nitric acid	50 mL	--------- --	ICP-45W-10X-0.5
		100 mL	ICP-45W-1	ICP-45W-10X-1
		500 mL	ICP-45W-5	ICP-45W-10X-5
Rhodium (Rh)		50 mL	--------- --	ICP-46H-10X-0.5
$RhCl_3 \bullet 3H_2O$	10% HCl	100 mL	ICP-46H-1	ICP-46H-10X-1
		500 mL	ICP-46H-5	---------- --
Rubidium (Rb) $RbNO_3$	2-5% Nitric acid	50 mL	--------- --	ICP-47N-10X-0.5
		100 mL	ICP-47N-1	ICP-47N-10X-1
		500 mL	ICP-47N-5	ICP-47N-10X-5
Ruthenium (Ru) $RuCl_3 \bullet 3H_2O$	10% HCl	50 mL	--------- --	ICP-48H-10X-0.5
		100 mL	ICP-48H-1	ICP-48H-10X-1
		500 mL	ICP-48H-5	---------- --
Samarium (Sm) Sm_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-49N-10X-0.5
		100 mL	ICP-49N-1	ICP-49N-10X-1
		500 mL	ICP-49N-5	ICP-49N-10X-5
Scandium (Sc) Sc_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-50N-10X-0.5
		100 mL	ICP-50N-1	ICP-50N-10X-1
		500 mL	ICP-50N-5	ICP-50N-10X-5
Selenium (Se) Se	2-5% Nitric acid	50 mL	--------- --	ICP-51N-10X-0.5
		100 mL	ICP-51N-1	ICP-51N-10X-1
		500 mL	ICP-51N-5	ICP-51N-10X-5
Silicon (Si) $(NH_4)2SiF_6$	Water tr. HF	50 mL	--------- --	ICP-52W-10X-0.5
		100 mL	ICP-52W-1	ICP-52W-10X-1
		500 mL	ICP-52W-5	ICP-52W-10X-5
Silver (Ag) $AgNO_3$	2-5% Nitric acid	50 mL	--------- --	ICP-53N-10X-0.5
		100 mL	ICP-53N-1	ICP-53N-10X-1
		500 mL	ICP-53N-5	ICP-53N-10X-5
Sodium (Na) $NaNO_3$	2-5% Nitric acid	50 mL	--------- --	ICP-54N-10X-0.5
		100 mL	ICP-54N-1	ICP-54N-10X-1
		500 mL	ICP-54N-5	ICP-54N-10X-5
Strontium (Sr) $Sr(NO_3)_2$	2-5% Nitric acid	50 mL	--------- --	ICP-55N-10X-0.5
		100 mL	ICP-55N-1	ICP-55N-10X-1
		500 mL	ICP-55N-5	ICP-55N-10X-5
Sulfur (S) $(NH_4)_2SO_4$	Water	50 mL	--------- --	ICP-56W-10X-0.5
		100 mL	ICP-56W-1	ICP-56W-10X-1
		500 mL	ICP-56W-5	ICP-56W-10X-5
Tantalum (Ta) Ta	Water tr. HF	50 mL	--------- --	ICP-57W-10X-0.5
		100 mL	ICP-57W-1	ICP-57W-10X-1
		500 mL	ICP-57W-5	ICP-57W-10X-5
Tellurium (Te) Te	20%-40% HCl	50 mL	--------- --	ICP-58H-10X-0.5
		100 mL	ICP-58H-1	ICP-58H-10X-1
		500 mL	ICP-58H-5	ICP-58H-10X-5
Terbium (Tb) Tb_4O_7	2-5% Nitric acid	50 mL	--------- --	ICP-59N-10X-0.5
		100 mL	ICP-59N-1	ICP-59N-10X-1
		500 mL	ICP-59N-5	ICP-59N-10X-5
Thallium (Tl) Tl	2-5% Nitric acid	50 mL	--------- --	ICP-60N-10X-0.5
		100 mL	ICP-60N-1	ICP-60N-10X-1
		500 mL	ICP-60N-5	ICP-60N-10X-5
Thorium (Th)	2-5% Nitric acid	------	--------- --	---------- --
$Th(NO_3)4 \bullet 4H_2O$		100 mL	ICP-61N-1	---------- --
		500 mL	ICP-61N-5	---------- --

Single Element ICP continued on next page

Single Element ICP

Element Starting Material	Matrix	Unit	1000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Thulium (Tm) Tm_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-62N-10X-0.5
		100 mL	ICP-62N-1	ICP-62N-10X-1
		500 mL	ICP-62N-5	---------- --
Tin (Sn) Sn	2-5% Nitric acid tr. HF	50 mL	--------- --	ICP-63N-10X-0.5
		100 mL	ICP-63N-1	ICP-63N-10X-1
		500 mL	ICP-63N-5	ICP-63N-10X-5
Titanium (Ti) $(NH_4)_2TiF_6$	Water tr. HF	50 mL	--------- --	ICP-64W-10X-0.5
		100 mL	ICP-64W-1	ICP-64W-10X-1
		500 mL	ICP-64W-5	ICP-64W-10X-5
Tungsten (W) $(NH_4)_2WO_4$	Water tr. NH_4OH	50 mL	--------- --	ICP-65W-10X-0.5
		100 mL	ICP-65W-1	ICP-65W-10X-1
		500 mL	ICP-65W-5	ICP-65W-10X-5
Uranium (U) U_3O_8	2-5% Nitric acid	-----	--------- --	---------- --
		100 mL	ICP-66N-1	---------- --
		500 mL	ICP-66N-5	---------- --
Vanadium (V) NH_4VO_3	2-5% Nitric acid	50 mL	--------- --	ICP-67N-10X-0.5
		100 mL	ICP-67N-1	ICP-67N-10X-1
		500 mL	ICP-67N-5	ICP-67N-10X-5
Ytterbium (Yb) Yb_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-68N-10X-0.5
		100 mL	ICP-68N-1	ICP-68N-10X-1
		500 mL	ICP-68N-5	ICP-68N-10X-5
Yttrium (Y) Y_2O_3	2-5% Nitric acid	50 mL	--------- --	ICP-69N-10X-0.5
		100 mL	ICP-69N-1	ICP-69N-10X-1
		500 mL	ICP-69N-5	ICP-69N-10X-5
Zinc (Zn) Zn	2-5% Nitric acid	50 mL	--------- --	ICP-70N-10X-0.5
		100 mL	ICP-70N-1	ICP-70N-10X-1
		500 mL	ICP-70N-5	ICP-70N-10X-5
Zirconium (Zr) $ZrO(NO_3)_2$	2-5% Nitric acid	50 mL	--------- --	ICP-71N-10X-0.5
		100 mL	ICP-71N-1	ICP-71N-10X-1
		500 mL	ICP-71N-5	ICP-71N-10X-5

Calibration and Matrix Blanks

Nitric Acid Blank

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

5% HNO_3 in 18 Megohm ASTM Type I deionized Water

Hydrochloric Acid Blank

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

5% HCl in 18 Megohm ASTM Type I deionized Water

Mixed Acid Blank

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

5% HCl + 1% HNO_3 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

We can provide Custom formulations to meet your needs.

To request a Custom formulation, contact Inorganic Technical Service using our website or Email inotech@accustandard.com.

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

ICP/MS
Single Element

AccuStandard's 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 Standards

Single Element ICP/MS

			100 µg/mL	1,000 µg/mL	10,000 µg/mL
Element	**Matrix**	**Unit**	**Cat. No.**	**Cat. No.**	**Cat. No.**
Aluminum (Al)	2-5% HNO_3	100 mL	ICP-MS-01N-0.01X-1	ICP-MS-01N-0.1X-1	ICP-MS-01N-1
Antimony (Sb)	2-5% HNO_3 tr. Tartaric acid	100 mL	ICP-MS-02N-0.01X-1	ICP-MS-02N-0.1X-1	ICP-MS-02N-1
Arsenic (As)	2-5% HNO_3	100 mL	ICP-MS-03N-0.01X-1	ICP-MS-03N-0.1X-1	ICP-MS-03N-1
Barium (Ba)	2-5% HNO_3	100 mL	ICP-MS-04N-0.01X-1	ICP-MS-04N-0.1X-1	ICP-MS-04N-1
Beryllium (Be)	2-5% HNO_3	100 mL	ICP-MS-05N-0.01X-1	ICP-MS-05N-0.1X-1	ICP-MS-05N-1
Bismuth (Bi)	2-10% HNO_3	100 mL	ICP-MS-06N-0.01X-1	ICP-MS-06N-0.1X-1	ICP-MS-06N-1
Boron (B)	Water tr. NH_4OH	100 mL	ICP-MS-07W-0.01X-1	ICP-MS-07W-0.1X-1	ICP-MS-07W-1
Cadmium (Cd)	2-5% HNO_3	100 mL	ICP-MS-08N-0.01X-1	ICP-MS-08N-0.1X-1	ICP-MS-08N-1
Calcium (Ca)	2-5% HNO_3	100 mL	ICP-MS-09N-0.01X-1	ICP-MS-09N-0.1X-1	ICP-MS-09N-1
Cerium (Ce)	2-5% HNO_3	100 mL	ICP-MS-11N-0.01X-1	ICP-MS-11N-0.1X-1	ICP-MS-11N-1
Cesium (Cs)	2-5% HNO_3	100 mL	ICP-MS-12N-0.01X-1	ICP-MS-12N-0.1X-1	ICP-MS-12N-1
Chromium (Cr)	2-5% HNO_3	100 mL	ICP-MS-13N-0.01X-1	ICP-MS-13N-0.1X-1	ICP-MS-13N-1
Cobalt (Co)	2-5% HNO_3	100 mL	ICP-MS-14N-0.01X-1	ICP-MS-14N-0.1X-1	ICP-MS-14N-1
Copper (Cu)	2-5% HNO_3	100 mL	ICP-MS-15N-0.01X-1	ICP-MS-15N-0.1X-1	ICP-MS-15N-1
Dysprosium (Dy)	2-5% HNO_3	100 mL	ICP-MS-16N-0.01X-1	ICP-MS-16N-0.1X-1	ICP-MS-16N-1
Erbium (Er)	2-5% HNO_3	100 mL	ICP-MS-17N-0.01X-1	ICP-MS-17N-0.1X-1	ICP-MS-17N-1
Europium (Eu)	2-5% HNO_3	100 mL	ICP-MS-18N-0.01X-1	ICP-MS-18N-0.1X-1	ICP-MS-18N-1
Gadolinium (Gd)	2-5% HNO_3	100 mL	ICP-MS-19N-0.01X-1	ICP-MS-19N-0.1X-1	ICP-MS-19N-1
Gallium (Ga)	2-5% HNO_3	100 mL	ICP-MS-20N-0.01X-1	ICP-MS-20N-0.1X-1	ICP-MS-20N-1
Germanium (Ge)	Water tr. HF	100 mL	ICP-MS-21W-0.01X-1	ICP-MS-21W-0.1X-1	ICP-MS-21W-1
Gold (Au)	10% HCl	100 mL	ICP-MS-22H-0.01X-1	ICP-MS-22H-0.1X-1	ICP-MS-22H-1
Hafnium (Hf)	2-5% HNO_3 tr. HF	100 mL	ICP-MS-23N-0.01X-1	ICP-MS-23N-0.1X-1	ICP-MS-23N-1
Holmium (Ho)	2-5% HNO_3	100 mL	ICP-MS-24N-0.01X-1	ICP-MS-24N-0.1X-1	ICP-MS-24N-1
Indium (In)	2-5% HNO_3	100 mL	ICP-MS-25N-0.01X-1	ICP-MS-25N-0.1X-1	ICP-MS-25N-1
Iridium (Ir)	10% HCl	100 mL	ICP-MS-26H-0.01X-1	ICP-MS-26H-0.1X-1	ICP-MS-26H-1
Iron (Fe)	2-5% HNO_3	100 mL	ICP-MS-27N-0.01X-1	ICP-MS-27N-0.1X-1	ICP-MS-27N-1
Lanthanum (La)	2-5% HNO_3	100 mL	ICP-MS-28N-0.01X-1	ICP-MS-28N-0.1X-1	ICP-MS-28N-1
Lead (Pb)	2-5% HNO_3	100 mL	ICP-MS-29N-0.01X-1	ICP-MS-29N-0.1X-1	ICP-MS-29N-1
Lithium (Li)	2-5% HNO_3	100 mL	ICP-MS-30N-0.01X-1	ICP-MS-30N-0.1X-1	ICP-MS-30N-1
Lutetium (Lu)	2-5% HNO_3	100 mL	ICP-MS-31N-0.01X-1	ICP-MS-31N-0.1X-1	ICP-MS-31N-1
Magnesium (Mg)	2-5% HNO_3	100 mL	ICP-MS-32N-0.01X-1	ICP-MS-32N-0.1X-1	ICP-MS-32N-1
Manganese (Mn)	2-5% HNO_3	100 mL	ICP-MS-33N-0.01X-1	ICP-MS-33N-0.1X-1	ICP-MS-33N-1
Mercury (Hg) ●	5-10% HNO_3	100 mL	ICP-MS-34N-0.01X-1	ICP-MS-34N-0.1X-1	ICP-MS-34N-1
Molybdenum (Mo)	Water tr. NH_4OH	100 mL	ICP-MS-35W-0.01X-1	ICP-MS-35W-0.1X-1	ICP-MS-35W-1
Neodymium (Nd)	2-5% HNO_3	100 mL	ICP-MS-36N-0.01X-1	ICP-MS-36N-0.1X-1	ICP-MS-36N-1
Nickel (Ni)	2-5% HNO_3	100 mL	ICP-MS-37N-0.01X-1	ICP-MS-37N-0.1X-1	ICP-MS-37N-1
Niobium (Nb)	Water tr. HF	100 mL	ICP-MS-38W-0.01X-1	ICP-MS-38W-0.1X-1	ICP-MS-38W-1
Palladium (Pd)	10% HCl	100 mL	ICP-MS-40H-0.01X-1	ICP-MS-40H-0.1X-1	ICP-MS-40H-1
Phosphorus (P)	Water	100 mL	ICP-MS-41W-0.01X-1	ICP-MS-41W-0.1X-1	ICP-MS-41W-1
Platinum (Pt)	10% HCl	100 mL	ICP-MS-42H-0.01X-1	ICP-MS-42H-0.1X-1	ICP-MS-42H-1
Potassium (K)	2-5% HNO_3	100 mL	ICP-MS-43N-0.01X-1	ICP-MS-43N-0.1X-1	ICP-MS-43N-1
Praseodymium (Pr)	2-5% HNO_3	100 mL	ICP-MS-44N-0.01X-1	ICP-MS-44N-0.1X-1	ICP-MS-44N-1
Rhenium (Re)	Water tr. HNO_3	100 mL	ICP-MS-45W-0.01X-1	ICP-MS-45W-0.1X-1	ICP-MS-45W-1
Rhodium (Rh)	10% HCl	100 mL	ICP-MS-46H-0.01X-1	ICP-MS-46H-0.1X-1	ICP-MS-46H-1

● Product contains Mercury. Dispose according to Federal, State or local laws.

Single Element ICP/MS continued on next page

Single Element ICP/MS

Element	Matrix	Unit	100 µg/mL Cat. No.	1,000 µg/mL Cat. No.	10,000 µg/mL Cat. No.
Rubidium (Rb)	2-5% HNO_3	100 mL	ICP-MS-47N-0.01X-1	ICP-MS-47N-0.1X-1	ICP-MS-47N-1
Ruthenium (Ru)	10% HCl	100 mL	ICP-MS-48H-0.01X-1	ICP-MS-48H-0.1X-1	ICP-MS-48H-1
Samarium (Sm)	2-5% HNO_3	100 mL	ICP-MS-49N-0.01X-1	ICP-MS-49N-0.1X-1	ICP-MS-49N-1
Scandium (Sc)	2-5% HNO_3	100 mL	ICP-MS-50N-0.01X-1	ICP-MS-50N-0.1X-1	ICP-MS-50N-1
Selenium (Se)	2-5% HNO_3	100 mL	ICP-MS-51N-0.01X-1	ICP-MS-51N-0.1X-1	ICP-MS-51N-1
Silicon (Si)	H_2O tr. HF	100 mL	ICP-MS-52W-0.01X-1	ICP-MS-52W-0.1X-1	ICP-MS-52W-1
Silver (Ag)	2-5% HNO_3	100 mL	ICP-MS-53N-0.01X-1	ICP-MS-53N-0.1X-1	ICP-MS-53N-1
Sodium (Na)	2-5% HNO_3	100 mL	ICP-MS-54N-0.01X-1	ICP-MS-54N-0.1X-1	ICP-MS-54N-1
Strontium (Sr)	2-5% HNO_3	100 mL	ICP-MS-55N-0.01X-1	ICP-MS-55N-0.1X-1	ICP-MS-55N-1
Sulfur (S)	Water	100 mL	ICP-MS-56W-0.01X-1	ICP-MS-56W-0.1X-1	ICP-MS-56W-1
Tantalum (Ta)	Water tr. HF	100 mL	ICP-MS-57W-0.01X-1	ICP-MS-57W-0.1X-1	ICP-MS-57W-1
Tellurium (Te)	10% HCl (min.)	100 mL	ICP-MS-58H-0.01X-1	ICP-MS-58H-0.1X-1	ICP-MS-58H-1
Terbium (Tb)	2-5% HNO_3	100 mL	ICP-MS-59N-0.01X-1	ICP-MS-59N-0.1X-1	ICP-MS-59N-1
Thallium (Tl)	2-5% HNO_3	100 mL	ICP-MS-60N-0.01X-1	ICP-MS-60N-0.1X-1	ICP-MS-60N-1
Thorium (Th)	2-5% HNO_3	100 mL	ICP-MS-61N-0.01X-1	ICP-MS-61N-0.1X-1	---------- --
Thulium (Tm)	2-5% HNO_3	100 mL	ICP-MS-62N-0.01X-1	ICP-MS-62N-0.1X-1	ICP-MS-62N-1
Tin (Sn)	2-5% HNO_3 tr. HF	100 mL	ICP-MS-63N-0.01X-1	ICP-MS-63N-0.1X-1	ICP-MS-63N-1
Titanium (Ti)	Water tr. HF	100 mL	ICP-MS-64W-0.01X-1	ICP-MS-64W-0.1X-1	ICP-MS-64W-1
Tungsten (W)	Water tr. NH_4OH	100 mL	ICP-MS-65W-0.01X-1	ICP-MS-65W-0.1X-1	ICP-MS-65W-1
Uranium (U)	2-5% HNO_3	100 mL	ICP-MS-66N-0.01X-1	ICP-MS-66N-0.1X-1	---------- --
Vanadium (V)	2-5% HNO_3	100 mL	ICP-MS-67N-0.01X-1	ICP-MS-67N-0.1X-1	ICP-MS-67N-1
Ytterbium (Yb)	2-5% HNO_3	100 mL	ICP-MS-68N-0.01X-1	ICP-MS-68N-0.1X-1	ICP-MS-68N-1
Yttrium (Y)	2-5% HNO_3	100 mL	ICP-MS-69N-0.01X-1	ICP-MS-69N-0.1X-1	ICP-MS-69N-1
Zinc (Zn)	2-5% HNO_3	100 mL	ICP-MS-70N-0.01X-1	ICP-MS-70N-0.1X-1	ICP-MS-70N-1
Zirconium (Zr)	2-5% HNO_3	100 mL	ICP-MS-71N-0.01X-1	ICP-MS-71N-0.1X-1	ICP-MS-71N-1

Matrix Blanks

Nitric Acid Blank

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

5% HNO_3 in 18 Megohm ASTM Type I deionized Water

Hydrochloric Acid Blank

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

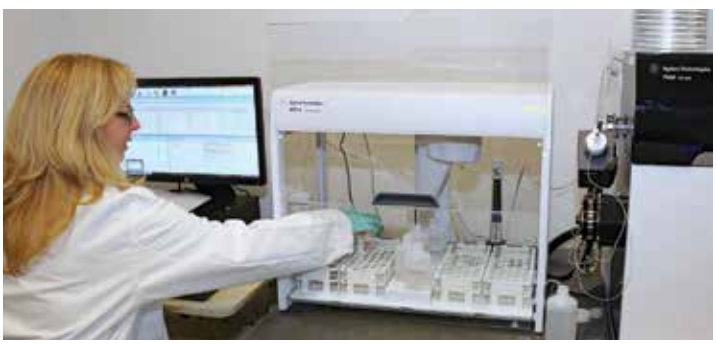
5% HCl in 18 Megohm ASTM Type I deionized Water

These blanks are prepared from the same water source and acids as your standards and therefore provide a consistent matrix. They are excellent as a blank, 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



AA
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. Actual Lot Analysis is provided on the label and a Certificate of Analysis is included for ease of record keeping and availability at audits.

- 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 ICP/MS Standards

Single Element AA

Element Matrix	Unit	1000 µg/mL Cat. No.
Aluminum (Al) 2-5% Nitric acid	100 mL 500 mL	AA01N-1 AA01N-5
Antimony (Sb) 2-5% HNO_3 tr.Tartaric acid	100 mL 500 mL	AA02N-1 AA02N-5
Arsenic (As) 2-5% Nitric acid	100 mL 500 mL	AA03N-1 AA03N-5
Barium (Ba) 2-5% Nitric acid	100 mL 500 mL	AA04N-1 AA04N-5
Boron (B) Water tr. NH_4OH	100 mL 500 mL	AA07W-1 AA07W-5
Cadmium (Cd) 2-5% Nitric acid	100 mL 500 mL	AA08N-1 AA08N-5
Calcium (Ca) 2-5% Nitric acid	100 mL 500 mL	AA09N-1 AA09N-5
Chromium (Cr) 2-5% Nitric acid	100 mL 500 mL	AA13N-1 AA13N-5
Cobalt (Co) 2-5% Nitric acid	100 mL 500 mL	AA14N-1 AA14N-5
Copper (Cu) 2-5% Nitric acid	100 mL 500 mL	AA15N-1 AA15N-5
Gold (Au) 5% HCl (min.)	100 mL 500 mL	AA22H-1 AA22H-5
Iron (Fe) 2-5% Nitric acid	100 mL 500 mL	AA27N-1 AA27N-5
Lead (Pb) 2-5% Nitric acid	100 mL 500 mL	AA29N-1 AA29N-5
Lithium (Li) 2-5% Nitric acid	100 mL 500 mL	AA30N-1 AA30N-5
Magnesium (Mg) 2-5% Nitric acid	100 mL 500 mL	AA32N-1 AA32N-5
Manganese (Mn) 2-5% Nitric acid	100 mL 500 mL	AA33N-1 AA33N-5
Mercury (Hg) ● 2-5% Nitric acid	100 mL 500 mL	AA34N-1 AA34N-5
Molybdenum (Mo) Water tr. NH_4OH	100 mL 500 mL	AA35W-1 AA35W-5
Nickel (Ni) 2-5% Nitric acid	100 mL 500 mL	AA37N-1 AA37N-5
Phosphorus (P) Water	100 mL 500 mL	AA41W-1 AA41W-5
Potassium (K) 2-5% Nitric acid	100 mL 500 mL	AA43N-1 AA43N-5
Selenium (Se) 2-5% Nitric acid	100 mL 500 mL	AA51N-1 AA51N-5
Silicon (Si) Water tr. HF	100 mL 500 mL	AA52W-1 AA52W-5
Silver (Ag) 2-5% Nitric acid	100 mL 500 mL	AA53N-1 AA53N-5
Sodium (Na) 2-5% Nitric acid	100 mL 500 mL	AA54N-1 AA54N-5
Strontium (Sr) 2-5% Nitric acid	100 mL 500 mL	AA55N-1 AA55N-5
Sulfur (S) Water	100 mL 500 mL	AA56W-1 AA56W-5
Thallium (Tl) 2-5% Nitric acid	100 mL 500 mL	AA60N-1 AA60N-5
Tin (Sn) 2-5% Nitric acid tr. HF	100 mL 500 mL	AA63N-1 AA63N-5
Titanium (Ti) Water tr. HF	100 mL 500 mL	AA64W-1 AA64W-5
Vanadium (V) 5-10% Nitric acid	100 mL 500 mL	AA67N-1 AA67N-5
Yttrium (Y) 2-5% Nitric acid	100 mL 500 mL	AA69N-1 AA69N-5
Zinc (Zn) 2-5% Nitric acid	100 mL 500 mL	AA70N-1 AA70N-5

● Product contains Mercury, dispose according to Federal, State or local laws.

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	Unit	Cat. No.
Ammonium dihydrogen phosphate 40% in Water	$NH_4H_2PO_4$	50 mL 100 mL	MOD-02-0.5 MOD-02-1
Ammonium nitrate 5% in Water	NH_4NO_3	50 mL 100 mL	MOD-03-0.5 MOD-03-1
Magnesium nitrate 2% Magnesium in 5% HNO_3	$Mg(NO_3)_2$	50 mL 100 mL	MOD-07-0.5 MOD-07-1
Nickel nitrate 5% Nickel in 5% HNO_3	$Ni(NO_3)_2$	50 mL 100 mL	MOD-08-0.5 MOD-08-1
Palladium nitrate 0.2% Palladium in 5% HNO_3	$Pd(NO_3)_2$	50 mL 100 mL	MOD-09A-0.5 MOD-09A-1
Palladium nitrate 1.0% Palladium in 10% HNO_3	$Pd(NO_3)_2$	50 mL 100 mL	MOD-09C-0.5 MOD-09C-1

Technical Note

Contact our Inorganic Technical Service Department if an additional matrix modifier is needed.

Calibration and Matrix Blanks

Nitric Acid Blank

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

5% HNO_3 in 18 Megohm ASTM Type I deionized Water

Hydrochloric Acid Blank

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

5% HCl in 18 Megohm ASTM Type I deionized Water

Mixed Acid Blank

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

5% HCl + 1% HNO_3 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

- 99.99% High Purity Starting Materials
- 18 Megohm, ASTM type I de-ionized Water
- Packaged in pre-cleaned high quality HDPE bottles.
- Each Standard is Supplied with a COA, stating traceability to NIST, certified value and expiration date.
- 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.
- Ready-To-Use Mixes and Calibration Sets.
- Standards may be used for other "Classical or Wet" methods.

Anions

		100 µg/mL	200 µg/mL	1000 µg/mL
Water Matrix	**Unit**	**Cat. No.**	**Cat. No.**	**Cat. No.**
Acetate	100 mL	IC-ACET-1X-1	----------	IC-ACET-10X-1
	500 mL	IC-ACET-1X-5	----------	IC-ACET-10X-5
Bromate	100 mL	----------	----------	IC-BROM-10X-1
	500 mL	----------	----------	IC-BROM-10X-5
Bromide (Br)	100 mL	IC-BR-1X-1	IC-BR-2X-1	IC-BR-10X-1
	500 mL	IC-BR-1X-5	IC-BR-2X-5	IC-BR-10X-5
Citrate	100 mL	----------	----------	IC-CITR-10X-1
Chlorate	100 mL	IC-CHLR-1X-1	----------	IC-CHLR-10X-1
	500 mL	IC-CHLR-1X-5	----------	IC-CHLR-10X-5
Chloride (Cl)	100 mL	IC-CL-1X-1	IC-CL-2X-1	IC-CL-10X-1
	500 mL	IC-CL-1X-5	IC-CL-2X-5	IC-CL-10X-5
Chlorite	100 mL	----------	----------	IC-CHLT-10X-1
Chromate	100 mL	IC-CHRM-1X-1	----------	IC-CHRM-10X-1
	500 mL	IC-CHRM-1X-5	----------	IC-CHRM-10X-5
Fluoride (F)	100 mL	IC-F-1X-1	IC-F-2X-1	IC-F-10X-1
	500 mL	IC-F-1X-5	IC-F-2X-5	IC-F-10X-5
Formate	100 mL	IC-FORM-1X-1	----------	IC-FORM-10X-1
	500 mL	IC-FORM-1X-5	----------	IC-FORM-10X-5
Glycolate	100 mL	----------	----------	IC-GLYC-10X-1
Iodide	100 mL	----------	----------	IC-I-10X-1
Lactate	100 mL	----------	----------	IC-LACT-10X-1
Malate	100 mL	----------	----------	IC-MALA-10X-1
Maleate	100 mL	----------	----------	IC-MALE-10X-1
Nitrite (NO_2)	100 mL	IC-NO2-1X-1	IC-NO2-2X-1	IC-NO2-10X-1
	500 mL	IC-NO2-1X-5	IC-NO2-2X-5	IC-NO2-10X-5
Nitrate (NO_3)	100 mL	IC-NO3-1X-1	IC-NO3-2X-1	IC-NO3-10X-1
	500 mL	IC-NO3-1X-5	IC-NO3-2X-5	IC-NO3-10X-5
Oxalate	100 mL	IC-OXAL-1X-1	----------	IC-OXAL-10X-1
	500 mL	IC-OXAL-1X-5	----------	IC-OXAL-10X-5
Perchlorate	100 mL	----------	----------	IC-PER-10X-1
Phthalate	100 mL	----------	----------	IC-PHTH-10X-1
Phosphate (PO_4)	100 mL	IC-PO4-1X-1	IC-PO4-2X-1	IC-PO4-10X-1
	500 mL	IC-PO4-1X-5	IC-PO4-2X-5	IC-PO4-10X-5
Propionate	100 mL	----------	----------	IC-PROP-10X-1
Succinate	100 mL	----------	----------	IC-SUCC-10X-1
Sulfate (SO_4)	100 mL	IC-SO4-1X-1	IC-SO4-2X-1	IC-SO4-10X-1
	500 mL	IC-SO4-1X-5	IC-SO4-2X-5	IC-SO4-10X-5
Sulfide	20 mL	----------	----------	IC-SULF-10X-20ML
Dilute NaOH, stabilizer	5 x 20 mL	----------	----------	IC-SULF-10X-20ML-VAP
Tartrate	100 mL	----------	----------	IC-TART-10X-1

Anion Kits

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

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

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

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

Ion Chrom - Ion Singles as the Element

	Unit	100 µg/mL	1000 µg/mL
Nitrite-Nitrogen (NO_2-N)	100 mL	IC-NO2-N-1X-1	IC-NO2-N-10X-1
Water Matrix	500 mL	IC-NO2-N-1X-5	IC-NO2-N-10X-5
Nitrate-Nitrogen (NO_3-N)	100 mL	IC-NO3-N-1X-1	IC-NO3-N-10X-1
Water Matrix	500 mL	IC-NO3-N-1X-5	IC-NO3-N-10X-5
Phosphate-Phosphorus (PO_4-P)	100 mL	IC-PO4-P-1X-1	IC-PO4-P-10X-1
Water Matrix	500 mL	IC-PO4-P-1X-5	IC-PO4-P-10X-5
Sulfate-Sulfur (SO_4-S)	100 mL	IC-SO4-S-1X-1	IC-SO4-S-10X-1
Water Matrix	500 mL	IC-SO4-S-1X-5	IC-SO4-S-10X-5
Ammonium-Nitrogen (NH_4-N)	100 mL	IC-NH4-N-1X-1	IC-NH4-N-10X-1
Water Matrix	500 mL	IC-NH4-N-1X-5	IC-NH4-N-10X-5

Anion Single Kits

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

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

Organic Acid Salt Standard

	Unit	100 µg/mL	1000 µg/mL
Formate	100 mL	IC-FORM-1X-1	IC-FORM-10X-1
Water Matrix	500 mL	IC-FORM-1X-5	IC-FORM-10X-5
Acetate	100 mL	IC-ACET-1X-1	IC-ACET-10X-1
Water Matrix	500 mL	IC-ACET-1X-5	IC-ACET-10X-5
Oxalate	100 mL	IC-OXAL-1X-1	IC-OXAL-10X-1
Water Matrix	500 mL	IC-OXAL-1X-5	IC-OXAL-10X-5
Chromate	100 mL	IC-CHRM-1X-1	IC-CHRM-10X-1
Water Matrix	500 mL	IC-CHRM-1X-5	IC-CHRM-10X-5

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

Mixed Common Anion Stock

M-314.0-MCA-250X-1 **100 mL**
25 mg/mL in Water 3 comps.

Chloride Carbonate
Sulfate

Conductivity Meter Calibration Std.

M-314.0-CMCS-1 **100 mL**

1410 µs/cm @ 25˚C in Water

Method 314.0 Perchlorate Calibration Set

M-314.0-SET **100 mL**

IC-PER-10X-1 M-314.0-CMCS-1
M-314.0-MCA-250X-1

Ion Chrom Eluents

0.5 M Sodium bicarbonate (100X concentrate)	**50 mL** IC-ELU-01-0.5	**100 mL** IC-ELU-01-1	**5 x 50 mL** IC-ELU-01-0.5-PAK	**5 x 100 mL** IC-ELU-01-1-PAK
0.5 M Sodium carbonate (100X concentrate)	**50 mL** IC-ELU-02-0.5	**100 mL** IC-ELU-02-1	**5 x 50 mL** IC-ELU-02-0.5-PAK	**5 x 100 mL** IC-ELU-02-1-PAK
0.18 M Sodium carbonate/ 0.17 M Sodium bicarbonate (100X concentrate)	**50 mL** IC-ELU-03-0.5	**100 mL** IC-ELU-03-1	**5 x 50 mL** IC-ELU-03-0.5-PAK	**5 x 100 mL** IC-ELU-03-1-PAK

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.

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 (O_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 #5
IC-MAN-05-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)	5
Sulfate (SO_4)	30

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 long term stability of our IC products, Nitrite has been removed from mixes that contain Nitrate.

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
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 #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 (N-NO_3)	100
Phosphorus-Phosphate (P-PO_4)	150
Sulfate (SO_4)	150

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

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

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

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

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

We offer several Nitrite concentrations that can be added just prior to analysis for maximum stability.

Ion Chrom - Cation Singles

Matrix	Unit	100 µg/mL Cat. No.	200 µg/mL Cat. No.	1000 µg/mL Cat. No.
Calcium (Ca)	100 mL	IC-CA-1X-1	IC-CA-2X-1	IC-CA-10X-1
Water, tr. HNO_3	500 mL	IC-CA-1X-5	IC-CA-2X-5	IC-CA-10X-5
Ammonium (NH_4)	100 mL	IC-NH4-1X-1	IC-NH4-2X-1	IC-NH4-10X-1 †
Water	500 mL	IC-NH4-1X-5	IC-NH4-2X-5	IC-NH4-10X-5 †
Magnesium (Mg)	100 mL	IC-MG-1X-1	IC-MG-2X-1	IC-MG-10X-1
Water, tr. HNO_3	500 mL	IC-MG-1X-5	IC-MG-2X-5	IC-MG-10X-5
Potassium (K)	100 mL	IC-K-1X-1	IC-K-2X-1	IC-K-10X-1
Water, tr. HNO_3	500 mL	IC-K-1X-5	IC-K-2X-5	IC-K-10X-5
Sodium (Na)	100 mL	IC-NA-1X-1	IC-NA-2X-1	IC-NA-10X-1
Water, tr. HNO_3	500 mL	IC-NA-1X-5	IC-NA-2X-5	IC-NA-10X-5
Lithium (Li)	100 mL	IC-LI-1X-1	IC-LI-2X-1	IC-LI-10X-1
Water, tr. HNO_3	500 mL	IC-LI-1X-5	IC-LI-2X-5	IC-LI-10X-5
Barium (Ba)	100 mL	IC-BA-1X-1	IC-BA-2X-1	IC-BA-10X-1
Water, tr. HNO_3	500 mL	IC-BA-1X-5	IC-BA-2X-5	IC-BA-10X-5
Strontium (Sr)	100 mL	IC-SR-1X-1	IC-SR-2X-1	IC-SR-10X-1
Water, tr. HNO_3	500 mL	IC-SR-1X-5	IC-SR-2X-5	IC-SR-10X-5
Sets 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**

Water tr. HNO_3 Matrix

† 1,000 µg/mL as Ammonium (NH_4) Other Nitrogen species equivalents are:

NH_3 (Ammonia) = 944 µg/mL **N (Nitrogen) = 776 µg/mL**

Ion Chrom - Cation Mixes

Cation Mix #1

IC-MCA-01-1 **100 mL**

At stated conc. (µg/mL) in Dilute HNO_3 6 comps.

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

Cation Mix #2

IC-MCA-02-1 **100 mL**

At stated conc. (µg/mL) in Dilute HNO_3 6 comps.

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

Cation Mix #3

IC-MCA-03-1 **100 mL**

At stated conc. (µg/mL) in Dilute HNO_3 4 comps.

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

Cation Mix #4

IC-MCA-04-1 **100 mL**

At stated conc. (µg/mL) in Dilute HNO_3 4 comps.

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

Cation Mix #5

IC-MCA-05-1 **100 mL**

At stated conc. (µg/mL) in Dilute HNO_3 4 comps.

Ammonium (NH_4)	3
Potassium (K)	6
Sodium (Na)	3
Lithium (Li)	0.5

Cation Mix #6

IC-MCA-06-1 **100 mL**

At stated conc. (µg/mL) in Dilute HNO_3 6 comps.

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

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

✔ Traceability to NIST SRM by Wet Chemical / Gravimetric Assay
✔ Traceability to NIST SRM by Instrumental Analysis
✔ Reference to NIST Traceability during product preparation

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

Many of these methods use classical wet chemical methods to determine the components of either potable or wastewater.

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

Method 300.1 Ion Chrom Standard Revised
IC-MAN-14-R2-1 **100 mL**
At stated conc. (µg/mL) in Water 6 comps.

F (Fluoride)	20
Cl (Chloride)	30
Br (Bromide)	100
NO_3-N (Nitrate-Nitrogen)	100
PO_4-P (Phosphate-Phosphorus)	150
SO_4 (Sulfate)	150

Technical Note

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

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

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

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

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

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

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

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

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

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

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

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

Technical Note

Can also be used for ortho-phosphate analysis.

Technical Note

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

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

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

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

Silica
WC-SIO2-10X-1 **100 mL**
1000 µg/mL as Silica (SiO_2) in Water tr. HF

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

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

Physical & Aggregate Properties

These Standards are concerned primarily with measuring actual physical characteristics of a sample as opposed to the chemical characteristics. 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 $CaCO_3$ to pH 4.5

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

A combination of Ca and Mg to give an approx. concentration of 1000 µg/mL $CaCO_3$. Hardness µg/mL equivalent $CaCO_3$ = 2.497 [Ca µg/mL] + 4.118 [Mg µg/mL]

Conductivity
WC-COND-10X-1 **100 mL**
1000 µmhos in Water

Solids
WC-SOL **sample**
2 comps.

1000 ppm TSS (Total Suspended Solids) and 1000 ppm TDS (Total Disolved Solids) for a 2000 ppm TS (Total Solids).

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

Methylene Blue Activated Substance (MBAS)
WC-MBAS-R1-10X-1 **100 mL**
1000 µg/mL in Water

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

Chemical Oxygen Demand (COD)

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

Total Organic Carbon (TOC)

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

Total Inorganic Carbon (TIC)

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

Total Organic 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

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.

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

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

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 — 2 comps.

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

n-Hexadecane
Stearic acid

Technical Note

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

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.% — 3 comps.

Chlorobenzene	25.0	*n*-Hexadecane	37.5
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 — 3 comps.

Chlorobenzene	1.05	Isooctane	1.55
n-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 — 3 comps.

Chlorobenzene	0.10	Isooctane	0.15
n-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.% — 3 comps.

Chlorobenzene	25.0	Isooctane	37.5
n-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

Quality Control Standards

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

QC Standard #1

QCS-01-1 **100 mL**
QCS-01-5 **500 mL**
100 µg/mL each in 5% HNO_3 tr. HF 23 comps.

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

QC Standard #2

QCS-02-1 **100 mL**
QCS-02-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 7 comps

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

† 1070 µg/mL as SiO_2

QC Standard #2R

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

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

† 214 µg/mL as SiO_2

QC Standard #3

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

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

QC Standard #4

QCS-04-1 **100 mL**
At stated conc. (µg/mL) in 5% HNO_3 19 comps.

Aluminum (Al)	100
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 #5

QCS-05-1 **100 mL**
At stated conc. (µg/mL) in 2% HNO_3 3 comps.

Lithium (Li)	250
Potassium (K)	10,000
Sodium (Na)	1000

QC Standard #6

QCS-06-1 **100 mL**
1000 µg/mL each in 2% HNO_3 4 comps.

- Barium (Ba)
- Calcium (Ca)
- Magnesium (Mg)
- Strontium (Sr)

Quality Control Stds. 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 **1 x 100 mL**
QCS-ASL-7-5 **1 x 500 mL**
At stated conc. (µg/mL) in 2-5% HNO_3 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

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

Second Source QC Standard #2

QCS-ASL-21-1 **1 x 100 mL**
QCS-ASL-21-5 **1 x 500 mL**
100 µg/mL each in 2-5% HNO_3 tr. HF 21 comps.

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

Second Source QC Standard #3

QCS-ASL-19-1 **1 x 100 mL**
QCS-ASL-19-5 **1 x 500 mL**
100 µg/mL each in 2-5% HNO_3 tr. HF 19 comps.

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

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 68 elements** these 4 semi-quantitative standards can be blended together and used immediately.

Semi-Quantitative Standard #1

SQS-01-1 **1 x 100 mL**
10 µg/mL each in 2-5% HNO_3 tr. HF 33 comps.

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

Semi-Quantitative Standard #2

SQS-02-R1-1 **1 x 100 mL**
10 µg/mL each in 2-5% HNO_3 tr. HCl tr. HF 33 comps.

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

Semi-Quantitative Standard #3

SQS-03-1 **1 x 100 mL**
10 µg/mL each in 2-5% HNO_3 2 comps.

- Mercury (Hg)
- Silver (Ag)

Semi-Quantitative Standard #4

SQS-04-1 **1 x 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% HNO_3 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% HNO_3 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% HNO_3 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% HNO_3 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% HNO_3 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

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

Primary Metals for Analysis by ICP-MS

Contains all approved elements
SDWA-06-MS-1 **100 mL**
SDWA-06-MS-5 **500 mL**
10 µg/mL each in 2% HNO_3 11 comps.

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

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 SiO_2

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 & 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 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 SiO_2

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

MISA Test Group 29 Analysis Calibration Standards

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

MISA Standard 1
Rare Earth Metals

MISA-01-1 **100 mL**
100 µg/mL each in 5% HNO_3 18 comps.

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

MISA Standard 2
Precious Metals

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

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

MISA Standard 3
Tellurium

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

- Tellurium (Te)

MISA Standard 4
Alkali, Alkaline Earth, Non-Transition Group

MISA-04-1 **100 mL**
100 µg/mL each in 10% HNO_3 16 comps.

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

MISA 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

MISA Standard 5
Fluoride Soluble Group

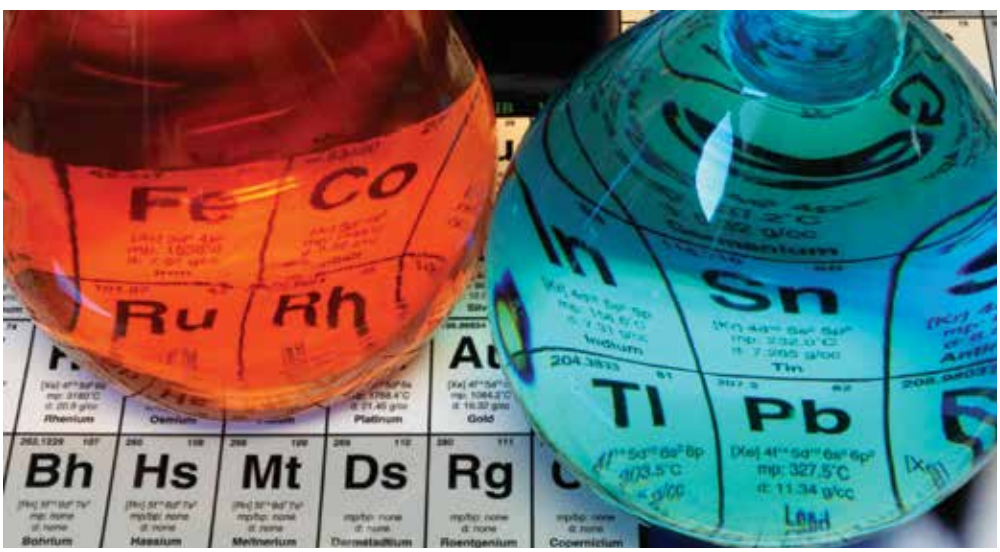
MISA-05-1 **100 mL**
100 µg/mL each in 5% HNO_3 tr. HF 15 comps.

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

MISA Standard 6
Transition Metals

MISA-06-1 **100 mL**
100 µg/mL each in 10% HNO_3 13 comps.

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



Calibration Check Standards

Calibration Standard #1

CLP-CAL-01-1 **100 mL**
5000 µg/mL each in 5% HNO_3 4 comps.

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

Calibration Standard #2

CLP-CAL-02-1 **100 mL**
At stated conc. (µg/mL) in 5% HNO_3 5 comps.

Chromium (Cr)	100
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% HNO_3 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% HNO_3 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% HNO_3

Antimony (Sb)

Calibration Standard #6

CLP-CAL-06-1 **100 mL**
100 µg/mL in 5% HNO_3

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% HNO_3 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% HNO_3 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.

We can provide Custom formulations to meet your needs.

To request a Custom formulation, contact Inorganic Technical Service using our website or Email inotech@accustandard.com.

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

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

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)

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

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

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	CLP-CRDL-02

Technical Note

These standards are prepared to meet the requirements of the 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.

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

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

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% HNO_3 10 comps.

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

Mixed Calibration Standard #2

M-200.7-02R-1 **100 mL**
M-200.7-02R-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 6 comps.

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

Mixed Calibration Standard #3

M-200.7-03R-1 **100 mL**
M-200.7-03R-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 4 comps.

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

Mixed Calibration Standard #4

M-200.7-04-1 **100 mL**
M-200.7-04-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 5 comps.

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

† 214 µg/mL as SiO_2

Mixed Calibration Standard #5

M-200.7-05-1 **100 mL**
M-200.7-05-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 6 comps.

Beryllium (Be)	10
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-200.7-02R-1
M-200.7-03R-1
M-200.7-04-1
M-200.7-05-1

M-200.7-5-R-5-SET **5 x 500 mL**
M-200.7-01-5
M-200.7-02R-5
M-200.7-03-5R
M-200.7-04-5
M-200.7-05-5

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% HNO_3 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% HNO_3 tr. HF 5 comps.

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

† 214 µg/mL as SiO_2

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% HNO_3 tr. HF 29 comps.

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

† 214 µg/mL as SiO_2

Laboratory Fortifying Stock Solution

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

LFSS-01-1 **100 mL**
LFSS-01-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 25 comps.

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

† 53.5 µg/mL as SiO_2

Mercury Standard

In separate solution due to incompatibility with other elements.

TCLP-02-1 **100 mL**
TCLP-02-5 **500 mL**
20 µg/mL in 5% HNO_3

Mercury (Hg)

Technical Note

The analytes Ca, K, Mg, and Na are not included in the stock solution because their concentrations vary widely in environmental samples.

Method 200.7 Fortifying (Spiking & Instrument Performance 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% HNO_3 tr. HF 26 comps.

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

Instrument Fortifying Standard #2

M-200.7-LFSS-02-1 **100 mL**
M-200.7-LFSS-02-5 **500 mL**
20 µg/mL each in 5% HNO_3 tr. HF 5 comps.

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

† 42.78 µg/mL as SiO_2

Method 200.7 Spiking Solutions for Drinking Water

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 in 2% HNO_3 4 comps.

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

Spiking Standard #3

M-200.7-SP-03 **50 mL**
At stated conc. (µg/mL) in 5% HNO_3 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

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	

Spiking Standard #4R

M-200.7-SP-04-R **50 mL**
200 µg/mL in dilute HNO_3

Antimony (Sb)

Spiking Standard #5R

M-200.7-SP-05-R **50 mL**
At stated conc. (µg/mL) in 5% HNO_3 5 comps.

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

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. NH_4OH

Molybdenum (Mo)

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	

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% HNO_3 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% HNO_3 3 comps.

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

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% HNO_3 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% HNO_3 5 comps.

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

Complete Calibration Set 6010B, Rev. 2, 1996 and 6010C, Rev. 3, 2000

MCS-1996-1-SET **7 x 100 mL**

MCS-01-1	MCS-04R-1	MCS-06R-1
MCS-02-1	MCS-05R-1	TCLP-02-1
MCS-03R-1		

MCS-1996-5-SET **7 x 500 mL**

MCS-01-5	MCS-04R-5	MCS-06R-5
MCS-02-5	MCS-05R-5	TCLP-02-5
MCS-03R-5		

Mixed Calibration Standard #3R

MCS-03R-1 **100 mL**
MCS-03R-5 **500 mL**
At stated conc. (µg/mL) in 2% HNO_3 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% HNO_3 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

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 the 1996 Rev. 2 and 2000 Rev. 3.

Mixed Calibration Standard #5R

MCS-05R-1 **100 mL**
MCS-05R-5 **500 mL**
At stated conc. (µg/mL) in 2% HNO_3 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% HNO_3, tr. HF 5 comps.

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

† 214 µg/mL as SiO_2

Mercury Standard

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

TCLP-02-1 **100 mL**
TCLP-02-5 **500 mL**
20 µg/mL in 5% HNO_3

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% HNO_3 tr. HF 23 comps.

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

Spiking Standard #2

QCS-02-1 **100 mL**
QCS-02-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 7 comps.

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

† 1070 µg/mL as SiO_2

QC Standard #2R

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

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

† 214 µg/mL as SiO_2

Mercury Standard

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

TCLP-02-1 **100 mL**
TCLP-02-5 **500 mL**
20 µg/mL in 5% HNO_3

Mercury (Hg)

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

Laboratory Performance Check Standard

LPCS-01R-1 **100 mL**
LPCS-01R-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 30 comps.

Aluminum (Al)	20
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 SiO_2

Primary Interferents

CLP-PIN-01-1 **100 mL**
CLP-PIN-01-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 4 comps.

Aluminum (Al)	5000
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% HNO_3 6 comps.

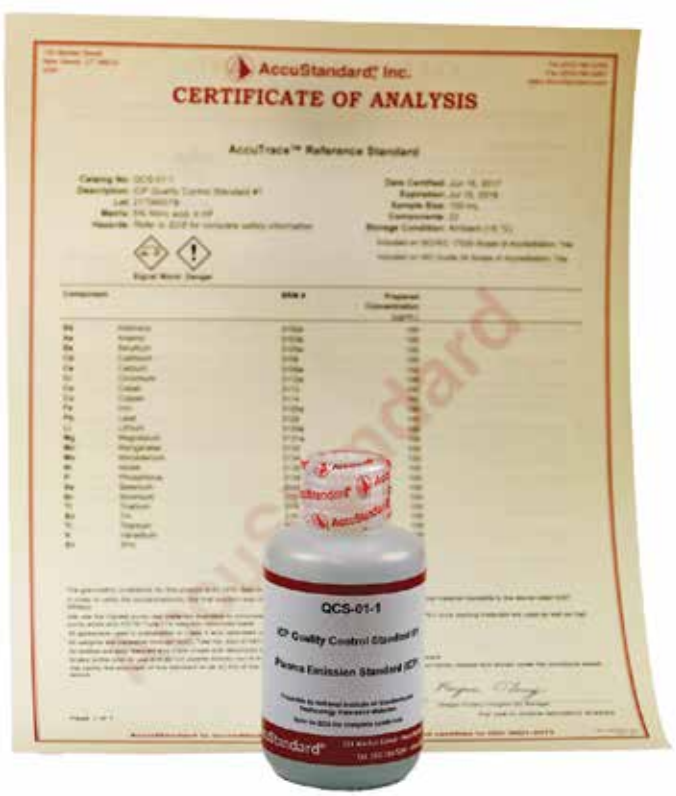
Chromium (Cr)	Nickel (Ni)
Copper (Cu)	Titanium (Ti)
Manganese (Mn)	Vanadium (V)

Set-up Solution

Nebulizer Adjustment Solution

ICP-69N-1 **100 mL**
1000 µg/mL in 2% HNO_3

Yttrium (Y)



ICP Alternate Source

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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 S`ervice Dept. for additional formulations not found on these pages or to cross reference part numbers.

Cross Reference Part No. Index

Agilent	AccuStandard
5183-4681	AG-INT
5183-4682	AG-VER1
5183-4687	AG-SPIKE
5183-4688	AG-CAL
5188-6524	AG-TUN
5188-6525	AG-INTSTD
5188-6526	AG-INTFR-6020 ♦
5188-6527	AG-INTFR2-6020 ♦
5188-6564	AG-TUNSTOCK
5190-0465	AG-TUNSTOCK1
8500-6940	AG-MECAL2A
8500-6942	AG-MECAL4
8500-6944	AG-MECAL1
8500-6948	AG-MECAL3
190024400	VAR-TUN ♦
190064800	AG-INTFA ♦
190024900	AG-ICV7
190025000	AG-QCS27
190025100	AG-ANALTB
6610030000	AG-WAVECAL-10X
6610030100	AG-WAVECAL
6610030400	AG-INT2
6610030500	AG-CAL1
6610030600	AG-CAL2
6610030700	AG-CALMAJOR

Perkin Elmer	
N0582152	PE-UVWAVE
N0691579	PE-MCS ♦
N0691580	PE-UV
N8122014	PE-SETUP2 *
N8122017	PE-CRDL3 * ♦
N8125030	PE-STAB *
N8125031	PE-CRDL4 * ♦
N8125032	PE-SETUP1 *
N8125034	PE-SENS * ♦
N8125040	PE-SMTUNE *
N8125041	PE-SMTUNE2 *
N9300200	PE-MCS1 ♦
N9300201	PE-MCS2 ♦
N9300202	PE-MCS3 ♦
N9300203	PE-MCS4 ♦
N9300204	PE-MCS5 ♦
N9300205	PE-ICS18
N9300208	PE-ICS5
N9300211	PE-WPTM1
N9300212	PE-WPTM2
N9300213	PE-WPTM3
N9300214	PE-WPAM1 ♦

Perkin Elmer	AccuStandard
N9300215	PE-WPAM3 ♦
N9300216	PE-SDWA1 ♦
N9300217	PE-SDWA2 ♦
N9300218	PE-CAL4
N9300219	PE-CAL5 ♦
N9300220	PE-CAL6 ♦
N9300221	PE-CAL7 ♦
N9300224	PE-CRDL1 * ♦
N9300225	PE-CRDL2 ♦
N9300226	PE-INTA ♦
N9300227	PE-ANAB ♦
N9300228	PE-ALTINTA ♦
N9300229	PE-ALTB ♦
N9300230	PE-SPIKE ♦
N9300231	PE-MECAL1
N9300232	PE-MECAL2
N9300233	PE-MECAL3
N9300234	PE-MECAL4
N9300235	PE-MECAL5
N9300280	PE-QC7
N9300281	PE-QC21
N9301720	PE-MECAL3
N9301721	PE-CAL2
N9302946	PE-VISWAVE
N9303816	PE-CAL1
N9303818	PE-CAL3
N9303821	PE-CHK1
N9303822	PE-CHK3
N9303823	PE-CHK4
N9303824	PE-CHK5
N9303825	PE-VER1
N9303826	PE-VER2
N9303827	PE-INTFRA ♦
N9303828	PE-INTFR1 ♦
N9303829	PE-INTFRB ♦
N9303830	PE-INTFR2 ♦
N9303831	PE-INTFRC ♦
N9303832	PE-INT
N9303834	PE-MEINT ♦
N9303835	PE-MEM1 ♦
N9303836	PE-MEM2 ♦
N9303839	PE-SPIKE1 ♦
N9303840	PE-SPIKE2 ♦
N9303841	PE-SPIKE3 ♦
N9303843	PE-TUNSOL
N9307113	PE-MES1 ♦
N9307114	PE-MES2 ♦
N9307115	PE-MES3 ♦
N9307116	PE-MES4 ♦

Horiba/Jobin Yvon	
JYICP-MIXHM	JY-CALHM ♦
JYICP-MIXMAJ	JY-CAL
JYICP-MIX7HSI	JY-QC7
JYICP-MIX9	JY-CHK ♦
JYICP-MIX21	JY-QC21
JYICP-MIX23	JY-QC23
JYICP-QC1	JY-CHK1 ♦

Teledyne	AccuStandard
601-3110	TELE-CHK1 *
601-4101	TELE-CHK2 * ♦
601-4102	TELE-CHK3 * ♦
602-00065	TELE-CHK4 ♦
602-00067	TELE-CHK4 ♦
602-00068	TELE-CHK5 ♦
602-00070	TELE-CHK5 ♦
602-00071	TELE-CHK6 ♦
602-00073	TELE-CHK6 ♦
620-403	TELE-CHK7 ♦
602-00125	TELE-CHK8-0.1X * ♦

Merck	AccuStandard
1.09410	MES-23 ♦
1.09411	MES-24
1.09480	MES-13 *
1.09481	MES-14
1.09482	MES-15 ♦
1.09487	MES-16
1.09490	MES-12 *
1.09491	MES-11 * ♦
1.09492	MES-08 *
1.09493	MES-10 *
1.09494	MES-09 *
1.09495	MES-17
1.09496	MES-19 * ♦
1.09497	MES-20 * ♦
1.09498	MES-21 ♦
1.09499	MES-22 *
1.09500	MES-18
1.10322	MES-07
1.10580	MES-06 *
1.10714	MES-05 * ♦
1.11355	MES-04
1.15474	MES-01
1.15626	MES-03 ♦
1.15708	MES-02 ♦

* Similar formulation
♦ Custom Products

AccuStandard is not affiliated with the companies and brands. They appear for the purpose of cross reference with the corresponding AccuStandard products.

AccuStandard equivalent of Agilent

ICP-OES Wavelength Calibration Solution

AG-WAVECAL-ASL-1 100 mL
AG-WAVECAL-ASL-5 500 mL
AG-WAVECAL-ASL-10X-1 100 mL
AG-WAVECAL-ASL-10X-5 500 mL
At stated conc. (µg/mL) in 1% HNO_3 15 comps.

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

ICP/MS Stock Tuning Solution

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

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

ICP/MS Stock Tuning Solution

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

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

Internal Standard Mix for ICP/MS

AG-INTSTD-ASL-1 100 mL
AG-INTSTD-ASL-5 500 mL
100 µg/mL in 10% HNO_3, tr. HCl 8 comps.

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

QCSTD-27 Quality Control Std

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

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

7500 Series PA Tuning 1

AG-TUN1-ASL-1 100 mL
AG-TUN1-ASL-5 500 mL
At stated conc. (µg/mL) in 5% HNO_3 26 comps.

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

7500 Series PA Tuning 2

AG-TUN2-ASL-1 100 mL
AG-TUN2-ASL-5 500 mL
At stated conc. (µg/mL) in 10% HCl, 1% HNO_3 tr. HF 8 comps.

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

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 / Perkin Elmer

AccuStandard equivalent of Agilent

Environmental Calibration Std.
AG-CAL-ASL-1 **100 mL**
AG-CAL-ASL-5 **500 mL**
At stated conc. (µg/mL) in 10% HNO_3 25 comps.

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

Calibration Mix 1 AA & ICP-OES
AG-CAL1-ASL-1 **100 mL**
AG-CAL1-ASL-5 **500 mL**
100 µg/mL each in 2% HNO_3 tr.HF 4 comps.

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

Calibration Mix 2 AA & ICP-OES
AG-CAL2-ASL-1 **100 mL**
AG-CAL2-ASL-5 **500 mL**
100 µg/mL each in 5% HNO_3 18 comps.

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

Calibration Mix Majors For AA & ICP-OES
AG-CALMAJOR-ASL-1 **100 mL**
AG-CALMAJOR-ASL-5 **500 mL**
500 µg/mL each in 5% HNO_3 5 comps.

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

Internal Standard Mix
AG-INT-ASL-1 **100 mL**
AG-INT-ASL-5 **500 mL**
10 µg/mL each in 5% HNO_3 7 comps.

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

ICP Internal Standard
AG-INT2-ASL-1 **100 mL**
AG-INT2-ASL-5 **500 mL**
100 µg/mL each in 5% HNO_3 6 comps.

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

Multi-Element Calibration Std. 1
AG-MECAL1-ASL-1 **100 mL**
AG-MECAL1-ASL-5 **500 mL**
10 µg/mL each in 5% HNO_3 17 comps.

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

Multi-Element Calibration Std. 2A
AG-MECAL2A-ASL-1 **100 mL**
AG-MECAL2A-ASL-5 **500 mL**
10 µg/mL each in 5% HNO_3 27 comps.

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

Multi-Element Calibration Std. 3
AG-MECAL3-ASL-R-1 **100 mL**
AG-MECAL3-ASL-R-5 **500 mL**
10 µg/mL each in 10% HCl, 1% HNO_3 10 comps.

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

Multi-Element Calibration Std. 4
AG-MECAL4-ASL-R1-1 **100 mL**
AG-MECAL4-ASL-R1-5 **500 mL**
10 µg/mL each in Water, tr. HF 13 comps.

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

Equivalent of Perkin Elmer

Instrument Calibration Std. 1
PE-CAL1-ASL-1 **100 mL**
PE-CAL1-ASL-5 **500 mL**
20 µg/mL each in 2% HNO_3 tr. Tartaric acid 20 comps.

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

Instrument Calibration Std. 2
PE-CAL2-ASL-1 **100 mL**
PE-CAL2-ASL-5 **500 mL**
100 µg/mL each in 5% HNO_3 tr. HF, tr. Tartaric acid 26 comps.

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

Instrument Calibration Std. 3
PE-CAL3-ASL-1 **100 mL**
PE-CAL3-ASL-5 **500 mL**
1000 µg/mL each in 5% HNO_3 5 comps.

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

Instrument Calibration Std. 1
PE-CAL4-ASL-1 **100 mL**
PE-CAL4-ASL-5 **500 mL**
5000 µg/mL each in 5% HNO_3 4 comps.

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

Multi-Element Calibration Std. 2A
AG-MECAL2A-ASL-1 **100 mL**
AG-MECAL2A-ASL-5 **500 mL**
10 µg/mL each in 5% HNO_3 27 comps.

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

ICP Alternate Source
Perkin Elmer

AccuStandard equivalent of Perkin Elmer

Instrument Check Standard 1
PE-CHK1-ASL-1 **100 mL**
PE-CHK1-ASL-5 **500 mL**
10 µg/mL each in 2% HNO_3 tr. HF, tr. Tartaric acid 17 comps.

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

Instrument Check Standard 3
PE-CHK3-ASL-1 **100 mL**
PE-CHK3-ASL-5 **500 mL**
200 µg/mL each in 2% HNO_3 5 comps.

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

Instrument Check Standard 4
PE-CHK4-ASL-1 **100 mL**
PE-CHK4-ASL-5 **500 mL**
10 µg/mL each in 2% HNO_3 3 comps.

Molybdenum (Mo)
Thorium (Th)
Uranium (U)

Instrument Check Standard 5
PE-CHK5-ASL-1 **100 mL**
PE-CHK5-ASL-5 **500 mL**
10 µg/mL each in 2% HNO_3 tr. HF 4 comps.

Molybdenum (Mo)
Tin (Sn)
Strontium (Sr)
Titanium (Ti)

AccuStandard is not affiliated with the companies and brands. They appear for the purpose of cross reference with the corresponding AccuStandard products.

Interference Check Standard 5
PE-ICS5-ASL-1 **100 mL**
PE-ICS5-ASL-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 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% HNO_3 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% HNO_3

Mercury (Hg)

Supplied separately for better product stability.

Internal Standard Mix
PE-INT-ASL-1 **100 mL**
PE-INT-ASL-5 **500 mL**
10 µg/mL each in 5% HNO_3 7 comps.

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

We can provide Custom formulations to meet your needs.

To request a Custom formulation, contact Inorganic Technical Service using our website or Email inotech@accustandard.com.

Multi-Element Calibration Std 1
PE-MECAL1-ASL-1 **100 mL**
PE-MECAL1-ASL-5 **500 mL**
10 µg/mL each in 2% HNO_3 9 comps.

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

Multi-Element Calibration Std 2
PE-MECAL2-ASL-1 **100 mL**
PE-MECAL2-ASL-5 **500 mL**
10 µg/mL each in 5% HNO_3 17 comps.

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

Multi-Element Calibration Std 3
PE-MECAL3-ASL-1-SET **2 x 100 mL**
PE-MECAL3-ASL-5-SET **2 x 500 mL**

PE-MECAL3-ASL
10 µg/mL each in 5% HNO_3 29 comps.

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

PE-MECAL3-HG-ASL
10 µg/mL in 5% HNO_3

Mercury (Hg)

Supplied separately for better product stability.

Multi-Element Calibration Std 4
PE-MECAL4-ASL-R1-1 **100 mL**
PE-MECAL4-ASL-R1-5 **500 mL**
10 µg/mL each in 10% HCl, 1% HNO_3 10 comps.

Gold (Au)
Hafnium (Hf)
Iridium (Ir)
Palladium (Pd)
Platinum (Pt)
Rhodium (Rh)
Ruthenium (Ru)
Antimony (Sb)
Tin (Sn)
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)
Germanium (Ge)
Molybdenum (Mo)
Niobium (Nb)
Phosphorus (P)
Rhenium (Re)
Sulfur (S)
Silicon (Si)
Tantalum (Ta)
Titanium (Ti)
Tungsten (W)
Zirconium (Zr)

AccuStandard equivalent of Perkin Elmer

QC Standard 7 Elements

PE-QC7-ASL-1 **100 mL**
PE-QC7-ASL-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. HF 7 comps.

Potassium (K)	1000
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% HNO_3, tr. HF, tr. Tartaric acid 21 comps.

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

ELAN 9000/6X00 Dual Detector Calibration Solution

PE-SETUP1-ASL-1 **100 mL**
PE-SETUP1-ASL-5 **500 mL**
2 µg/mL each in 2% HNO_3 tr. HCl 5 comps.

Cadmium (Cd)
Copper (Cu)
Lead (Pb)
Magnesium (Mg)
Rhodium (Rh)

Supplied as a 10X concentrate for better stability.

ELAN 6000/5000 Plasma Setup Solution

PE-SETUP2-ASL-1 **100 mL**
PE-SETUP2-ASL-5 **500 mL**
1 µg/mL each in 1% HNO_3 tr. HCl 11 comps.

Barium (Ba)
Cadmium (Cd)
Cerium (Ce)
Copper (Cu)
Germanium (Ge)
Lead (Pb)
Magnesium (Mg)
Rhodium (Rh)
Scandium (Sc)
Terbium (Tb)
Thallium (Tl)

Supplied as a 100X concentrate for better stability.

ELAN 9000/6100 Setup/Stab/ Masscal Solution

PE-STAB-ASL-1 **100 mL**
PE-STAB-ASL-5 **500 mL**
1 µg/mL each in 1% HNO_3 tr. HCl 9 comps.

Barium (Ba)
Cadmium (Cd)
Cerium (Ce)
Copper (Cu)
Indium (In)
Lead (Pb)
Magnesium (Mg)
Rhodium (Rh)
Uranium (U)

Supplied as a 100X concentrate for better stability.

SmartTune Solution for ELAN/DRC-e

PE-SMTUNE-ASL-1 **100 mL**
PE-SMTUNE-ASL-5 **500 mL**
1 µg/mL each in 2% HNO_3 tr. HCl 9 comps.

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

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% HNO_3 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% HNO_3, tr. HCl 12 comps.

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

Low UV Standard

PE-UV-ASL-1 **100 mL**
PE-UV-ASL-5 **500 mL**
10 µg/mL each in 2% HNO_3 3 comps.

Aluminum (Al)
Phosphorus (P)
Sulfur (S)

UV Wavecal Solution

PE-UVWAVE-ASL-R1-1 **100 mL**
PE-UVWAVE-ASL-R1-5 **500 mL**
At stated conc. (µg/mL) in 5% HCl tr. HNO_3 12 comps.

Potassium (K)	100
Phosphorus (P)	100
Sulfur (S)	100
Arsenic (As)	20
Lanthanum (La)	20
Lithium (Li)	20
Manganese (Mn)	20
Molybdenum (Mo)	20
Sodium (Na)	20
Nickel (Ni)	20
Scandium (Sc)	20
Calcium (Ca)	1

VIS Wavecal Solution

PE-VISWAVE-ASL-1 **100 mL**
PE-VISWAVE-ASL-5 **500 mL**
At stated conc. (µg/mL) in 2% HNO_3 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 2

PE-VER2-ASL-R1-1 **100 mL**
PE-VER2-ASL-R1-5 **500 mL**
10 µg/mL each in 2% HNO_3 tr. HF 2 comps.

Tin (Sn)
Titanium (Ti)

Initial Calibration Verification Standard 1

PE-VER1-ASL-1 **100 mL**
PE-VER1-ASL-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 tr. Tartaric acid 26 comps.

Iron (Fe)	1000
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

ICP Alternate Source
Perkin Elmer and Horiba/Jobin Yvon & Teledyne

AccuStandard equivalent of PE

Trace Metals I

PE-WPTM1-ASL-1-SET **2 x 100 mL**
PE-WPTM1-ASL-5-SET **2 x 500 mL**

PE-WPTM1-ASL
At stated conc. (µg/mL) in 5% HNO_3 14 comps.

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

PE-WPTM1-HG-ASL
10 µg/mL in 5% HNO_3

Mercury (Hg)

Supplied separately for better product stability.

Trace Metals II

PE-WPTM2-ASL-1 **100 mL**
PE-WPTM2-ASL-5 **500 mL**
At stated conc. (µg/mL) in 2% HNO_3 3 comps.

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

Trace Metals III

PE-WPTM3-ASL-1 **100 mL**
PE-WPTM3-ASL-5 **500 mL**
At stated conc. (µg/mL) in 2% HNO_3 6 comps.

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

Horiba/Jobin Yvon

Instrument Calibration Standard

JY-CAL-ASL-1 **100 mL**
JY-CAL-ASL-5 **500 mL**
5000 µg/mL each in 2-5% HNO_3 4 comps.

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

Quality Control Standard 7

JY-QC7-ASL-1 **100 mL**
JY-QC7-ASL-5 **500 mL**
At stated conc. (µg/mL) in 5% HNO_3 7 comps.

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

Quality Control Standard 21

JY-QC21-ASL-1 **100 mL**
JY-QC21-ASL-5 **500 mL**
100 µg/mL each in 2-5% HNO_3 tr. HF 21 comps.

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

Quality Control Standard 23

JY-QC23-ASL-1 **100 mL**
JY-QC23-ASL-5 **500 mL**
1000 µg/mL each in 2-5% HNO_3 23 comps.

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

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% HNO_3 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% HNO_3

Silver (Ag)

Supplied separately for better product stability.

AccuStandard equivalent of Merck Multi-Element Standards

ICP Multi-Element Standard Solution I

MES-01-1 **100 mL**
MES-01-5 **500 mL**
At stated conc. (µg/mL) in 1 mol/L HNO_3 19 comps.

Silver (Ag)	50
Aluminum (Al)	100
Boron (B)	15
Barium (Ba)	5
Beryllium (Be)	1
Bismuth (Bi)	200
Cadmium (Cd)	20
Cobalt (Co)	20
Chromium (Cr)	25
Copper (Cu)	20
Iron (Fe)	15
Gallium (Ga)	150
Indium (In)	200
Manganese (Mn)	5
Nickel (Ni)	50
Lead (Pb)	200
Strontium (Sr)	1
Thallium (Tl)	400
Zinc (Zn)	20

ICP Multi-Element Standard Solution IV

MES-04-1 **100 mL**
MES-04-5 **500 mL**
1000 µg/mL each in 1 mol/L HNO_3 23 comps.

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

ICP Multi-Element Standard Solution VII

MES-07-1 **100 mL**
MES-07-5 **500 mL**
100 µg/mL each in Water tr. HNO_3 9 comps.

Ammonium (NH_4)	Magnesium (Mg)
Barium (Ba)	Manganese (Mn)
Calcium (Ca)	Sodium (Na)
Potassium (K)	Strontium (Sr)
Lithium (Li)	

ICP Multi-Element Standard Solution VI for MS

MES-06-1-SET **100 mL**
MES-06-5-SET **500 mL**
At stated conc. (µg/mL) in 1 mol/L HNO_3 tr. HF 29 comps.

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

MES-06-TE
10 µg/mL in 10% HCl
Tellurium (Te)

Supplied separately for better stability

ICP Multi-Element Standard Solution VIII

MES-08-1-SET **2x100 mL**
MES-08-5-SET **2x500 mL**
100 µg/mL each in 1 mol/L HNO_3 23 comps.

MES-08

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 **2x100 mL**
MES-09-5-SET **2x500 mL**
100 µg/mL each in 1 mol/L HNO_3 8 comps.

MES-09

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

MES-09-HG
100 µg/mL in 1 mol/L HNO_3
Mercury (Hg)

Supplied separately for better stability.

ICP Multi-Element Standard Solution X

MES-10-1 **100 mL**
MES-10-5 **500 mL**
At stated conc. (µg/mL) in 1 mol/L HNO_3 23 comps.

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

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

ICP Multi-Element Standard Solution XII

MES-12-1-SET **2x100 mL**
MES-12-5-SET **2x500 mL**
1000 µg/mL each 5% HCl tr. HNO_3 7 comps.

MES-12-R1

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 **2x100 mL**
MES-13-5-SET **2x500 mL**
At stated conc.(µg/mL) in 5% HNO_3 14 comps.

MES-13

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

MES-13-HG
5 µg/mL each in 5% HNO_3
Mercury (Hg)

Supplied separately for better stability

ICP Multi-Element Standard Solution XIV

MES-14-1 **100 mL**
MES-14-5 **500 mL**
At stated conc. (µg/mL) in 2% HCl tr. HNO_3 11 comps.

Phosphorus (P)	100
Sulfur (S)	100
Potassium (K)	100
Arsenic (As)	20
Lanthanum (La)	20
Lithium (Li)	20
Molybdenum (Mo)	20
Manganese (Mn)	20
Nickel (Ni)	20
Scandium (Sc)	20
Sodium (Na)	20

ICP Alternate Source
Merck

AccuStandard equivalent of Merck Multi-Element Standards

ICP Multi-Element Standard Solution XVI

MES-16-1 **100 mL**
MES-16-5 **500 mL**
100 µg/mL each in 5% HNO_3 tr. HF
21 comps.

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

ICP Multi-Element Standard Solution XVII

MES-17-1 **100 mL**
MES-17-5 **500 mL**
100 µg/mL each in in 15% HCl tr. HNO_3
7 comps.

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

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% HNO_3
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 **2x100 mL**
MES-21-5-SET **2x500 mL**
10 µg/mL each in 5% HNO_3
29 comps.

MES-21
Silver (Ag)
Aluminum (Al)
Arsenic (As)
Barium (Ba)
Beryllium (Be)
Bismuth (Bi)
Calcium (Ca)
Cadmium (Cd)
Cobalt (Co)
Chromium (Cr)
Cesium (Cs)
Copper (Cu)
Iron (Fe)
Gallium (Ga)
Indium (In)
Potassium (K)
Lithium (Li)
Magnesium (Mg)
Manganese (Mn)
Sodium (Na)
Nickel (Ni)
Lead (Pb)
Rubidium (Rb)
Selenium (Se)
Strontium (Sr)
Thallium (Tl)
Vanadium (V)
Uranium (U)
Zinc (Zn)

MES-21-HG
10 µg/mL in 5% $HHNO_3$
Mercury (Hg)

Supplied separately for better product stability

ICP Multi-Element Standard Solution XXII for MS

MES-22-1 **100 mL**
MES-22-5 **500 mL**
2 µg/mL each in 2% HNO_3 tr. HCl
5 comps.

Cadmium (Cd)
Copper (Cu)
Magnesium (Mg)
Lead (Pb)
Rhodium (Rh)

Supplied as a 10X concentrate for better stability.

ICP Multi-Element Standard Solution XXIV

MES-24-1 **100 mL**
MES-24-5 **500 mL**
At stated conc. (µg/mL) in 1% HNO_3
15 comps.

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

AccuStandard is not affiliated with the companies and brands on these pages. The brands and company names appear for the purpose of cross reference with the corresponding AccuStandard products.

We can provide Custom formulations to meet your needs.

To request a Custom formulation, contact Inorganic Technical Service using our website or Email inotech@accustandard.com.

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.	100 mL
Blank 1% Aliquot 336/MIBK	D-3237-01	
0.02 g Pb / gal (5.3 mg Pb/ L) in 1% Aliquat 336 / MIBK	D-3237-02	
0.05 g Pb / gal (13.2 mg Pb/ L) in 1% Aliquat 336 / MIBK	D-3237-03	
0.10 g Pb / gal (26.4 mg Pb/ L) in 1% Aliquat 336 / MIBK	D-3237-04	

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**
250 µg/mL each in 75 cSt Hydrocarbon oil 4 comps.

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

Standards of Interest

See 369-374 for a complete listing of Wear Metal Standards.

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**
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

ICP/MS
Multi-Element Standards

■ **Ultra Pure Matrix** ■ **Special Packaging** ■ **Traceability to National Reference Materials**

AccuStandard's 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 FLPE 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% HNO_3 17 comps.

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

Calibration Standard 2

ICP-MS-CAL2-1 **100 mL**
10 µg/mL each in 5% HNO_3 29 comps.

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

Calibration Standard 3

ICP-MS-CAL3-R-1 **100 mL**
10 µg/mL each in 10% HCl, 1% HNO_3 10 comps.

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

Calibration Standard 4

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

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

Calibration Standard 5

ICP-MS-CAL5-1 **100 mL**
10 µg/mL in 5% HNO_3

Element	Most Abundant Isotope
Mercury (Hg)	202

Calibration Standard Set

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

Matrix Blanks

Nitric Acid Blank

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

5% HNO_3 in 18 Megohm ASTM Type I deionized Water

Hydrochloric Acid Blank

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

5% HCl in 18 Megohm ASTM Type I deionized Water

These blanks are prepared from the same water source and acids as your standards and therefore provide a consistent matrix. They are excellent as a blank, 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

Tuning Solutions

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

ICP-MS-TUNSOL1-1 **100 mL**
100 µg/mL each in 2% HNO_3 8 comps.

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

ICP-MS-TUNSOL2-1 **100 mL**
100 µg/mL each in 2% HNO_3 13 comps.

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

Interference Check Standards

Solution A

ICP-MS-INTA-1 **100 mL**
At stated conc. (µg/mL) in 1% HNO_3 12 comps.

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

Solution B

ICP-MS-INTB-1 **100 mL**
At stated conc. (µg/mL) in 2% HNO_3 11 comps.

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

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% HNO_3 24 comps.

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

ICP-MS-MEMCHKA2-R1 **100 mL**
20 µg/mL In 2% HNO_3

Element	Most Abundant Isotope
Silver (Ag)	107

Solution B

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

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

Technical Note

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

Spiking Standards

Spiking Standard for Water

ICP-MS-SPIKE-W-1 **100 mL**

At stated conc. (µg/mL) in 5% HNO_3 17 comps.

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

Spiking Standard for Soil

ICP-MS-SPIKE-S-1 **100 mL**

At stated conc. (µg/mL) in 5% HNO_3 15 comps.

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

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% HNO_3 9 comps.

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

Sample 2

ICP-MS-QC2-1 **100 mL**

10 µg/mL each in 5% HNO_3 25 comps

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

Sample 3

ICP-MS-QC3-1 **100 mL**

10 µg/mL each in 5% HNO_3 tr. HF 21 comps.

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

Internal Standards

Single Internal Standards

For your convenience we offer two concentrations.

Element	Matrix	Unit	10 µg/mL	100 µg/mL
Bismuth	2-5% HNO	100 mL	ICP-MS-IS-BI-1	ICP-MS-IS-BI-10X-1
Holmium	2-5% HNO	100 mL	ICP-MS-IS-HO-1	ICP-MS-IS-HO-10X-1
Indium	2-5% HNO_3	100 mL	ICP-MS-IS-IN-1	ICP-MS-IS-IN-10X-1
Lutetium	2-5% HNO_3	100 mL	ICP-MS-IS-LU-1	ICP-MS-IS-LU-10X-1
Lithium-6	2-5% HNO_3	100 mL	ICP-MS-IS-LI6-1	ICP-MS-IS-LI6-10X-1
Rhodium	10% HCl	100 mL	ICP-MS-IS-RH-1	ICP-MS-IS-RH-10X-1
Scandium	2-5% HNO_3	100 mL	ICP-MS-IS-SC-1	ICP-MS-IS-SC-10X-1
Terbium	2-5% HNO_3	100 mL	ICP-MS-IS-TB-1	ICP-MS-IS-TB-10X-1
Yttrium	2-5% HNO_3	100 mL	ICP-MS-IS-Y-1	ICP-MS-IS-Y-10X-1

Internal Standard Mix

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

ICP-MS-IS-MIX1-1 **100 mL**

10 µg/mL each in 2% HNO_3 7 comps.

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

Method 200.8 Determination of Trace Elements in Water and Waste by ICP/MS

Calibration Standards

Calibration Standard #1 (1991 Version)

ICP-MS-200.8-CAL1-1 **100 mL**

10 µg/mL each in 5% HNO_3 tr. HF 18 comps.

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

Calibration Standard #2

ICP-MS-200.8-CAL2-1 **100 mL**

10 µg/mL each in 2% HNO_3 2 comps.

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

Calibration Standard #1R (1994 Version)

ICP-MS-200.8-CAL1R-1 **100 mL**

At stated conc. (µg/mL) in 2% HNO_3 tr. HF 18 comps.

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

Calibration Standard #3

ICP-MS-200.8-CAL3-1 **100 mL**

1 component in 5% HNO_3

Element	µg/mL	Most Abundant Isotope
Mercury (Hg)	5	202

Internal Standards

Internal Standard #1

ICP-MS-200.8-IS-1 **100 mL**

100 µg/mL each in 2% HNO_3 5 comps.

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

Internal Standard #2

ICP-MS-200.8-IS2-1 **100 mL**

100 µg/mL in 2% HNO_3

Element	Most Abundant Isotope
Gold (Au)	197

see previous pg for single element internal standards

Tuning Standard

ICP-MS-200.8-TUN-1 **100 mL**

10 µg/mL each in 2% HNO_3 5 comps.

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

Method 6020 Standards for Inductively Coupled Mass Spectrometry

Calibration Standard

ICP-MS-6020-CAL-R-1 **100 mL**

10 µg/mL each in 2% HNO_3 22 comps.

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

Interference Check Standard #1

ICP-MS-6020-INT1-1 **100 mL**

At stated conc. (µg/mL) in 2% HNO_3 12 comps.

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

Interference Check Standard #2

ICP-MS-6020-INT2-1 **100 mL**

2 µg/mL each in 5% HNO_3 tr. HF 9 comps.

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

Tuning Standard

ICP-MS-6020-TUN-1 **100 mL**

10 µg/mL each in 2% HNO_3 4 comps.

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

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. All standards undergo rigorous quality assurance checks. Major constituents in the final Standard are typically analyzed by both plasma emission and rotrode techniques. 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. We developed a Premium Organometallic line for chemists preferring to have organometallic standards with <1 ppm sulfur or phosphorus (see Table of Contents).

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

Single Element Organometallic

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

Matrix Oil and Stabilizer

75 cSt Oil
MOSOL-75 — **500 mL**

Stabilizer
WM-STAB — **1 x 50 g**

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

MA-1000-100G — **100 g**
MA-1000-200G — **200 g**
1000 µg/g each in Base oil

MA-3000-100G — **100 g**
MA-3000-200G — **200 g**
3000 µg/g each in Base oil

MA-5000-100G — **100 g**
MA-5000-200G — **200 g**
5000 µg/g each in Base oil — 5 comps.

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

See Petrochemical Section for Metals in Biofuels.

We can provide Custom formulations to meet your needs.

To request a Custom formulation, contact Inorganic Technical Service using our website or Email inotech@accustandard.com.

21 Wear Metal Multi-Element

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

WM-21-100G-SET 7 x 100 g

WM-21-200G-SET 7 x 200 g

21 Wear Metals in base oil at the stated conc.

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

22 Wear Metal Multi-Element

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

100 gram Set WM-22-100G-SET 7 x 100 g

200 gram Set WM-22-200G-SET 7 x 200 g

21 Wear Metals plus K in base oil at the stated conc.

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

23 Wear Metal Multi-Element

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

100 gram Set WM-23-100G-SET 7 x 100 g

200 gram Set WM-23-200G-SET 7 x 200 g

21 Wear Metals plus K and Sb in base oil at the stated conc.

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

Organometallic Standards
Premium Sulfur-Free

Organometallic Single Element Stock Standards

Evnt	1000 µg/g Cat. No. 50 mL	5000 µg/g Cat. No. 50 mL	Element	1000 µg/g Cat. No. 50 mL	5000 µg/g Cat. No. 50 mL
Aluminum (Al)	WM-NMS-01	WM-NMS-01-5X	Mercury (Hg)	WM-NMS-34	WM-NMS-34-5X
Antimony (Sb)	WM-NMS-02	WM-NMS-02-5X	Molybdenum (Mo)	WM-NMS-35	WM-NMS-35-5X
Arsenic (As)	WM-NMS-03	WM-NMS-03-5X	Nickel (Ni)	WM-NMS-37	WM-NMS-37-5X
Barium (Ba)	WM-NMS-04	WM-NMS-04-5X	Phosphorus (P)	WM-NMS-41	WM-NMS-41-5X
Beryllium (Be)	WM-NMS-05	WM-NMS-05-5X	Potassium (K)	WM-NMS-43	WM-NMS-43-5X
Cadmium (Cd)	WM-NMS-08	WM-NMS-08-5X	Selenium (Se)	WM-NMS-51	WM-NMS-51-5X
Calcium (Ca)	WM-NMS-09	WM-NMS-09-5X	Silicon (Si)	WM-NMS-52	WM-NMS-52-5X
Cerium (Ce)	WM-NMS-11	WM-NMS-11-5X	Silver (Ag)	WM-NMS-53	WM-NMS-53-5X
Chromium (Cr)	WM-NMS-13	WM-NMS-13-5X	Sodium (Na)	WM-NMS-54	WM-NMS-54-5X
Cobalt (Co)	WM-NMS-14	WM-NMS-14-5X	Strontium (Sr)	WM-NMS-55	WM-NMS-55-5X
Copper (Cu)	WM-NMS-15	WM-NMS-15-5X	Thallium (Tl)	WM-NMS-60	WM-NMS-60-5X
Gallium (Ga)	WM-NMS-20	WM-NMS-20-5X	Tin (Sn)	WM-NMS-63	WM-NMS-63-5X
Gold (Au)	WM-NMS-22	--- ----	Titanium (Ti)	WM-NMS-64	WM-NMS-64-5X
Iron (Fe)	WM-NMS-27	WM-NMS-27-5X	Vanadium (V)	WM-NMS-67	WM-NMS-67-5X
Lead (Pb)	WM-NMS-29	WM-NMS-29-5X	Yttrium (Y)	WM-NMS-69	WM-NMS-69-5X
Lithium (Li)	WM-NMS-30	WM-NMS-30-5X	Zinc (Zn)	WM-NMS-70	WM-NMS-70-5X
Magnesium (Mg)	WM-NMS-32	WM-NMS-32-5X	Zirconium (Zr)	WM-NMS-71	WM-NMS-71-5X
Manganese (Mn)	WM-NMS-33	WM-NMS-33-5X			

Premium Sulfur-Free

Sulfur below detection limits for most elements

No Metallic Sulfonates

- Stabilized
- Ready for Use

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.

Organometallic standards do not require a hazardous shipping fee except where noted.

21 Wear Metal Multi-Element

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

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. Contact Technical Service for additional information.

Recommended Internal Standard

Organometallic (Internal Standard) Sulfur free

	Conc.	Cat. No.	50 mL
Cobalt	1000 µg/g	WM-NMS-14	
	5000 µg/g	WM-NMS-14-5X	

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)	100 mL
ASTM-P-0102-01	0.00	0.00	0.00	0.00	
ASTM-P-0102-02	0.50	300	10.0	500	
ASTM-P-0102-03	1.00	500	100	25.0	
ASTM-P-0102-04	0.00	100	80.0	250	
ASTM-P-0102-05	2.00	200	40.0	100	
ASTM-P-0102-06	2.50	400	5.00	400	
ASTM-P-0102-07	3.00	0.00	60.0	300	
ASTM-P-0102-08	3.50	500	0.00	200	
ASTM-P-0102-09	0.00	100	100	0.00	
ASTM-P-0102-10	4.50	300	50.0	250	
ASTM-P-0102-11	5.00	200	20.0	500	
ASTM-P-0102-12	5.50	50.0	100	50.0	

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)	100 mL
ASTM-P-0103-01	0.00	0.00	0.00	0.00	
ASTM-P-0103-02	0.50	300	10.0	500	
ASTM-P-0103-03	1.00	500	100	25.0	
ASTM-P-0103-04	0.00	100	80.0	250	
ASTM-P-0103-05	2.00	200	40.0	100	
ASTM-P-0103-06	2.50	400	5.00	400	
ASTM-P-0103-07	3.00	0.00	60.0	300	
ASTM-P-0103-08	3.50	500	0.00	200	
ASTM-P-0103-09	0.00	100	100	0.00	
ASTM-P-0103-10	4.50	300	50.0	250	
ASTM-P-0103-11	5.00	200	20.0	500	
ASTM-P-0103-12	5.50	50	100	50.0	

Stock Multi-Element Standard in Mineral Oil

D-5863-95B-10X-1 — **1 x 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 — **1 x 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.%)	100 mL
ASTM-P-0104-01	0.0005	
ASTM-P-0104-02	0.0025	
ASTM-P-0104-03	0.0050	
ASTM-P-0104-04	0.0075	
ASTM-P-0104-05	0.0100	
ASTM-P-0104-06	0.0125	
ASTM-P-0104-07	0.0150	
ASTM-P-0104-08	0.0175	
ASTM-P-0104-09	0.0200	

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.%)	100 mL
ASTM-P-0105-01	0.0000	
ASTM-P-0105-02	0.0300	
ASTM-P-0105-03	0.0400	
ASTM-P-0105-04	0.0500	
ASTM-P-0105-05	0.0600	
ASTM-P-0105-06	0.0800	
ASTM-P-0105-07	0.1000	

Internal Standard

ASTM-P-0107-5 — **500 mL**

Manganese @ 0.05 Wt. % in Xylene-Mineral Oil

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.%)	100 mL
ASTM-P-0106-01	0.0000	
ASTM-P-0106-02	0.0005	
ASTM-P-0106-03	0.0010	
ASTM-P-0106-04	0.0025	
ASTM-P-0106-05	0.0050	
ASTM-P-0106-06	0.0075	
ASTM-P-0106-07	0.0100	

We can provide Custom formulations to meet your needs.

To request a Custom formulation, contact Inorganic Technical Service using our website or Email inotech@accustandard.com.

Lubricating Oil Standards

Elements in Lubricating Oil

ASTM-P-0108-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ca (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0108-01	0.600	0.005	0.175	0.060
ASTM-P-0108-02	0.500	0.200	0.050	0.080
ASTM-P-0108-03	0.400	0.150	0.300	0.180
ASTM-P-0108-04	0.260	0.250	0.150	0.120
ASTM-P-0108-05	0.005	0.005	0.450	0.070
ASTM-P-0108-06	0.400	0.025	0.350	0.100
ASTM-P-0108-07	0.300	0.060	0.250	0.120
ASTM-P-0108-08	0.200	0.100	0.450	0.100
ASTM-P-0108-09	0.060	0.080	0.300	0.130
ASTM-P-0108-10	0.060	0.050	0.200	0.050
ASTM-P-0108-11	0.050	0.120	0.100	0.075
ASTM-P-0108-12	0.025	0.150	0.200	0.130
ASTM-P-0108-13	0.005	0.200	0.400	0.150
ASTM-P-0108-14	0.170	0.250	0.550	0.110
ASTM-P-0108-15	0.100	0.100	0.200	0.200
ASTM-P-0108-16	0.010	0.010	0.600	0.250
ASTM-P-0108-17	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0109-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ca (Wt.%)	Cl (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0109-01	0.600	0.100	0.005	0.175	0.060
ASTM-P-0109-02	0.500	0.000	0.200	0.050	0.080
ASTM-P-0109-03	0.400	0.010	0.150	0.300	0.180
ASTM-P-0109-04	0.260	0.500	0.250	0.150	0.120
ASTM-P-0109-05	0.005	1.000	0.005	0.450	0.070
ASTM-P-0109-06	0.400	0.400	0.025	0.350	0.100
ASTM-P-0109-07	0.300	0.100	0.060	0.250	0.120
ASTM-P-0109-08	0.200	0.010	0.100	0.450	0.100
ASTM-P-0109-09	0.060	0.050	0.080	0.300	0.130
ASTM-P-0109-10	0.060	0.200	0.050	0.200	0.050
ASTM-P-0109-11	0.050	0.500	0.120	0.100	0.075
ASTM-P-0109-12	0.025	0.800	0.150	0.200	0.130
ASTM-P-0109-13	0.005	1.000	0.200	0.400	0.150
ASTM-P-0109-14	0.170	0.600	0.250	0.550	0.110
ASTM-P-0109-15	0.100	0.200	0.100	0.200	0.200
ASTM-P-0109-16	0.010	0.400	0.010	0.600	0.250
ASTM-P-0109-17	0.000	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0110-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ba (Wt.%)	Ca (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0110-01	0.100	0.600	0.005	0.175	0.060
ASTM-P-0110-02	0.175	0.500	0.200	0.050	0.080
ASTM-P-0110-03	0.000	0.400	0.150	0.300	0.180
ASTM-P-0110-04	0.025	0.260	0.250	0.150	0.120
ASTM-P-0110-05	0.150	0.005	0.005	0.450	0.070
ASTM-P-0110-06	0.000	0.400	0.025	0.350	0.100
ASTM-P-0110-07	0.200	0.300	0.060	0.250	0.120
ASTM-P-0110-08	0.000	0.200	0.100	0.450	0.100
ASTM-P-0110-09	0.100	0.060	0.080	0.300	0.130
ASTM-P-0110-10	0.050	0.060	0.050	0.200	0.050
ASTM-P-0110-11	0.075	0.050	0.120	0.100	0.075
ASTM-P-0110-12	0.010	0.025	0.150	0.200	0.130
ASTM-P-0110-13	0.005	0.005	0.200	0.400	0.150
ASTM-P-0110-14	0.000	0.170	0.250	0.550	0.110
ASTM-P-0110-15	0.000	0.100	0.100	0.200	0.200
ASTM-P-0110-16	0.005	0.010	0.010	0.600	0.250
ASTM-P-0110-17	0.000	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0111-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ba (Wt.%)	Ca (Wt.%)	Cl (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0111-01	0.100	0.600	0.100	0.005	0.175	0.060
ASTM-P-0111-02	0.175	0.500	0.000	0.200	0.050	0.080
ASTM-P-0111-03	0.000	0.400	0.010	0.150	0.300	0.180
ASTM-P-0111-04	0.025	0.260	0.500	0.250	0.150	0.120
ASTM-P-0111-05	0.150	0.005	1.000	0.005	0.450	0.070
ASTM-P-0111-06	0.000	0.400	0.400	0.025	0.350	0.100
ASTM-P-0111-07	0.200	0.300	0.100	0.060	0.250	0.120
ASTM-P-0111-08	0.000	0.200	0.010	0.100	0.450	0.100
ASTM-P-0111-09	0.100	0.060	0.050	0.080	0.300	0.130
ASTM-P-0111-10	0.050	0.060	0.200	0.050	0.200	0.050
ASTM-P-0111-11	0.075	0.050	0.500	0.120	0.100	0.075
ASTM-P-0111-12	0.010	0.025	0.800	0.150	0.200	0.130
ASTM-P-0111-13	0.005	0.005	1.000	0.200	0.400	0.150
ASTM-P-0111-14	0.000	0.170	0.600	0.250	0.550	0.110
ASTM-P-0111-15	0.000	0.100	0.200	0.100	0.200	0.200
ASTM-P-0111-16	0.005	0.010	0.400	0.010	0.600	0.250
ASTM-P-0111-17	0.000	0.000	0.000	0.000	0.000	0.000

Elements in Lubricating Oil

ASTM-P-0112-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ca (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0112-01	0.000	0.000	0.000	0.000	0.000
ASTM-P-0112-02	0.500	0.150	0.200	0.050	0.080
ASTM-P-0112-03	0.400	0.350	0.150	0.300	0.180
ASTM-P-0112-04	0.260	0.225	0.250	0.150	0.120
ASTM-P-0112-05	0.005	0.450	0.005	0.450	0.070
ASTM-P-0112-06	0.400	0.500	0.025	0.350	0.100
ASTM-P-0112-07	0.300	0.325	0.060	0.250	0.120
ASTM-P-0112-08	0.200	0.250	0.100	0.450	0.100
ASTM-P-0112-09	0.060	0.100	0.080	0.300	0.130
ASTM-P-0112-10	0.060	0.400	0.050	0.200	0.050
ASTM-P-0112-11	0.050	0.300	0.120	0.100	0.075
ASTM-P-0112-12	0.025	0.200	0.150	0.200	0.130
ASTM-P-0112-13	0.005	0.375	0.200	0.400	0.150
ASTM-P-0112-14	0.170	0.175	0.250	0.550	0.110
ASTM-P-0112-15	0.100	0.425	0.100	0.200	0.200
ASTM-P-0112-16	0.010	0.275	0.010	0.600	0.250
ASTM-P-0112-17	0.600	0.100	0.005	0.175	0.060

Elements in Lubricating Oil

ASTM-P-0113-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	Ba (Wt.%)	Ca (Wt.%)	Mg (Wt.%)	P (Wt.%)	S (Wt.%)	Zn (Wt.%)
ASTM-P-0113-01	0.025	0.600	0.100	0.005	0.175	0.060
ASTM-P-0113-02	0.000	0.500	0.150	0.200	0.050	0.080
ASTM-P-0113-03	0.100	0.400	0.350	0.150	0.300	0.180
ASTM-P-0113-04	0.175	0.260	0.225	0.250	0.150	0.120
ASTM-P-0113-05	0.150	0.005	0.000	0.005	0.450	0.070
ASTM-P-0113-06	0.000	0.400	0.500	0.025	0.350	0.100
ASTM-P-0113-07	0.100	0.300	0.325	0.060	0.250	0.120
ASTM-P-0113-08	0.200	0.200	0.250	0.100	0.450	0.100
ASTM-P-0113-09	0.050	0.060	0.100	0.080	0.300	0.130
ASTM-P-0113-10	0.075	0.060	0.400	0.050	0.200	0.050
ASTM-P-0113-11	0.010	0.050	0.300	0.120	0.100	0.075
ASTM-P-0113-12	0.000	0.025	0.200	0.150	0.200	0.130
ASTM-P-0113-13	0.175	0.005	0.375	0.200	0.400	0.150
ASTM-P-0113-14	0.005	0.170	0.175	0.250	0.550	0.110
ASTM-P-0113-15	0.000	0.100	0.425	0.100	0.200	0.200
ASTM-P-0113-16	0.005	0.010	0.275	0.010	0.600	0.250
ASTM-P-0113-17	0.000	0.000	0.000	0.000	0.000	0.000

Lubricating Oil Standards (Continued)

Elements in Lubricating Oil

ASTM-P-0114-SET — 17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

Cat. No. Nominal Value	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. Nominal Value	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. Nominal Value	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. Nominal Value	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. Nominal Value	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

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

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

Elements in Lubricating Oil

ASTM-P-0127-SET — **11 x 100 mL**

Designed for Test Method IP 501

Cat # Nominal Value	Al (Wt.%)	Ca (Wt.%)	Fe (Wt.%)	Na (Wt.%)	Ni (Wt.%)	P (Wt.%)	S (Wt.%)	Si (Wt.%)	V (Wt.%)	Zn (Wt.%)
ASTM-P-0127-01	0.0005	0.0010	0.0250	0.0010	0.0050	0.0020	5.0000	0.0050	0.0075	0.0010
ASTM-P-0127-02	0.0100	0.0075	0.0100	0.0000	0.0005	0.0005	2.0000	0.0100	0.0300	0.0002
ASTM-P-0127-03	0.0010	0.0100	0.0000	0.0020	0.0000	0.0010	0.5000	0.0000	0.0350	0.0050
ASTM-P-0127-04	0.0025	0.0030	0.0050	0.0200	0.0075	0.0050	4.0000	0.0250	0.0050	0.0040
ASTM-P-0127-05	0.0075	0.0040	0.0150	0.0005	0.0100	0.0075	0.3000	0.0200	0.0000	0.0015
ASTM-P-0127-06	0.0050	0.0000	0.0075	0.0015	0.0040	0.0100	1.0000	0.0030	0.0100	0.0075
ASTM-P-0127-07	0.0150	0.0050	0.0200	0.0100	0.0020	0.0040	0.7250	0.0150	0.0010	0.0000
ASTM-P-0127-08	0.0000	0.0005	0.0010	0.0000	0.0010	0.0000	0.1000	0.0010	0.0200	0.0020
ASTM-P-0127-09	0.0025	0.0020	0.0005	0.0050	0.0150	0.0025	2.5000	0.0050	0.0005	0.0005
ASTM-P-0127-10	0.0050	0.0150	0.0025	0.0150	0.0025	0.0015	3.0000	0.0025	0.0025	0.0010
ASTM-P-0127-11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Standards of Interest

Concentrations for the sets on pages 371-374 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