

# 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

125 Market Street  
New Haven, CT 06513  
USA



AccuStandard®, Inc.

Tel (203)786-5290  
Fax (203)786-5287  
www.AccuStandard.com

## CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Directly traceable to NIST  
SRM's - where available

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

GHS safety information

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

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)

Density included for easy  
conversion to weight/  
weight applications



Signal Word: Danger

Impurity Scan for 68  
elements in final solution.

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 |

Concentration verified by two  
independent methods for added  
assurance.

Uncertainty reported for statistical confidence.

This solution was assayed titrimetrically, using EDTA which was standardized against NIST SRM #928 (lead nitrate).  
The gravimetric uncertainty for this product is  $\pm 0.2\%$ . 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 1, 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  $\pm 0.5\%$  of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

QC management approval

Certified By:

Meigan O'Leary  
Meigan O'Leary, Inorganic QC Manager

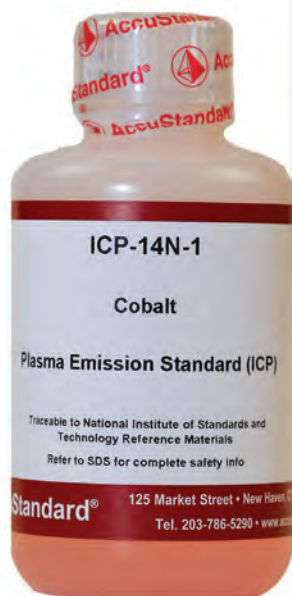
For use in routine laboratory analysis.

QR-ORG/IND-001  
Rev. 7/11

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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                                                                                                 | Matrix                                | Unit   | 1000 µg/mL |                 |
| Starting Material                                                                                       |                                       |        | Cat. No.   | Cat. No.        |
| <b>Aluminum (Al)</b><br>Al(NO <sub>3</sub> ) <sub>3</sub> • 9H <sub>2</sub> O                           | 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   |
| <b>Antimony (Sb)</b><br>Sb                                                                              | 2-5% Nitric acid tr.<br>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   |
| <b>Arsenic (As)</b><br>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   |
| <b>Barium (Ba)</b><br>Ba(NO <sub>3</sub> ) <sub>2</sub>                                                 | 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   |
| <b>Beryllium (Be)</b><br>BeO(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub>                | 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   |
| <b>Bismuth (Bi)</b><br>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   |
| <b>Boron (B)</b><br>H <sub>3</sub> BO <sub>3</sub>                                                      | Water tr. NH <sub>4</sub> OH          | 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   |
| <b>Cadmium (Cd)</b><br>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   |
| <b>Calcium (Ca)</b><br>CaCO <sub>3</sub>                                                                | 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   |
| <b>Cerium (Ce)</b><br>Ce(NO <sub>3</sub> ) <sub>3</sub>                                                 | 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   |
| <b>Cesium (Cs)</b><br>CsNO <sub>3</sub>                                                                 | 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   |
| <b>Chromium reduced to (+3) state</b><br>(NH <sub>4</sub> ) <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> | 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   |
| <b>Cobalt (Co)</b><br>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   |
| <b>Copper (Cu)</b><br>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   |
| <b>Dysprosium (Dy)</b><br>Dy <sub>2</sub> O <sub>3</sub>                                                | 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   |
| <b>Erbium (Er)</b><br>Er <sub>2</sub> O <sub>3</sub>                                                    | 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   |
| <b>Europium (Eu)</b><br>Eu <sub>2</sub> O <sub>3</sub>                                                  | 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   |
| <b>Gadolinium (Gd)</b><br>Gd <sub>2</sub> O <sub>3</sub>                                                | 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   |
| <b>Gallium (Ga)</b><br>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



# ICP

## Single Element

### Single Element ICP

| Element                                                                                 | Starting Material            | Matrix | Unit   | 1000 µg/mL |    | 10,000 µg/mL    |    |
|-----------------------------------------------------------------------------------------|------------------------------|--------|--------|------------|----|-----------------|----|
|                                                                                         |                              |        |        | Cat. No.   |    | Cat. No.        |    |
| <b>Germanium (Ge)</b><br>(NH <sub>4</sub> ) <sub>2</sub> GeF <sub>6</sub>               | 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   |    |
| <b>Gold (Au)</b><br>Au                                                                  | 10% HCl                      |        | 50 mL  | -----      | -- | ICP-22H-10X-0.5 |    |
|                                                                                         |                              |        | 100 mL | ICP-22H-1  |    | ICP-22H-10X-1   |    |
|                                                                                         |                              |        | 500 mL | ICP-22H-5  |    | -----           | -- |
| <b>Hafnium (Hf)</b><br>HfO <sub>2</sub>                                                 | 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   |    |
| <b>Holmium (Ho)</b><br>Ho <sub>2</sub> O <sub>3</sub>                                   | 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   |    |
| <b>Indium (In)</b><br>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   |    |
| <b>Iridium (Ir)</b><br>IrCl <sub>3</sub> • 3H <sub>2</sub> O                            | 10% HCl                      |        | 50 mL  | -----      | -- | ICP-26H-10X-0.5 |    |
|                                                                                         |                              |        | 100 mL | ICP-26H-1  |    | ICP-26H-10X-1   |    |
|                                                                                         |                              |        | 500 mL | ICP-26H-5  |    | -----           | -- |
| <b>Iron (Fe)</b><br>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   |    |
| <b>Lanthanum (La)</b><br>La <sub>2</sub> O <sub>3</sub>                                 | 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   |    |
| <b>Lead (Pb)</b><br>Pb(NO <sub>3</sub> ) <sub>2</sub>                                   | 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   |    |
| <b>Lithium (Li)</b><br>Li <sub>2</sub> CO <sub>3</sub>                                  | 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   |    |
| <b>Lutetium (Lu)</b><br>Lu <sub>2</sub> O <sub>3</sub>                                  | 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  |    | -----           | -- |
| <b>Magnesium (Mg)</b><br>Mg(NO <sub>3</sub> ) <sub>2</sub> •6H <sub>2</sub> O           | 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   |    |
| <b>Manganese (Mn)</b><br>Mn(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>2</sub> | 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   |    |
| <b>Mercury (Hg)</b><br>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   |    |
| <b>Molybdenum (Mo)</b><br>(NH <sub>4</sub> ) <sub>2</sub> MoO <sub>4</sub>              | Water tr. NH <sub>4</sub> OH |        | 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   |    |
| <b>Neodymium (Nd)</b><br>Nd <sub>2</sub> O <sub>3</sub>                                 | 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   |    |
| <b>Nickel (Ni)</b><br>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   |    |
| <b>Niobium (Nb)</b><br>Nb <sub>2</sub> O <sub>5</sub>                                   | 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   |    |
| <b>Palladium (Pd)</b><br>Pd                                                             | 10% HCl                      |        | 50 mL  | -----      | -- | ICP-40H-10X-0.5 |    |
|                                                                                         |                              |        | 100 mL | ICP-40H-1  |    | ICP-40H-10X-1   |    |
|                                                                                         |                              |        | 500 mL | ICP-40H-5  |    | -----           | -- |
| <b>Phosphorus (P)</b><br>NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>                 | 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   |    |
| <b>Platinum (Pt)</b><br>Pt                                                              | 10% HCl                      |        | 50 mL  | -----      | -- | ICP-42H-10X-0.5 |    |
|                                                                                         |                              |        | 100 mL | ICP-42H-1  |    | ICP-42H-10X-1   |    |
|                                                                                         |                              |        | 500 mL | ICP-42H-5  |    | -----           | -- |

# 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                                                                      |                       |        | 1000 µg/mL | 10,000 µg/mL    |
| Starting Material                                                            | Matrix                | Unit   | Cat. No.   | Cat. No.        |
| <b>Potassium (K)</b><br>KNO <sub>3</sub>                                     | 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   |
| <b>Praseodymium (Pr)</b><br>Pr <sub>6</sub> O <sub>11</sub>                  | 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   |
| <b>Rhenium (Re)</b><br>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   |
| <b>Rhodium (Rh)</b><br>RhCl <sub>3</sub> • 3H <sub>2</sub> O                 | 10% HCl               | 50 mL  | -----      | ICP-46H-10X-0.5 |
|                                                                              |                       | 100 mL | ICP-46H-1  | ICP-46H-10X-1   |
|                                                                              |                       | 500 mL | ICP-46H-5  | -----           |
| <b>Rubidium (Rb)</b><br>RbNO <sub>3</sub>                                    | 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   |
| <b>Ruthenium (Ru)</b><br>RuCl <sub>3</sub> • 3H <sub>2</sub> O               | 10% HCl               | 50 mL  | -----      | ICP-48H-10X-0.5 |
|                                                                              |                       | 100 mL | ICP-48H-1  | ICP-48H-10X-1   |
|                                                                              |                       | 500 mL | ICP-48H-5  | -----           |
| <b>Samarium (Sm)</b><br>Sm <sub>2</sub> O <sub>3</sub>                       | 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   |
| <b>Scandium (Sc)</b><br>Sc <sub>2</sub> O <sub>3</sub>                       | 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   |
| <b>Selenium (Se)</b><br>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   |
| <b>Silicon (Si)</b><br>(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub>      | 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   |
| <b>Silver (Ag)</b><br>AgNO <sub>3</sub>                                      | 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   |
| <b>Sodium (Na)</b><br>NaNO <sub>3</sub>                                      | 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   |
| <b>Strontium (Sr)</b><br>Sr(NO <sub>3</sub> ) <sub>2</sub>                   | 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   |
| <b>Sulfur (S)</b><br>(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>         | 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   |
| <b>Tantalum (Ta)</b><br>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   |
| <b>Tellurium (Te)</b><br>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   |
| <b>Terbium (Tb)</b><br>Tb <sub>4</sub> O <sub>7</sub>                        | 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   |
| <b>Thallium (Tl)</b><br>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   |
| <b>Thorium (Th)</b><br>Th(NO <sub>3</sub> ) <sub>4</sub> • 4H <sub>2</sub> O | 2-5% Nitric acid      | -----  | -----      | -----           |
|                                                                              |                       | 100 mL | ICP-61N-1  | -----           |
|                                                                              |                       | 500 mL | ICP-61N-5  | -----           |

**Single Element ICP  
continued on next page**



# ICP

## Single Element

### Single Element ICP

| Element<br>Starting Material                                             | Matrix                       | Unit   | 1000 µg/mL |    | 10,000 µg/mL    |    |
|--------------------------------------------------------------------------|------------------------------|--------|------------|----|-----------------|----|
|                                                                          |                              |        | Cat. No.   |    | Cat. No.        |    |
| <b>Thulium (Tm)</b><br>Tm <sub>2</sub> O <sub>3</sub>                    | 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  |    | -----           | -- |
| <b>Tin (Sn)</b><br>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   |    |
| <b>Titanium (Ti)</b><br>(NH <sub>4</sub> ) <sub>2</sub> TiF <sub>6</sub> | 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   |    |
| <b>Tungsten (W)</b><br>(NH <sub>4</sub> ) <sub>2</sub> WO <sub>4</sub>   | Water tr. NH <sub>4</sub> OH | 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   |    |
| <b>Uranium (U)</b><br>U <sub>3</sub> O <sub>8</sub>                      | 2-5% Nitric acid             | -----  | -----      | -- | -----           | -- |
|                                                                          |                              | 100 mL | ICP-66N-1  |    | -----           | -- |
|                                                                          |                              | 500 mL | ICP-66N-5  |    | -----           | -- |
| <b>Vanadium (V)</b><br>NH <sub>4</sub> VO <sub>3</sub>                   | 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   |    |
| <b>Ytterbium (Y)</b><br>Yb <sub>2</sub> O <sub>3</sub>                   | 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   |    |
| <b>Yttrium (Yb)</b><br>Y <sub>2</sub> O <sub>3</sub>                     | 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   |    |
| <b>Zinc (Zn)</b><br>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   |    |
| <b>Zirconium (Zr)</b><br>ZrO(NO <sub>3</sub> ) <sub>2</sub>              | 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<sub>3</sub> in 18 Megohm ASTM  
Type I deionized Water

#### Hydrochloric Acid Blank

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

5% HCl in 18 Megohm ASTM Type I  
deionized Water

#### Mixed Acid Blank

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

5% HCl + 1% HNO<sub>3</sub> in 18 Megohm  
ASTM Type I deionized Water

#### Water Blank

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

18 Megohm ASTM Type I deionized  
Water

**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](mailto: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

| Element           | Matrix                                  | Unit   | 100 µg/mL          | 1,000 µg/mL       | 10,000 µg/mL |
|-------------------|-----------------------------------------|--------|--------------------|-------------------|--------------|
|                   |                                         |        | Cat. No.           | Cat. No.          | Cat. No.     |
| Aluminum (Al)     | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-01N-0.01X-1 | ICP-MS-01N-0.1X-1 | ICP-MS-01N-1 |
| Antimony (Sb)     | 2-5% HNO <sub>3</sub> 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 <sub>3</sub>                   | 100 mL | ICP-MS-03N-0.01X-1 | ICP-MS-03N-0.1X-1 | ICP-MS-03N-1 |
| Barium (Ba)       | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-04N-0.01X-1 | ICP-MS-04N-0.1X-1 | ICP-MS-04N-1 |
| Beryllium (Be)    | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-05N-0.01X-1 | ICP-MS-05N-0.1X-1 | ICP-MS-05N-1 |
| Bismuth (Bi)      | 2-10% HNO <sub>3</sub>                  | 100 mL | ICP-MS-06N-0.01X-1 | ICP-MS-06N-0.1X-1 | ICP-MS-06N-1 |
| Boron (B)         | Water tr. NH <sub>4</sub> OH            | 100 mL | ICP-MS-07W-0.01X-1 | ICP-MS-07W-0.1X-1 | ICP-MS-07W-1 |
| Cadmium (Cd)      | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-08N-0.01X-1 | ICP-MS-08N-0.1X-1 | ICP-MS-08N-1 |
| Calcium (Ca)      | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-09N-0.01X-1 | ICP-MS-09N-0.1X-1 | ICP-MS-09N-1 |
| Cerium (Ce)       | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-11N-0.01X-1 | ICP-MS-11N-0.1X-1 | ICP-MS-11N-1 |
| Cesium (Cs)       | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-12N-0.01X-1 | ICP-MS-12N-0.1X-1 | ICP-MS-12N-1 |
| Chromium (Cr)     | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-13N-0.01X-1 | ICP-MS-13N-0.1X-1 | ICP-MS-13N-1 |
| Cobalt (Co)       | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-14N-0.01X-1 | ICP-MS-14N-0.1X-1 | ICP-MS-14N-1 |
| Copper (Cu)       | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-15N-0.01X-1 | ICP-MS-15N-0.1X-1 | ICP-MS-15N-1 |
| Dysprosium (Dy)   | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-16N-0.01X-1 | ICP-MS-16N-0.1X-1 | ICP-MS-16N-1 |
| Erbium (Er)       | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-17N-0.01X-1 | ICP-MS-17N-0.1X-1 | ICP-MS-17N-1 |
| Europium (Eu)     | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-18N-0.01X-1 | ICP-MS-18N-0.1X-1 | ICP-MS-18N-1 |
| Gadolinium (Gd)   | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-19N-0.01X-1 | ICP-MS-19N-0.1X-1 | ICP-MS-19N-1 |
| Gallium (Ga)      | 2-5% HNO <sub>3</sub>                   | 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 <sub>3</sub> 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 <sub>3</sub>                   | 100 mL | ICP-MS-24N-0.01X-1 | ICP-MS-24N-0.1X-1 | ICP-MS-24N-1 |
| Indium (In)       | 2-5% HNO <sub>3</sub>                   | 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 <sub>3</sub>                   | 100 mL | ICP-MS-27N-0.01X-1 | ICP-MS-27N-0.1X-1 | ICP-MS-27N-1 |
| Lanthanum (La)    | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-28N-0.01X-1 | ICP-MS-28N-0.1X-1 | ICP-MS-28N-1 |
| Lead (Pb)         | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-29N-0.01X-1 | ICP-MS-29N-0.1X-1 | ICP-MS-29N-1 |
| Lithium (Li)      | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-30N-0.01X-1 | ICP-MS-30N-0.1X-1 | ICP-MS-30N-1 |
| Lutetium (Lu)     | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-31N-0.01X-1 | ICP-MS-31N-0.1X-1 | ICP-MS-31N-1 |
| Magnesium (Mg)    | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-32N-0.01X-1 | ICP-MS-32N-0.1X-1 | ICP-MS-32N-1 |
| Manganese (Mn)    | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-33N-0.01X-1 | ICP-MS-33N-0.1X-1 | ICP-MS-33N-1 |
| Mercury (Hg) ●    | 5-10% HNO <sub>3</sub>                  | 100 mL | ICP-MS-34N-0.01X-1 | ICP-MS-34N-0.1X-1 | ICP-MS-34N-1 |
| Molybdenum (Mo)   | Water tr. NH <sub>4</sub> OH            | 100 mL | ICP-MS-35W-0.01X-1 | ICP-MS-35W-0.1X-1 | ICP-MS-35W-1 |
| Neodymium (Nd)    | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-36N-0.01X-1 | ICP-MS-36N-0.1X-1 | ICP-MS-36N-1 |
| Nickel (Ni)       | 2-5% HNO <sub>3</sub>                   | 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 <sub>3</sub>                   | 100 mL | ICP-MS-43N-0.01X-1 | ICP-MS-43N-0.1X-1 | ICP-MS-43N-1 |
| Praseodymium (Pr) | 2-5% HNO <sub>3</sub>                   | 100 mL | ICP-MS-44N-0.01X-1 | ICP-MS-44N-0.1X-1 | ICP-MS-44N-1 |
| Rhenium (Re)      | Water tr. HNO <sub>3</sub>              | 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



# ICP/MS

## Single Element

### Single Element ICP/MS

| Element        | Matrix                       | Unit   | 100 µg/mL          | 1,000 µg/mL       | 10,000 µg/mL |
|----------------|------------------------------|--------|--------------------|-------------------|--------------|
|                |                              |        | Cat. No.           | Cat. No.          | Cat. No.     |
| Rubidium (Rb)  | 2-5% HNO <sub>3</sub>        | 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 <sub>3</sub>        | 100 mL | ICP-MS-49N-0.01X-1 | ICP-MS-49N-0.1X-1 | ICP-MS-49N-1 |
| Scandium (Sc)  | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-50N-0.01X-1 | ICP-MS-50N-0.1X-1 | ICP-MS-50N-1 |
| Selenium (Se)  | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-51N-0.01X-1 | ICP-MS-51N-0.1X-1 | ICP-MS-51N-1 |
| Silicon (Si)   | H <sub>2</sub> O 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 <sub>3</sub>        | 100 mL | ICP-MS-53N-0.01X-1 | ICP-MS-53N-0.1X-1 | ICP-MS-53N-1 |
| Sodium (Na)    | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-54N-0.01X-1 | ICP-MS-54N-0.1X-1 | ICP-MS-54N-1 |
| Strontium (Sr) | 2-5% HNO <sub>3</sub>        | 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 <sub>3</sub>        | 100 mL | ICP-MS-59N-0.01X-1 | ICP-MS-59N-0.1X-1 | ICP-MS-59N-1 |
| Thallium (Tl)  | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-60N-0.01X-1 | ICP-MS-60N-0.1X-1 | ICP-MS-60N-1 |
| Thorium (Th)   | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-61N-0.01X-1 | ICP-MS-61N-0.1X-1 | ----- --     |
| Thulium (Tm)   | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-62N-0.01X-1 | ICP-MS-62N-0.1X-1 | ICP-MS-62N-1 |
| Tin (Sn)       | 2-5% HNO <sub>3</sub> 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 <sub>4</sub> OH | 100 mL | ICP-MS-65W-0.01X-1 | ICP-MS-65W-0.1X-1 | ICP-MS-65W-1 |
| Uranium (U)    | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-66N-0.01X-1 | ICP-MS-66N-0.1X-1 | ----- --     |
| Vanadium (V)   | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-67N-0.01X-1 | ICP-MS-67N-0.1X-1 | ICP-MS-67N-1 |
| Ytterbium (Y)  | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-68N-0.01X-1 | ICP-MS-68N-0.1X-1 | ICP-MS-68N-1 |
| Yttrium (Yb)   | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-69N-0.01X-1 | ICP-MS-69N-0.1X-1 | ICP-MS-69N-1 |
| Zinc (Zn)      | 2-5% HNO <sub>3</sub>        | 100 mL | ICP-MS-70N-0.01X-1 | ICP-MS-70N-0.1X-1 | ICP-MS-70N-1 |
| Zirconium (Zr) | 2-5% HNO <sub>3</sub>        | 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<sub>3</sub> 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.

#### Hydrochloric Acid Blank

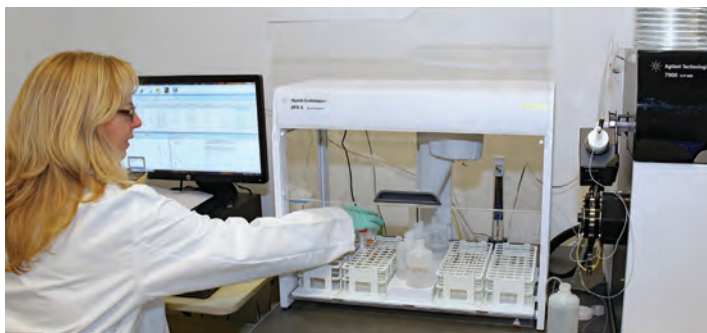
ICP-MS-BLH-1 100 mL  
ICP-MS-BLH-5 500 mL

5% HCl in 18 Megohm ASTM Type I deionized Water

#### Water Blank

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

18 Megohm ASTM Type I deionized Water





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                                 | Unit   | 1000 µg/mL | Element                      | Unit   | 1000 µg/mL |
|-----------------------------------------|--------|------------|------------------------------|--------|------------|
| Matrix                                  |        | Cat. No.   | Matrix                       |        | Cat. No.   |
| <b>Aluminum (Al)</b>                    | 100 mL | AA01N-1    | <b>Molybdenum (Mo)</b>       | 100 mL | AA35W-1    |
| 2-5% Nitric acid                        | 500 mL | AA01N-5    | Water tr. NH <sub>4</sub> OH | 500 mL | AA35W-5    |
| <b>Antimony (Sb)</b>                    | 100 mL | AA02N-1    | <b>Nickel (Ni)</b>           | 100 mL | AA37N-1    |
| 2-5% HNO <sub>3</sub> tr. Tartaric acid | 500 mL | AA02N-5    | 2-5% Nitric acid             | 500 mL | AA37N-5    |
| <b>Arsenic (As)</b>                     | 100 mL | AA03N-1    | <b>Phosphorus (P)</b>        | 100 mL | AA41W-1    |
| 2-5% Nitric acid                        | 500 mL | AA03N-5    | Water                        | 500 mL | AA41W-5    |
| <b>Barium (Ba)</b>                      | 100 mL | AA04N-1    | <b>Potassium (K)</b>         | 100 mL | AA43N-1    |
| 2-5% Nitric acid                        | 500 mL | AA04N-5    | 2-5% Nitric acid             | 500 mL | AA43N-5    |
| <b>Boron (B)</b>                        | 100 mL | AA07W-1    | <b>Selenium (Se)</b>         | 100 mL | AA51N-1    |
| Water tr. NH <sub>4</sub> OH            | 500 mL | AA07W-5    | 2-5% Nitric acid             | 500 mL | AA51N-5    |
| <b>Cadmium (Cd)</b>                     | 100 mL | AA08N-1    | <b>Silicon (Si)</b>          | 100 mL | AA52W-1    |
| 2-5% Nitric acid                        | 500 mL | AA08N-5    | Water tr. HF                 | 500 mL | AA52W-5    |
| <b>Calcium (Ca)</b>                     | 100 mL | AA09N-1    | <b>Silver (Ag)</b>           | 100 mL | AA53N-1    |
| 2-5% Nitric acid                        | 500 mL | AA09N-5    | 2-5% Nitric acid             | 500 mL | AA53N-5    |
| <b>Chromium (Cr)</b>                    | 100 mL | AA13N-1    | <b>Sodium (Na)</b>           | 100 mL | AA54N-1    |
| 2-5% Nitric acid                        | 500 mL | AA13N-5    | 2-5% Nitric acid             | 500 mL | AA54N-5    |
| <b>Cobalt (Co)</b>                      | 100 mL | AA14N-1    | <b>Strontium (Sr)</b>        | 100 mL | AA55N-1    |
| 2-5% Nitric acid                        | 500 mL | AA14N-5    | 2-5% Nitric acid             | 500 mL | AA55N-5    |
| <b>Copper (Cu)</b>                      | 100 mL | AA15N-1    | <b>Sulfur (S)</b>            | 100 mL | AA56W-1    |
| 2-5% Nitric acid                        | 500 mL | AA15N-5    | Water                        | 500 mL | AA56W-5    |
| <b>Gold (Au)</b>                        | 100 mL | AA22H-1    | <b>Thallium (Tl)</b>         | 100 mL | AA60N-1    |
| 5% HCl (min.)                           | 500 mL | AA22H-5    | 2-5% Nitric acid             | 500 mL | AA60N-5    |
| <b>Iron (Fe)</b>                        | 100 mL | AA27N-1    | <b>Tin (Sn)</b>              | 100 mL | AA63N-1    |
| 2-5% Nitric acid                        | 500 mL | AA27N-5    | 2-5% Nitric acid tr. HF      | 500 mL | AA63N-5    |
| <b>Lead (Pb)</b>                        | 100 mL | AA29N-1    | <b>Titanium (Ti)</b>         | 100 mL | AA64W-1    |
| 2-5% Nitric acid                        | 500 mL | AA29N-5    | Water tr. HF                 | 500 mL | AA64W-5    |
| <b>Lithium (Li)</b>                     | 100 mL | AA30N-1    | <b>Vanadium (V)</b>          | 100 mL | AA67N-1    |
| 2-5% Nitric acid                        | 500 mL | AA30N-5    | 5-10% Nitric acid            | 500 mL | AA67N-5    |
| <b>Magnesium (Mg)</b>                   | 100 mL | AA32N-1    | <b>Yttrium (Yb)</b>          | 100 mL | AA69N-1    |
| 2-5% Nitric acid                        | 500 mL | AA32N-5    | 2-5% Nitric acid             | 500 mL | AA69N-5    |
| <b>Manganese (Mn)</b>                   | 100 mL | AA33N-1    | <b>Zinc (Zn)</b>             | 100 mL | AA70N-1    |
| 2-5% Nitric acid                        | 500 mL | AA33N-5    | 2-5% Nitric acid             | 500 mL | AA70N-5    |
| <b>Mercury (Hg) ●</b>                   | 100 mL | AA34N-1    |                              |        |            |
| 2-5% Nitric acid                        | 500 mL | AA34N-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.    |
|----------------------------------------|------------------------------------------------|--------|-------------|
| <b>Ammonium dihydrogen phosphate</b>   | NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> | 50 mL  | MOD-02-0.5  |
| 40% in Water                           |                                                | 100 mL | MOD-02-1    |
| <b>Ammonium nitrate</b>                | NH <sub>4</sub> NO <sub>3</sub>                | 50 mL  | MOD-03-0.5  |
| 5% in Water                            |                                                | 100 mL | MOD-03-1    |
| <b>Magnesium nitrate</b>               | Mg(NO <sub>3</sub> ) <sub>2</sub>              | 50 mL  | MOD-07-0.5  |
| 2% Magnesium in 5% HNO <sub>3</sub>    |                                                | 100 mL | MOD-07-1    |
| <b>Nickel nitrate</b>                  | Ni(NO <sub>3</sub> ) <sub>2</sub>              | 50 mL  | MOD-08-0.5  |
| 5% Nickel in 5% HNO <sub>3</sub>       |                                                | 100 mL | MOD-08-1    |
| <b>Palladium nitrate</b>               | Pd(NO <sub>3</sub> ) <sub>2</sub>              | 50 mL  | MOD-09A-0.5 |
| 0.2% Palladium in 5% HNO <sub>3</sub>  |                                                | 100 mL | MOD-09A-1   |
| <b>Palladium nitrate</b>               | Pd(NO <sub>3</sub> ) <sub>2</sub>              | 50 mL  | MOD-09C-0.5 |
| 1.0% Palladium in 10% HNO <sub>3</sub> |                                                | 100 mL | 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<sub>3</sub> in 18 Megohm ASTM Type I deionized Water

#### Hydrochloric Acid Blank

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

5% HCl in 18 Megohm ASTM Type I deionized Water

#### Mixed Acid Blank

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

5% HCl + 1% HNO<sub>3</sub> in 18 Megohm ASTM Type I deionized Water

#### Water Blank

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

18 Megohm ASTM Type I deionized Water



# 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

| Water Matrix                 | Unit      | 100 µg/mL    | 200 µg/mL   | 1000 µg/mL           |
|------------------------------|-----------|--------------|-------------|----------------------|
|                              |           | 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 <sub>2</sub> )   | 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 <sub>3</sub> )   | 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 <sub>4</sub> ) | 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 <sub>4</sub> )   | 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)               | Bromide (Br)                 |
| Chloride (Cl)              | Phosphate (PO <sub>4</sub> ) |
| Nitrite (NO <sub>2</sub> ) | Sulfate (SO <sub>4</sub> )   |
| Nitrate (NO <sub>3</sub> ) |                              |



## Ion Chrom - Ion Singles as the Element

|                                                | Unit   | 100 µg/mL     | 1000 µg/mL     |
|------------------------------------------------|--------|---------------|----------------|
| <b>Nitrite-Nitrogen (NO<sub>2</sub>-N)</b>     | 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 |
| <b>Nitrate-Nitrogen (NO<sub>3</sub>-N)</b>     | 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 |
| <b>Phosphate-Phosphorus (PO<sub>4</sub>-P)</b> | 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 |
| <b>Sulfate-Sulfur (SO<sub>4</sub>-S)</b>       | 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 |
| <b>Ammonium-Nitrogen (NH<sub>4</sub>-N)</b>    | 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<sub>2</sub>-N)  
 Nitrate-Nitrogen (NO<sub>3</sub>-N)  
 Bromide (Br)  
 Phosphate-Phosphorus (PO<sub>4</sub>-P)  
 Sulfate-Sulfur (SO<sub>4</sub>-S)

## Organic Acid Salt Standard

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

### Conductivity Meter Calibration Std.

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

### Mixed Common Anion Stock

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

### Method 314.0

#### Perchlorate Calibration Set

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



## Ion Chrom Eluents

|                                                                                     |               |             |                   |                 |
|-------------------------------------------------------------------------------------|---------------|-------------|-------------------|-----------------|
| <b>0.5 M Sodium bicarbonate</b><br>(100X concentrate)                               | 50 mL         | 100 mL      | 5 x 50 mL         | 5 x 100 mL      |
|                                                                                     | IC-ELU-01-0.5 | IC-ELU-01-1 | IC-ELU-01-0.5-PAK | IC-ELU-01-1-PAK |
| <b>0.5 M Sodium carbonate</b><br>(100X concentrate)                                 | 50 mL         | 100 mL      | 5 x 50 mL         | 5 x 100 mL      |
|                                                                                     | IC-ELU-02-0.5 | IC-ELU-02-1 | IC-ELU-02-0.5-PAK | IC-ELU-02-1-PAK |
| <b>0.18 M Sodium carbonate/<br/>0.17 M Sodium bicarbonate</b><br>(100X concentrate) | 50 mL         | 100 mL      | 5 x 50 mL         | 5 x 100 mL      |
|                                                                                     | IC-ELU-03-0.5 | IC-ELU-03-1 | IC-ELU-03-0.5-PAK | 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.





# Ion Chromatography

## Anion Mixes

### Anion Mix #1

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

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

### Anion Mix #2

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

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

### Anion Mix #3

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

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

### Anion Mix #4

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

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

### Anion Mix #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 <sub>3</sub> )   | 20 |
| Phosphate (PO <sub>4</sub> ) | 5  |
| Sulfate (SO <sub>4</sub> )   | 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 <sub>3</sub> )   | 5  |
| Phosphate (PO <sub>4</sub> ) | 5  |
| Sulfate (SO <sub>4</sub> )   | 10 |

### Anion Mix #7

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

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

### Anion Mix #8

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

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

### Anion Mix #9

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

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

### Anion Mix #10

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

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

### Anion Mix #11

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

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

### Anion Mix #12

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

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

### Anion Mix #13

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

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

### Anion Mix #14

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

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

### Anion Mix #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 <sub>3</sub> )     | 100 |
| Phosphorus-Phosphate (P-PO <sub>4</sub> ) | 150 |
| Sulfate (SO <sub>4</sub> )                | 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<sub>2</sub>) 100 µg/mL

### Dichloroacetate Surrogate Standard

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

### Nitrite

|                             |            |
|-----------------------------|------------|
| <b>IC-NO2-10X-1</b> 100 mL  |            |
| Nitrite (NO <sub>2</sub> )  | 1000 µg/mL |
| <b>IC-NO2-1X-1</b> 100 mL   |            |
| Nitrite (NO <sub>2</sub> )  | 100 µg/mL  |
| <b>IC-NO2-0.1X-1</b> 100 mL |            |
| Nitrite (NO <sub>2</sub> )  | 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 <sub>3</sub> )   | 100 |
| Phosphate (PO <sub>4</sub> ) | 100 |

### Anion Mix #18

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

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

#### Technical Note

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

#### 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              | 200 µg/mL              | 1000 µg/mL              |
|----------------------------------|-------------------|------------------------|------------------------|-------------------------|
|                                  |                   | Cat. No.               | Cat. No.               | Cat. No.                |
| <b>Calcium (Ca)</b>              | 100 mL            | IC-CA-1X-1             | IC-CA-2X-1             | IC-CA-10X-1             |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-CA-1X-5             | IC-CA-2X-5             | IC-CA-10X-5             |
| <b>Ammonium (NH<sub>4</sub>)</b> | 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 †          |
| <b>Magnesium (Mg)</b>            | 100 mL            | IC-MG-1X-1             | IC-MG-2X-1             | IC-MG-10X-1             |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-MG-1X-5             | IC-MG-2X-5             | IC-MG-10X-5             |
| <b>Potassium (K)</b>             | 100 mL            | IC-K-1X-1              | IC-K-2X-1              | IC-K-10X-1              |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-K-1X-5              | IC-K-2X-5              | IC-K-10X-5              |
| <b>Sodium (Na)</b>               | 100 mL            | IC-NA-1X-1             | IC-NA-2X-1             | IC-NA-10X-1             |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-NA-1X-5             | IC-NA-2X-5             | IC-NA-10X-5             |
| <b>Lithium (Li)</b>              | 100 mL            | IC-LI-1X-1             | IC-LI-2X-1             | IC-LI-10X-1             |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-LI-1X-5             | IC-LI-2X-5             | IC-LI-10X-5             |
| <b>Barium (Ba)</b>               | 100 mL            | IC-BA-1X-1             | IC-BA-2X-1             | IC-BA-10X-1             |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-BA-1X-5             | IC-BA-2X-5             | IC-BA-10X-5             |
| <b>Strontium (Sr)</b>            | 100 mL            | IC-SR-1X-1             | IC-SR-2X-1             | IC-SR-10X-1             |
| Water, tr. HNO <sub>3</sub>      | 500 mL            | IC-SR-1X-5             | IC-SR-2X-5             | IC-SR-10X-5             |
| <b>Sets listed above</b>         | <b>8 x 100 mL</b> | <b>IC-CAT-1X-1-SET</b> | <b>IC-CAT-2X-1-SET</b> | <b>IC-CAT-10X-1-SET</b> |
|                                  | <b>8 x 500 mL</b> | <b>IC-CAT-1X-5-SET</b> | <b>IC-CAT-2X-5-SET</b> | <b>IC-CAT-10X-5-SET</b> |

Water tr. HNO<sub>3</sub> Matrix

† 1,000 µg/mL as Ammonium (NH<sub>4</sub>) Other Nitrogen species equivalents are:

NH<sub>3</sub> (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<sub>3</sub> 6 comps.

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

### Cation Mix #3

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

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

### Cation Mix #5

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

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

### Cation Mix #6

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

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

### Cation Mix #2

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

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

### Cation Mix #4

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

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

**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" <sup>1</sup> 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.

<sup>1</sup> 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 <sub>3</sub> -N (Nitrate-Nitrogen)     | 100 |
| PO <sub>4</sub> -P (Phosphate-Phosphorus) | 150 |
| SO <sub>4</sub> (Sulfate)                 | 150 |

#### Technical Note

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

### Dichloroacetate Surrogate Standard

**M-300.1-SS** 100 mL  
0.5 µg/mL Dichloroacetate in Water

### Cyanide

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

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

### Chloride

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

### Total Residual Chlorine

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

### Fluoride

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

### Iodide

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

### pH

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

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

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

### Phosphorus - Total

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

#### Technical Note

Can also be used for ortho-phosphate analysis.

#### Technical Note

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

### Nitrogen - Ammonium

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

### Nitrogen - Nitrite

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

### Nitrogen - Nitrate

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

### Silica

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

### Sulfate

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

### Hexavalent Chromium

**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<sub>3</sub> to pH 4.5

### Hardness

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

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

### Conductivity

**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 Dissolved 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<sub>2</sub>SO<sub>4</sub>

### Total Inorganic Carbon (TIC)

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

### Total Organic Halides (TOX)

**WC-TOX-10X-1** 1 mL  
**WC-TOX-10X-1-PAK** 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



# TPH, Oil and Grease

## EPA Methods

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

#### Precision and Recovery (PAR) Spiking Solution

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

#### Technical Note

This Precision and Recovery (PAR) Spiking Solution was developed for Method 1664. This performance based method was developed to replace previous gravimetric procedures incorporating Freon-113 as the extraction solvent for the determination of Oil and Grease and Total Petroleum Hydrocarbons. Each standard is packaged in a flame sealed ampule 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 | <i>n</i> -Hexadecane | 37.5 |
| Isooctane       | 37.5 |                      |      |

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

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

### Method 8440 Total Petroleum Hydrocarbon Analysis

#### Total Recoverable Petroleum Hydrocarbon Mix

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

#### Total Petroleum Hydrocarbon Concentrate Mix

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

#### Silica Gel Cleanup Calibration Solution

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



# ICP

## Multi-Element QC and Second Source QC



### 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<sub>3</sub> tr. HF 23 comps.

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

#### QC Standard #2

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

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

† 1070 µg/mL as SiO<sub>2</sub>

#### QC Standard #2R

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

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

† 214 µg/mL as SiO<sub>2</sub>

#### QC Standard #3

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

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

#### QC Standard #4

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

|                |     |
|----------------|-----|
| Aluminum (Al)  | 100 |
| 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<sub>3</sub> 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<sub>3</sub> 4 comps.

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

#### Quality Control Stds. Sets

|                     |                      |
|---------------------|----------------------|
| <b>QCS-1-SET</b>    | <b>3 x 100 mL</b>    |
| QCS-01-1            | QCS-02-1 QCS-03-1    |
| <b>QCS-5-SET</b>    | <b>3 x 500 mL</b>    |
| QCS-01-5            | QCS-02-5 QCS-03-5    |
| <b>QCS-R1-1-SET</b> | <b>3 x 100 mL</b>    |
| QCS-01-1            | QCS-02-R1-1 QCS-03-1 |
| <b>QCS-R1-5-SET</b> | <b>3 x 500 mL</b>    |
| 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<sub>3</sub> tr. HF 7 comps.

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

#### Second Source QC Standard #2

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

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

#### Second Source QC Standard #3

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

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

- NIST Traceable
- Independent Lots
- Exact Match

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



# ICP

## Screening Standards and Groundwater & Wastewater

### 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<sub>3</sub> tr. HF 33 comps.

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

#### Semi-Quantitative Standard #2

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

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

#### Semi-Quantitative Standard #3

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

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

#### Semi-Quantitative Standard #4

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

|           |
|-----------|
| Gold (Au) |
|-----------|

#### Screening Standard Set

|                     |                   |
|---------------------|-------------------|
| <b>SQS-R1-1-SET</b> | <b>4 x 100 mL</b> |
| 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<sub>3</sub> 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<sub>3</sub> 3 comps.

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

#### Trace Metal Sets

|                   |                   |
|-------------------|-------------------|
| <b>WPTM-1-SET</b> | <b>3 x 100 mL</b> |
| WPTM-01-1         | WPTM-02-1         |
| WPTM-03-1         |                   |
| <b>WPTM-5-SET</b> | <b>3 x 500 mL</b> |
| 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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub> 4 comps.

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

#### Alternate Trace Metal Sets

|                   |                   |
|-------------------|-------------------|
| <b>WPAM-1-SET</b> | <b>2 x 100 mL</b> |
| WPAM-01-1         | WPAM-03-1         |
| <b>WPAM-5-SET</b> | <b>2 x 500 mL</b> |
| WPAM-01-5         | WPAM-03-5         |

# ICP

## SDWA (Safe Drinking Water Act) Standards



### SDWA Standards

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

#### Primary Drinking Water Metals

**SDWA-01-1** 100 mL  
**SDWA-01-5** 500 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub>

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<sub>3</sub> 9 comps.

|                |     |
|----------------|-----|
| Arsenic (As)   | 100 |
| Barium (Ba)    | 10  |
| Beryllium (Be) | 10  |
| Cadmium (Cd)   | 10  |
| Calcium (Ca)   | 100 |
| Chromium (Cr)  | 10  |
| Copper (Cu)    | 10  |
| Nickel (Ni)    | 10  |
| Sodium (Na)    | 100 |

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

Contains all approved elements

**SDWA-06-MS-1** 100 mL  
**SDWA-06-MS-5** 500 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 11 comps.

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

#### 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<sub>3</sub> 5 comps.

|                |     |
|----------------|-----|
| Aluminum (Al)  | 10  |
| Iron (Fe)      | 100 |
| Manganese (Mn) | 10  |
| Silver (Ag)    | 10  |
| Zinc (Zn)      | 10  |

#### Primary Metals for Analysis by GFAA

Contains GFAA approved elements

**SDWA-05-1** 100 mL  
**SDWA-05-5** 500 mL  
10 µg/mL each in 2-5% HNO<sub>3</sub> 9 comps.

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

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

**SDWA-07-1** 100 mL  
**SDWA-07-5** 500 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 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<sub>2</sub>

#### 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<sub>3</sub> 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<sub>2</sub>

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



# ICP

## MISA Test Group 29 and ASTM D5184

### MISA Test Group 29 Analysis Calibration Standards

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

#### MISA Standard 1

##### Rare Earth Metals

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

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

#### MISA Standard 2

##### Precious Metals

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

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

#### MISA Standard 3

##### Tellurium

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

Tellurium (Te)

#### MISA Standard 4

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

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

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

#### MISA Standard 5

##### Fluoride Soluble Group

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

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

#### MISA Standard 6

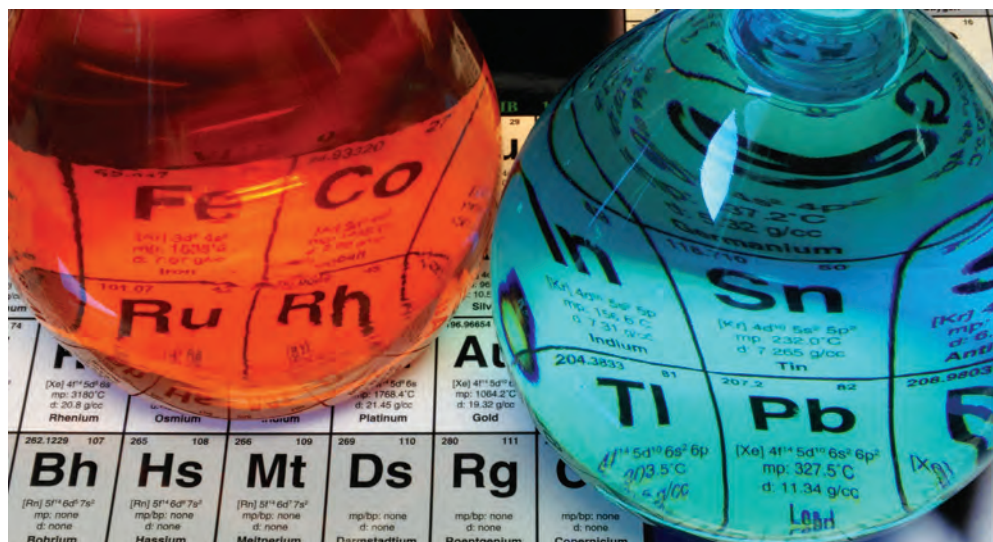
##### Transition Metals

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

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

#### 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





### Calibration Check Standards

#### Calibration Standard #1

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

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

#### Calibration Standard #2

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

|                |     |
|----------------|-----|
| Chromium (Cr)  | 100 |
| 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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub>

Antimony (Sb)

#### Calibration Standard #6

**CLP-CAL-06-1** 100 mL  
100 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

#### CLP Calibration Standard Set

|                      |                       |
|----------------------|-----------------------|
| <b>CLP-CAL-1-SET</b> | <b>6 x 100 mL</b>     |
| 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<sub>3</sub> 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<sub>3</sub> 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](mailto:inotech@accustandard.com).



# ICP

## Contract Laboratory Program (CLP)

### Interference Check & Analyte Standards

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

#### Primary Analytes

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

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 12 comps.

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

#### Alternate Interferents

**CLP-PIN-02-1** 100 mL  
**CLP-PIN-02-5** 500 mL

1000 µg/mL each in 5% HNO<sub>3</sub> 6 comps.

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

#### Alternate Analytes

**CLP-PAN-02-1** 100 mL  
**CLP-PAN-02-5** 500 mL

At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF 12 comps.

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

#### Interferent / Analyte Sets

|                     |                   |
|---------------------|-------------------|
| <b>CLP-IA-1-SET</b> | <b>4 x 100 mL</b> |
| CLP-PIN-01-1        | CLP-PIN-02-1      |
| CLP-PAN-01-1        | CLP-PAN-02-1      |
| <b>CLP-IA-5-SET</b> | <b>4 x 500 mL</b> |
| CLP-PIN-01-5        | CLP-PIN-02-5      |
| CLP-PAN-01-5        | CLP-PAN-02-5      |

#### Primary Interferents

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

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

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

### Detection Limit Standards

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

#### CLP Detection Limits Standard #1

**CLP-CRDL-01-1** 100 mL

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

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

† 214 µg/mL as SiO<sub>2</sub>

#### Mixed Calibration Standard #5

**M-200.7-05-1** 100 mL  
**M-200.7-05-5** 500 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 6 comps.

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

#### Mixed Calibration Stds. Sets

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

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

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

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

### 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<sub>3</sub> 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<sub>3</sub> tr. HF 5 comps.

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

† 214 µg/mL as SiO<sub>2</sub>

### 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<sub>3</sub> tr. HF 29 comps.

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

† 214 µg/mL as SiO<sub>2</sub>

#### Laboratory Fortifying Stock Solution

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

**LFSS-01-1** 100 mL  
**LFSS-01-5** 500 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> tr. HF 25 comps.

|                |    |                 |                                  |
|----------------|----|-----------------|----------------------------------|
| Aluminum (Al)  | 25 | Manganese (Mn)  | 25                               |
| Antimony (Sb)  | 25 | Molybdenum (Mo) | 10                               |
| Arsenic (As)   | 25 | Nickel (Ni)     | 25                               |
| Barium (Ba)    | 25 | Phosphorus (P)  | 50                               |
| Beryllium (Be) | 5  | Selenium (Se)   | 25                               |
| Boron (B)      | 25 | Silicon (Si) †  | 25                               |
| Cadmium (Cd)   | 10 | Silver (Ag)     | 2.5                              |
| Chromium (Cr)  | 25 | Strontium (Sr)  | 25                               |
| Cobalt (Co)    | 10 | Thallium (Tl)   | 25                               |
| Copper (Cu)    | 25 | Tin (Sn)        | 10                               |
| Iron (Fe)      | 25 | Vanadium (V)    | 10                               |
| Lead (Pb)      | 25 | Zinc (Zn)       | 25                               |
| Lithium (Li)   | 25 |                 | † 53.5 µg/mL as SiO <sub>2</sub> |

#### Mercury Standard

In separate solution due to incompatibility with other elements.

**TCLP-02-1** 100 mL  
**TCLP-02-5** 500 mL  
 20 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

#### Technical Note

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



# ICP

## EPA Method 200.7

### 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<sub>3</sub> tr. HF 26 comps.

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

#### Instrument Fortifying Standard #2

**M-200.7-LFSS-02-1** 100 mL  
**M-200.7-LFSS-02-5** 500 mL  
 20 µg/mL each in 5% HNO<sub>3</sub> tr. HF 5 comps.

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

### 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<sub>2</sub>

#### Spiking Standard #2R

**M-200.7-SP-02-R** 50 mL  
**M-200.7-SP-02-R-1** 100 mL  
**M-200.7-SP-02-R-5** 500 mL  
 10,000 µg/mL each in 2% HNO<sub>3</sub> 4 comps.

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

#### Spiking Standard #3

**M-200.7-SP-03** 50 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 12 comps.

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

#### Spiking Standard #4R

**M-200.7-SP-04-R** 50 mL  
 200 µg/mL in dilute HNO<sub>3</sub>

|               |
|---------------|
| Antimony (Sb) |
|---------------|

#### Spiking Standard #5R

**M-200.7-SP-05-R** 50 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 5 comps.

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

#### Method 200.7 Spiking Set

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

### Method 200.7 Interference Check Standards

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

#### SIC Solution #1

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

**SICS-01-1** 100 mL  
**SICS-01-5** 500 mL  
 50 µg/mL in Water tr. NH<sub>4</sub>OH

|                 |
|-----------------|
| Molybdenum (Mo) |
|-----------------|

#### SIC Solution #2

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

**SICS-02-1** 100 mL  
**SICS-02-5** 500 mL  
 At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 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<sub>3</sub> 3 comps.

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

#### Check Solutions Sets

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

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



### 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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub> 8 comps.

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

#### Mixed Calibration Standard #5R

MCS-05R-1 100 mL  
MCS-05R-5 500 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> 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<sub>3</sub>, tr. HF 5 comps.

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

† 214 µg/mL as SiO<sub>2</sub>

#### 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.

#### 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<sub>3</sub>

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<sub>3</sub> tr. HF 23 comps.

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

#### Spiking Standard #2

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

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

† 1070 µg/mL as SiO<sub>2</sub>

#### QC Standard #2R

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

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

#### Mercury Standard

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

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

20 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)



# ICP

## EPA Method 6010

### 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<sub>3</sub> 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<sub>2</sub>

#### Primary Interferents

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

|                |      |
|----------------|------|
| Aluminum (Al)  | 5000 |
| 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<sub>3</sub> 6 comps.

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

#### Set-up Solution

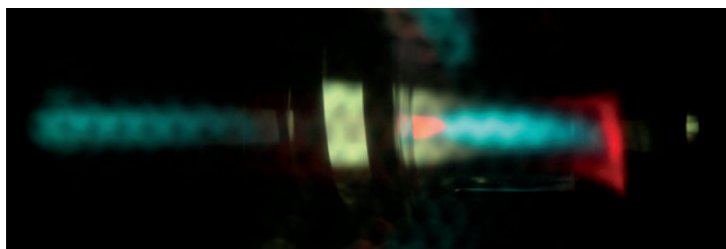
#### Nebulizer Adjustment Solution

ICP-69N-1 100 mL

1000 µg/mL in 2% HNO<sub>3</sub>

Yttrium (Y)





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| <b>Perkin Elmer</b>        | <b>357-360</b> |
| <b>Horiba/Jobin Yvon</b>   | <b>360</b>     |
| <b>Teledyne</b>            | <b>360</b>     |
| <b>Merck ICP Standards</b> | <b>361-362</b> |

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

## Cross Reference Part No. Index

| Instrument          | AccuStandard Cat. No. | Instrument          | AccuStandard Cat. No. | Instrument               | AccuStandard Cat. No. |
|---------------------|-----------------------|---------------------|-----------------------|--------------------------|-----------------------|
| <b>Agilent</b>      |                       | <b>Perkin Elmer</b> |                       | <b>Horiba/Jobin Yvon</b> |                       |
| 5183-4681           | AG-INT                | N9300215            | PE-WPAM3 ♦            | JYICP-MIXHM              | JY-CALHM ♦            |
| 5183-4682           | AG-VER1               | N9300216            | PE-SDWA1 ♦            | JYICP-MIXMAJ             | JY-CAL                |
| 5183-4687           | AG-SPIKE              | N9300217            | PE-SDWA2 ♦            | JYICP-MIX7HSI            | JY-QC7                |
| 5183-4688           | AG-CAL                | N9300218            | PE-CAL4               | JYICP-MIX9               | JY-CHK ♦              |
| 5188-6524           | AG-TUN                | N9300219            | PE-CAL5 ♦             | JYICP-MIX21              | JY-QC21               |
| 5188-6525           | AG-INTSTD             | N9300220            | PE-CAL6 ♦             | JYICP-MIX23              | JY-QC23               |
| 5188-6526           | AG-INTFR-6020 ♦       | N9300221            | PE-CAL7 ♦             | JYICP-QC1                | JY-CHK1 ♦             |
| 5188-6527           | AG-INTFR2-6020 ♦      | N9300224            | PE-CRDL1 * ♦          | <b>Teledyne</b>          |                       |
| 5188-6564           | AG-TUNSTOCK           | N9300225            | PE-CRDL2 ♦            | <b>AccuStandard</b>      |                       |
| 5190-0465           | AG-TUNSTOCK1          | N9300226            | PE-INTA ♦             | 601-3110                 | TELE-CHK1 *           |
| 8500-6940           | AG-MECAL2A            | N9300227            | PE-ANAB ♦             | 601-4101                 | TELE-CHK2 * ♦         |
| 8500-6942           | AG-MECAL4             | N9300228            | PE-ALTINTA ♦          | 601-4102                 | TELE-CHK3 * ♦         |
| 8500-6944           | AG-MECAL1             | N9300229            | PE-ALTB ♦             | 602-00065                | TELE-CHK4 ♦           |
| 8500-6948           | AG-MECAL3             | N9300230            | PE-SPIKE ♦            | 602-00067                | TELE-CHK4 ♦           |
| 190024400           | VAR-TUN ♦             | N9300231            | PE-MECAL1             | 602-00068                | TELE-CHK5 ♦           |
| 190064800           | AG-INTFA ♦            | N9300232            | PE-MECAL2             | 602-00070                | TELE-CHK5 ♦           |
| 190024900           | AG-ICV7               | N9300233            | PE-MECAL3             | 602-00071                | TELE-CHK6 ♦           |
| 190025000           | AG-QCS27              | N9300234            | PE-MECAL4             | 602-00073                | TELE-CHK6 ♦           |
| 190025100           | AG-ANALTB             | N9300235            | PE-MECAL5             | 620-403                  | TELE-CHK7 ♦           |
| 6610030000          | AG-WAVECAL-10X        | N9300280            | PE-QC7                | 602-00125                | TELE-CHK8-0.1X * ♦    |
| 6610030100          | AG-WAVECAL            | N9300281            | PE-QC21               | <b>Merck</b>             |                       |
| 6610030400          | AG-INT2               | N9301720            | PE-MECAL3             | <b>AccuStandard</b>      |                       |
| 6610030500          | AG-CAL1               | N9301721            | PE-CAL2               | 1.09410                  | MES-23 ♦              |
| 6610030600          | AG-CAL2               | N9302946            | PE-VISWAVE            | 1.09411                  | MES-24                |
| 6610030700          | AG-CALMAJOR           | N9303816            | PE-CAL1               | 1.09480                  | MES-13 *              |
| <b>Perkin Elmer</b> |                       | N9303818            | PE-CAL3               | 1.09481                  | MES-14                |
| N0582152            | PE-UVWAVE             | N9303821            | PE-CHK1               | 1.09482                  | MES-15 ♦              |
| N0691579            | PE-MCS ♦              | N9303822            | PE-CHK3               | 1.09487                  | MES-16                |
| N0691580            | PE-UV                 | N9303823            | PE-CHK4               | 1.09490                  | MES-12 *              |
| N8122014            | PE-SETUP2 *           | N9303824            | PE-CHK5               | 1.09491                  | MES-11 * ♦            |
| N8122017            | PE-CRDL3 * ♦          | N9303825            | PE-VER1               | 1.09492                  | MES-08 *              |
| N8125030            | PE-STAB *             | N9303826            | PE-VER2               | 1.09493                  | MES-10 *              |
| N8125031            | PE-CRDL4 * ♦          | N9303827            | PE-INTFRA ♦           | 1.09494                  | MES-09 *              |
| N8125032            | PE-SETUP1 *           | N9303828            | PE-INTFR1 ♦           | 1.09495                  | MES-17                |
| N8125034            | PE-SENS * ♦           | N9303829            | PE-INTFRB ♦           | 1.09496                  | MES-19 * ♦            |
| N8125040            | PE-SMTUNE *           | N9303830            | PE-INTFR2 ♦           | 1.09497                  | MES-20 * ♦            |
| N8125041            | PE-SMTUNE2 *          | N9303831            | PE-INTFRC ♦           | 1.09498                  | MES-21 ♦              |
| N9300200            | PE-MCS1 ♦             | N9303832            | PE-INT                | 1.09499                  | MES-22 *              |
| N9300201            | PE-MCS2 ♦             | N9303834            | PE-MEINT ♦            | 1.09500                  | MES-18                |
| N9300202            | PE-MCS3 ♦             | N9303835            | PE-MEM1 ♦             | 1.10322                  | MES-07                |
| N9300203            | PE-MCS4 ♦             | N9303836            | PE-MEM2 ♦             | 1.10580                  | MES-06 *              |
| N9300204            | PE-MCS5 ♦             | N9303839            | PE-SPIKE1 ♦           | 1.10714                  | MES-05 * ♦            |
| N9300205            | PE-ICS18              | N9303840            | PE-SPIKE2 ♦           | 1.11355                  | MES-04                |
| N9300208            | PE-ICS5               | N9303841            | PE-SPIKE3 ♦           | 1.15474                  | MES-01                |
| N9300211            | PE-WPTM1              | N9303843            | PE-TUNSOL             | 1.15626                  | MES-03 ♦              |
| N9300212            | PE-WPTM2              | N9307113            | PE-MES1 ♦             | 1.15708                  | MES-02 ♦              |
| N9300213            | PE-WPTM3              | N9307114            | PE-MES2 ♦             |                          |                       |
| N9300214            | PE-WPAM1 ♦            | N9307115            | PE-MES3 ♦             |                          |                       |
|                     |                       | N9307116            | PE-MES4 ♦             |                          |                       |

\* 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.



# ICP Alternate Source

## Agilent

### AccuStandard equivalent of Agilent

#### ICP-OES Wavelength Calibration Solution

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

|                 | <b>CAL</b> | <b>CAL-10X</b> |
|-----------------|------------|----------------|
| 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

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

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

#### ICP/MS Stock Tuning Solution

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

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

#### Internal Standard Mix for ICP/MS

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

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

#### QCSTD-27 Quality Control Std

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

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

#### 7500 Series PA Tuning 1

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

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

#### 7500 Series PA Tuning 2

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

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

#### 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

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

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

#### Environmental Initial Calibration Verification

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

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

#### ANALT-B Quality Control Std

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

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

#### ICV-7 Quality Control Standard

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

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



### AccuStandard equivalent of Agilent

#### Environmental Calibration Std.

**AG-CAL-ASL-1** 100 mL  
**AG-CAL-ASL-5** 500 mL  
 At stated conc. (µg/mL) in 10% HNO<sub>3</sub> 25 comps.

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

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

**AG-CAL1-ASL-1** 100 mL  
**AG-CAL1-ASL-5** 500 mL  
 100 µg/mL each in 2% HNO<sub>3</sub> tr. HF 4 comps.

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

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

**AG-CAL2-ASL-1** 100 mL  
**AG-CAL2-ASL-5** 500 mL  
 100 µg/mL each in 5% HNO<sub>3</sub> 18 comps.

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

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

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

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

#### Internal Standard Mix

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

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

#### ICP Internal Standard

**AG-INT2-ASL-1** 100 mL  
**AG-INT2-ASL-5** 500 mL  
 100 µg/mL each in 5% HNO<sub>3</sub> 6 comps.

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

#### Multi-Element Calibration Std. 1

**AG-MECAL1-ASL-1** 100 mL  
**AG-MECAL1-ASL-5** 500 mL  
 10 µg/mL each in 5% HNO<sub>3</sub> 17 comps.

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

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

**AG-MECAL2A-ASL-1** 100 mL  
**AG-MECAL2A-ASL-5** 500 mL  
 10 µg/mL each in 5% HNO<sub>3</sub> 27 comps.

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

#### Multi-Element Calibration Std. 3

**AG-MECAL3-ASL-R-1** 100 mL  
**AG-MECAL3-ASL-R-5** 500 mL  
 10 µg/mL each in 10% HCl, 1% HNO<sub>3</sub> 10 comps.

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

#### Multi-Element Calibration Std. 4

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

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

### Equivalent of Perkin Elmer

#### Instrument Calibration Std. 1

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

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

#### Instrument Calibration Std. 2

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

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

#### Instrument Calibration Std. 3

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

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

#### Instrument Calibration Std. 1

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

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

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

**AG-MECAL2A-ASL-1** 100 mL  
**AG-MECAL2A-ASL-5** 500 mL  
 10 µg/mL each in 5% HNO<sub>3</sub> 27 comps.

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



# 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<sub>3</sub> tr. HF, tr. Tartaric acid  
 17 comps.

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

#### Instrument Check Standard 3

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

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

#### Instrument Check Standard 4

**PE-CHK4-ASL-1** 100 mL  
**PE-CHK4-ASL-5** 500 mL  
 10 µg/mL each in 2% HNO<sub>3</sub> 3 comps.

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

#### Instrument Check Standard 5

**PE-CHK5-ASL-1** 100 mL  
**PE-CHK5-ASL-5** 500 mL  
 10 µg/mL each in 2% HNO<sub>3</sub> tr. HF 4 comps.

|                 |                |
|-----------------|----------------|
| Molybdenum (Mo) | Strontium (Sr) |
| Tin (Sn)        | 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-ICSS-ASL-1** 100 mL  
**PE-ICSS-ASL-5** 500 mL  
 At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub>

Mercury (Hg)

Supplied separately for better product stability.

#### Internal Standard Mix

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

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

#### Multi-Element Calibration Std 1

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

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

#### Multi-Element Calibration Std 2

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

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

#### Multi-Element Calibration Std 3

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

##### PE-MECAL3-ASL

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

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

##### PE-MECAL3-HG-ASL

10 µg/mL in 5% HNO<sub>3</sub>

Mercury (Hg)

Supplied separately for better product stability.

#### Multi-Element Calibration Std 4

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

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

#### Multi-Element Calibration Std 5

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

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

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### AccuStandard equivalent of Perkin Elmer

#### QC Standard 7 Elements

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

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

|               |      |
|---------------|------|
| Potassium (K) | 1000 |
| 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<sub>3</sub>, tr. HF, tr. Tartaric acid  
21 comps.

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

#### 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<sub>3</sub> tr. HCl 5 comps.

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

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<sub>3</sub> tr. HCl 11 comps.

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

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<sub>3</sub> tr. HCl 9 comps.

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

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<sub>3</sub> tr. HCl 9 comps.

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

Supplied as a 100X concentrate for better stability.

#### SmartTune Solution for DRC/DRC<sup>Plus</sup>/DRC II

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

At stated conc. (µg/mL) in 0.5% HNO<sub>3</sub> 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<sub>3</sub>, tr. HCl 12 comps.

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

#### Low UV Standard

**PE-UV-ASL-1** 100 mL  
**PE-UV-ASL-5** 500 mL

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

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

#### 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<sub>3</sub>  
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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub>

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<sub>3</sub> 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<sub>3</sub> 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<sub>3</sub> 4 comps.

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

#### Quality Control Standard 7

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

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

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

#### Quality Control Standard 21

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

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

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

#### Quality Control Standard 23

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

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

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

### 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<sub>3</sub> 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<sub>3</sub>

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<sub>3</sub> 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<sub>3</sub> 23 comps.

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

#### ICP Multi-Element Standard Solution VII

**MES-07-1** 100 mL  
**MES-07-5** 500 mL  
 100 µg/mL each in Water tr. HNO<sub>3</sub> 9 comps.

|                             |                |
|-----------------------------|----------------|
| Ammonium (NH <sub>4</sub> ) | 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<sub>3</sub> tr. HF 29 comps.

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

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

Supplied separately for better stability

#### 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<sub>3</sub> 23 comps.

|                |                |
|----------------|----------------|
| <b>MES-08</b>  |                |
| 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<sub>3</sub> 8 comps.

|                |               |
|----------------|---------------|
| <b>MES-09</b>  |               |
| Arsenic (As)   | Chromium (Cr) |
| Beryllium (Be) | Nickel (Ni)   |
| Lead (Pb)      | Selenium (Se) |
| Cadmium (Cd)   | Thallium (Tl) |

**MES-09-HG**  
 100 µg/mL in 1 mol/L HNO<sub>3</sub>  
 Mercury (Hg)

Supplied separately for better stability.

#### ICP Multi-Element Standard Solution X

**MES-10-1** 100 mL  
**MES-10-5** 500 mL  
 At stated conc. (µg/mL) in 1 mol/L HNO<sub>3</sub> 23 comps.

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

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

#### ICP Multi-Element Standard Solution XII

**MES-12-1-SET** 2x100 mL  
**MES-12-5-SET** 2x500 mL  
 1000 µg/mL each 5% HCl tr. HNO<sub>3</sub> 7 comps.

|                  |              |
|------------------|--------------|
| <b>MES-12-R1</b> |              |
| 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<sub>3</sub> 14 comps.

|                |     |
|----------------|-----|
| <b>MES-13</b>  |     |
| Aluminum (Al)  | 500 |
| Arsenic (As)   | 100 |
| Beryllium (Be) | 100 |
| Cadmium (Cd)   | 25  |
| Cobalt (Co)    | 100 |
| Chromium (Cr)  | 100 |
| Copper (Cu)    | 100 |
| Iron (Fe)      | 100 |
| Manganese (Mn) | 100 |
| Nickel (Ni)    | 100 |
| Lead (Pb)      | 100 |
| Selenium (Se)  | 25  |
| Vanadium (V)   | 250 |
| Zinc (Zn)      | 100 |

**MES-13-HG**  
 5 µg/mL each in 5% HNO<sub>3</sub>  
 Mercury (Hg)

Supplied separately for better stability

#### ICP Multi-Element Standard Solution XIV

**MES-14-1** 100 mL  
**MES-14-5** 500 mL  
 At stated conc. (µg/mL) in 2% HCl tr. HNO<sub>3</sub> 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<sub>3</sub> tr. HF  
 21 comps.

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

#### ICP Multi-Element Standard Solution XVII

**MES-17-1** 100 mL  
**MES-17-5** 500 mL  
 100 µg/mL each in 15% HCl tr.  
 HNO<sub>3</sub> 7 comps.

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

#### ICP Multi-Element 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<sub>3</sub> 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<sub>3</sub>  
 29 comps.

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

**MES-21-HG**  
 10 µg/mL in 5% HHNO<sub>3</sub>  
 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<sub>3</sub> tr. HCl  
 5 comps.

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

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<sub>3</sub> 15 comps.

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

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## ASTM D3230 Determination of Salts in Crude Oil

### Mixed Salt Solution

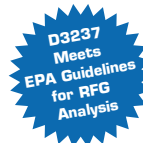
|                                                                                       |        |
|---------------------------------------------------------------------------------------|--------|
| D-3230-89-1                                                                           | 100 mL |
| D-3230-89-5                                                                           | 500 mL |
| At stated conc. (µg/mL) in Alcohol Solution (1-butanol : MeOH) (ratio 63:37) 3 comps. |        |
| Calcium chloride                                                                      | 10     |
| Magnesium chloride                                                                    | 20     |
| Sodium chloride                                                                       | 70     |

## 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% Aliquat 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 |        |



## 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 |            |



Thousands of Standards, just a click away

**AccuStandard.com**



# 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<sub>3</sub> 17 comps.

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

#### Calibration Standard 2

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

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

#### Calibration Standard 3

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

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

#### Calibration Standard 4

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

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

#### Calibration Standard 5

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

| Element      | Most Abundant Isotope |
|--------------|-----------------------|
| Mercury (Hg) | 202                   |

#### Calibration Standard Set

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

### Matrix Blanks

#### Nitric Acid Blank

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

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

#### Hydrochloric Acid Blank

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

5% HCl in 18 Megohm ASTM Type I deionized Water

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

#### Water Blank

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

18 Megohm ASTM Type I deionized Water

# ICP/MS

## Multi-Element Standards



### Tuning Solutions

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

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

| Element     | Most Abundant Isotope |
|-------------|-----------------------|
| Silver (Ag) | 107                   |

#### Solution B

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

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

### Technical Note

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





# ICP/MS

## Multi-Element Standards

### Spiking Standards

#### Spiking Standard for Water

ICP-MS-SPIKE-W-1 100 mL

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

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

#### Spiking Standard for Soil

ICP-MS-SPIKE-S-1 100 mL

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

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

#### Spiking Standard Set

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

### Quality Control

#### Sample 1

ICP-MS-QC1-1

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

| Element        | 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

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

| Element         | Isotope |
|-----------------|---------|
| Aluminum (Al)   | 27      |
| Antimony (Sb)   | 121     |
| Arsenic (As)    | 75      |
| Barium (Ba)     | 138     |
| Beryllium (Be)  | 9       |
| Cadmium (Cd)    | 114     |
| Calcium (Ca)    | 40      |
| Chromium (Cr)   | 52      |
| Cobalt (Co)     | 59      |
| Copper (Cu)     | 63      |
| Iron (Fe)       | 56      |
| Lead (Pb)       | 208     |
| Magnesium (Mg)  | 24      |
| Manganese (Mn)  | 55      |
| 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

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

| Element         | 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 <sub>3</sub> | 100 mL | ICP-MS-IS-IN-1  | ICP-MS-IS-IN-10X-1  |
| Lutetium  | 2-5% HNO <sub>3</sub> | 100 mL | ICP-MS-IS-LU-1  | ICP-MS-IS-LU-10X-1  |
| Lithium-6 | 2-5% HNO <sub>3</sub> | 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 <sub>3</sub> | 100 mL | ICP-MS-IS-SC-1  | ICP-MS-IS-SC-10X-1  |
| Terbium   | 2-5% HNO <sub>3</sub> | 100 mL | ICP-MS-IS-TB-1  | ICP-MS-IS-TB-10X-1  |
| Yttrium   | 2-5% HNO <sub>3</sub> | 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<sub>3</sub> 7 comps.

| Element          | 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<sub>3</sub> tr. HF 18 comps.

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

##### Calibration Standard #2

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

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

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

ICP-MS-200.8-CAL1R-1 100 mL  
At stated conc. (µg/mL) in 2% HNO<sub>3</sub> tr. HF 18 comps.

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

##### Calibration Standard #3

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

| Element      | µg/mL | Isotope |
|--------------|-------|---------|
| Mercury (Hg) | 5     | 202     |

#### Internal Standards

##### Internal Standard #1

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

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

##### Internal Standard #2

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

| Element   | Isotope |
|-----------|---------|
| Gold (Au) | 197     |

see previous pg for  
single element internal standards

##### Tuning Standard

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

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

### Method 6020 Standards for Inductively Coupled Mass Spectrometry

##### Calibration Standard

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

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

##### Interference Check Standard #1

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

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

##### Interference Check Standard #2

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

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

##### Tuning Standard

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

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



# 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
- Formulated from Ultra High Purity Organometallic starting materials & matrices
- Prepared Calibration Curves
- Certificate of Analysis

### Single Element Organometallic

| Element         | 1000 µg/g in 75 cSt base oil<br>Cat. No. (50 g) | 5000 µg/g in 75 cSt base oil<br>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)      Phosphorus (P)  
Calcium (Ca)      Zinc (Zn)  
Magnesium (Mg)

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](mailto:inotech@accustandard.com).

# Organometallic Standards

## AA, ICP, DCP & XRF Analysis



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

### 22 Wear Metal Multi-Element

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

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





# Organometallic Standards

## Premium Sulfur-Free

### Organometallic Single Element Stock Standards

| Evnt           | 1000 µg/g<br>Cat. No. | 50 mL | 5000 µg/g<br>Cat. No. | 50 mL | Element         | 1000 µg/g<br>Cat. No. | 50 mL | 5000 µg/g<br>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.

### 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)      |

#### 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 |       |

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

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

#### 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.

# Organometallic Standards

## AA, ICP, DCP & XRF Analysis



### Sulfur and Metals in Oil

#### Test Method A - ICP with an Organic Solvent Specimen Solution

##### Sulfur and Metals in Mineral Oil

| Designed for ASTM D5708 |                |             |               |                 |        |
|-------------------------|----------------|-------------|---------------|-----------------|--------|
| ASTM-P-0102-SET         |                |             |               |                 |        |
| 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         |                |             |               |                 |        |
| 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                |        |

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              |        |

##### Internal Standard

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

**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](mailto:inotech@accustandard.com).



# Organometallic Standards

## AA, ICP, DCP & XRF Analysis

### Lubricating Oil Standards

#### Elements in Lubricating Oil

ASTM-P-0108-SET

17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

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

#### Elements in Lubricating Oil

ASTM-P-0115-SET

17 x 100 mL

Designed for ASTM D4927, D6443 & D6481

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

#### Elements in Lubricating Oil

ASTM-P-0116-SET

11 x 100 mL

Designed for ASTM D6481

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

#### Elements in Lubricating Oil

ASTM-P-0117-SET

10 x 100 mL

Designed for ASTM D6443

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

#### Elements in Lubricating Oil

ASTM-P-0118-SET

10 x 100 mL

Designed for ASTM D4628, D4927, D4951, D6443

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



# Organometallic Standards

## AA, ICP, DCP & XRF Analysis

### Lubricating Oil Standards (Continued)

#### Elements in Lubricating Oil

ASTM-P-0119-SET

22 x 100 mL

Designed for ASTM D4927, D6443, D6481 & D7751

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

#### Standards of Interest

Concentrations for the sets on pages 371-374 are targets. Actual production lots may vary.

### Metal Working Fluids

ASTM-P-0121-SET

13 x 100 mL

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

#### Elements in Lubricating Oil

ASTM-P-0120-SET

23 x 100 mL

Designed for ASTM D4927, D6443 & D6481

| Cat. No.       | Ba     | Ca     | Cl     | Cu     | Mg     | P      | S      | Zn     |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Nominal Value  | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (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 #          | Al     | Ca     | Fe     | Na     | Ni     | P      | S      | Si     | V      | Zn     |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Nominal Value  | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (Wt.%) | (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 |

# Safety, Storage, Packaging

## Safety

All products come with Safety Data Sheets (SDS) and Certificates of Analysis (COA) which are also available on [AccuStandard.com](http://AccuStandard.com).



GHS-07

- Irritant
- Skin Sensitizer
- Acute toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant



GHS-05

- Corrosives
- Skin corrosion/burns
- Eye Damage
- Corrosive to Metals



GHS-02

- Flammables
- Self Reactives
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Organic Peroxides



GHS-06

- Acute Toxicity (fatal or toxic)



GHS-03

- Oxidizers



GHS-08

- Carcinogen
- Respiratory Sensitizer
- Reproductive Toxicity
- Mutagenicity
- Aspiration Toxicity



GHS-09

- Aquatic Toxicity

## Storage

Expiration dates are determined by short-term and long-term stability studies, experience and knowledge of chemical interactions. As part of our long-term studies, standards are analyzed at the end of their assigned period and sometimes can be recertified for an additional length of time.

All products come with storage conditions listed on the label of the ampule or bottle. Some chemical formulations require refrigeration or freezer storage to inhibit adverse reactions among the components. It is imperative that these conditions are followed to preserve the integrity of the material.

## Organic Products (Usage, Handling)

Amber ampules are used to ensure the integrity of the contents. The ampule contains at least 120% of the stated volume of a solution, allowing easy transfer. Transfer the required amount using a pipet or clean gastight syringe. Excess solution can be stored in a tightly capped vial.

Smudgeproof, tear and solvent resistant \*



## Organic 2-Part Labels (ampules or vials)

**Part One** can be placed into a laboratory journal to document the standard used for the analysis. This label section includes the catalog number, description, lot number, expiration date, safety information, proper storage conditions and documents AccuStandard as the manufacturer.

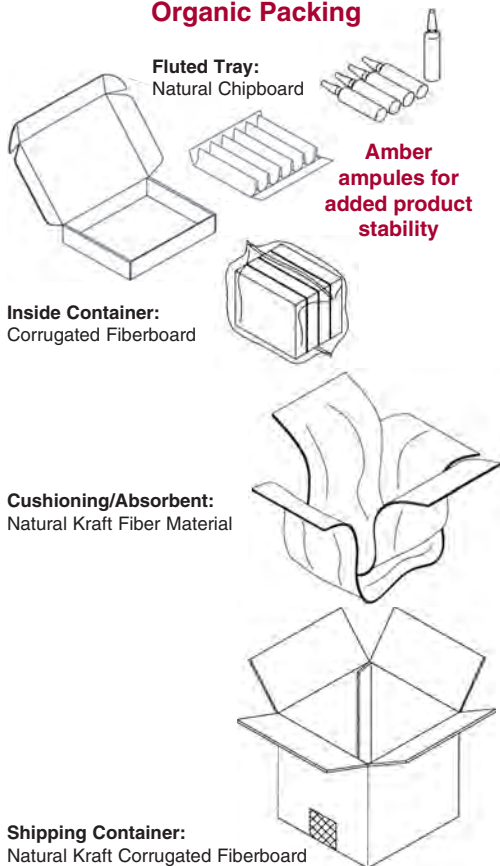
**Part Two** duplicates required information for labeling transfer vial(s) with correct information.



\* Includes the most common solvents: Methylene chloride, Methanol and Acetone

For your protection an ampule opener is included with every order.

## Organic Packing



## Inorganic Products (Usage, Handling)

- Shake bottle prior to use and do not pipette directly out of the bottle.
- Use only cleaned Class A volumetric glassware.
- Keep bottles tightly capped when not being used and store under normal laboratory conditions.

## ColdPAK \*

ColdPAKs may be recommended or required with certain temperature sensitive products. Some standards are susceptible to change at room temperature or higher. In some of these cases, we may recommend or require that these products ship in a "ColdPAK" (a styrofoam container that has an ice pack in it). The purpose is to delay the exposure of the product to higher temperatures, and NOT to keep the product frozen. The product will not immediately go out of specifications when the ColdPAK melts or when the product reaches room temperature. It simply delays exposure to higher temperatures.

## Fast and efficient shipping

Multiple shipping options available for fast delivery.

Packaging maximizes space and keeps dimensions and weight down to minimize shipping charges.

Designed and tested to meet DOT and IATA shipping regulations.

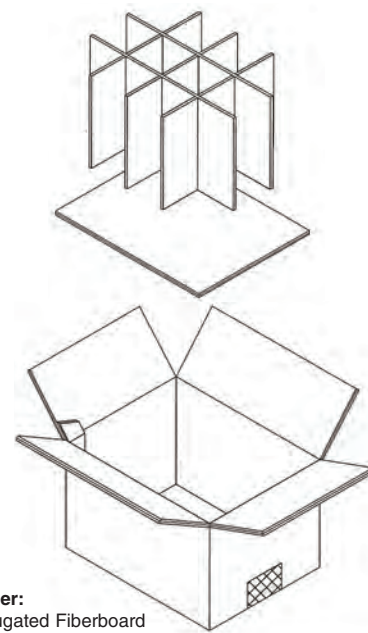
Made with recyclable and biodegradable materials.



## Inorganic Packing



**Dividers:**  
Natural Kraft  
Corrugated Fiberboard



**Shipping Container:**  
Natural Kraft Corrugated Fiberboard

# Technical Reference

## Solvent Miscibility Table, Density and Boiling Point

|                                                                                |  |
|--------------------------------------------------------------------------------|--|
| Acetic acid (1.049 g/mL) (117-118°C)                                           |  |
| Acetone (0.791 g/mL) (56°C)                                                    |  |
| Acetonitrile (AcCN) (0.786 g/mL) (81-82°C)                                     |  |
| Benzene (0.874 g/mL) (80°C)                                                    |  |
| 2-Butanol (0.808 g/mL) (98°C)                                                  |  |
| Butyl alcohol (0.81 g/mL) (116-118°C)                                          |  |
| tert-Butylmethyl ether (MtBE) (0.74 g/mL) (55-56°C)                            |  |
| Carbon tetrachloride (1.594 g/mL) (76-77°C)                                    |  |
| Chloroform (1.492 g/mL) (60.5-61.5°C)                                          |  |
| Cyclohexane (0.779 g/mL) (80.7°C)                                              |  |
| Cyclopentane (0.751 g/mL) (50°C)                                               |  |
| Dichloroethane (1.256 g/mL) (83°C)                                             |  |
| N,N-Dimethylformamide (DMF) (0.944 g/mL) (153°C)                               |  |
| 1,4-Dioxane (1.034 g/mL) (100-102°C)                                           |  |
| Dipropyl ether (0.736 g/mL) (88-90°C)                                          |  |
| Ethyl acetate (EtOAc) (0.902 g/mL) (76.5-77.5°C)                               |  |
| Ethyl alcohol (EtOH) (0.789 g/mL) (78°C)                                       |  |
| Ethyl ether (0.706 g/mL) (34.6°C)                                              |  |
| n-Heptane (0.684 g/mL) (98°C)                                                  |  |
| n-Hexane (0.659 g/mL) (69°C)                                                   |  |
| Isooctane (0.692 g/mL) (98-99°C)                                               |  |
| Isopropyl alcohol (0.785 g/mL) (82°C)                                          |  |
| Methanol (MeOH) (0.791 g/mL) (64.7°C)                                          |  |
| Methylene chloride (CH <sub>2</sub> Cl <sub>2</sub> ) (1.325 g/mL) (39.8-40°C) |  |
| Methyl sulfoxide (DMSO) (1.10 g/mL) (189°C)                                    |  |
| n-Pentane (0.626 g/mL) (35-36°C)                                               |  |
| 1,1,2,2-Tetrachloroethane (1.586 g/mL) (147°C)                                 |  |
| Tetrahydrofuran (THF) (0.889 g/mL) (65-67°C)                                   |  |
| Toluene (0.865 g/mL) (110-111°C)                                               |  |
| Trichloroethane (1.336 g/mL) (74-76°C)                                         |  |
| Water (1 g/mL) (100°C)                                                         |  |
| Xylene (0.868 g/mL) (138-139°C)                                                |  |

☐ Miscible

☒ Immiscible

Read down column  
and across for  
solvent miscibility

Density@25°C

Boiling Point

For technical information including: methods, papers, FAQs and helpful hints



Visit our website  
AccuStandard.com

# Alchemist Art Gallery

## About the cover



## The Alchemist

Francois-Marius Granet  
French, 19th century,  
Courtesy of the Science History  
Institute Collections, and  
Roy Eddleman  
Photograph by Will Brown

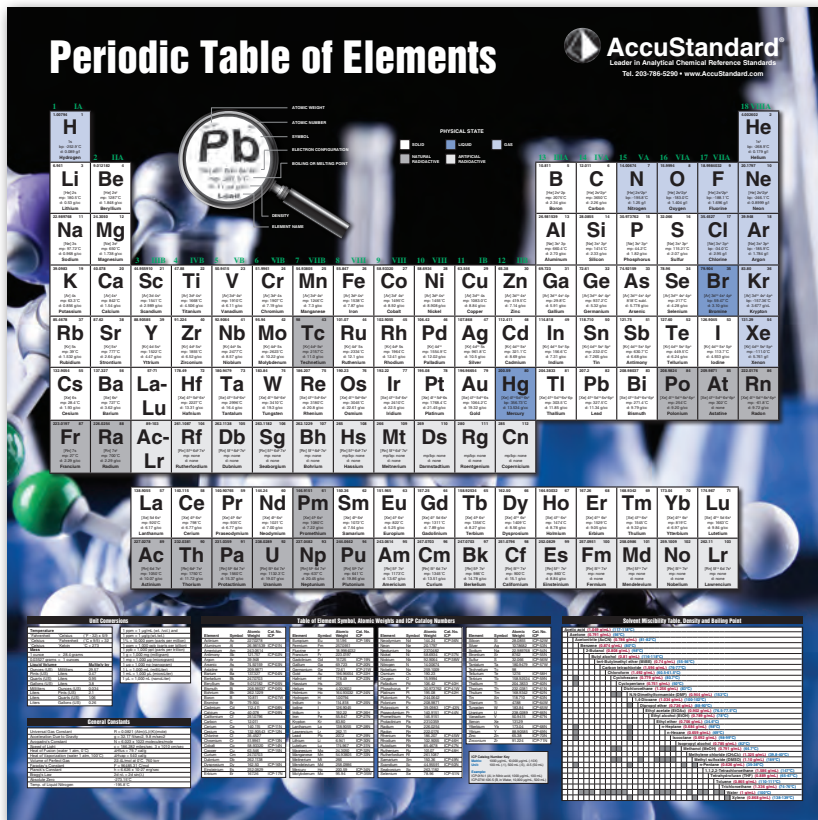
A bearded man reading a book is standing in a great vaulted interior. A large window illuminates the room, with glassware sparsely placed on the shelves.

## Past Alchemist covers



**Alchemist artwork available,  
please inquire.**

# Periodic Table of Elements



**(20 x 20 inch laminated poster)**

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

**Periodic Table poster available,  
please inquire.**

## Art Gallery & Periodic Table

# Custom Formulations



## Custom Quotation Requests

Custom formulations can be requested by contacting Technical Service: [techservice@accustandard.com](mailto:techservice@accustandard.com) (Organic), [inotech@accustandard.com](mailto:inotech@accustandard.com) (Inorganic) or by using our website. To assist us in providing the best formulation for your application, provide the following information with your custom request:

- Name
- Contact information
- Desired solvent
- Analytes (name and CAS #)
- Concentration
- Quantity
- Application/Instrumentation

Note that our minimum purchase for custom products is usually 5 mL for organic products and 500 mL for Inorganic products.



# Custom Formulations

- Fast Turnaround
- 25-Plus Years Custom Formulation Experience
- Custom Standards are a cost and time saving alternative



The products found in our catalog represent only a portion of the Inorganic reference standards we offer. If you require something you do not see in our catalog, or a variation of a catalog item, please let us know. Our experienced team routinely provides quality custom solutions to labs around the world.

Need it in a hurry? Just ask. Typical turn around time is approximately one week; however, we can often meet a shorter deadline when required, for no extra fee.

Custom standards are made and tested under the guidelines of our ISO certified quality system and are covered under the scope of our ISO accreditations. Standards are traceable to NIST SRMs wherever possible. You can be confident that you are not sacrificing quality when ordering a custom standard.

- Order exactly what you need
- Fast turnaround time
- 18 month shelf life on most products
- Traceable to NIST SRMs wherever possible
- Produced under our ISO certified quality system
- Various packaging options and bulk discounts available

Custom formulations maybe requested by contacting Inorganic Technical Service at [inotech@accustandard.com](mailto:inotech@accustandard.com) or by visiting our website [www.AccuStandard.com](http://www.AccuStandard.com)

## Quality

Quality is defined as a measure of excellence or a state of being free from defects or deficiencies. At AccuStandard, we take that definition a step further and believe that quality results from the combination of perception and expectation. The feeling of high quality occurs when perception exceeds expectation. We strive to meet or exceed our customer's expectations from the initial contact with our Customer Service Department to the end use of our products.

AccuStandard is an ISO accredited Reference Material Producer.



■ ICP-MS ■ ICP ■ Ion Chromatography

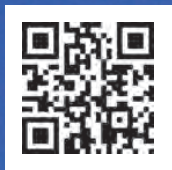
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