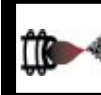


# ICP/MS Multi-Element Standards



■ 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.

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

### Calibration Standard 2

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

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

### Calibration Standard 3

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

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

### Calibration Standard 4

**ICP-MS-CAL4-1** 100 mL  
10 µg/mL each in H<sub>2</sub>O tr. HF 12 comps.

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

### Calibration Standard 5

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

Most Abundant	
Element	Isotope
Hg (Mercury)	202

### Calibration Standard Set

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



## 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

▼ Hazardous fee not required.



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

ICP-MS-TUNSOL2-1		100 mL
100 µg/mL each in 2% HNO <sub>3</sub>		13 comps.
Most Abundant		
Element	Isotope	
Ba (Barium)	138	
Be (Beryllium)	9	
Bi (Bismuth)	209	
Ce (Cerium)	140	
Cu (Copper)	63	
Ho (Holmium)	165	
In (Indium)	115	
Pb (Lead)	208	
Li (Lithium)	7	
Mg (Magnesium)	24	
Tl (Thallium)	205	
U (Uranium)	238	
Y (Yttrium)	89	

### Interference Check Standards

Solution A		
ICP-MS-INTA-1		
At stated conc. (µg/mL) in 1% HNO <sub>3</sub> 12 comps.		
Most Abundant		
Element	µg/mL	Isotope
Al (Aluminum)	1000	27
C (Carbon)	2000	12
Ca (Calcium)	3000	40
Cl (Chloride)	18000	35
Fe (Iron)	2500	56
Mg (Magnesium)	1000	24
Mo (Molybdenum)	20	98
P (Phosphorous)	1000	31
K (Potassium)	1000	39
Na (Sodium)	2500	23
S (Sulphur)	1000	32
Ti (Titanium)	20	48

Solution B		
ICP-MS-INTB-1		
At stated conc. (µg/mL) in 2% HNO <sub>3</sub> 11 comps.		
Most Abundant		
Element	µg/mL	Isotope
As (Arsenic)	10	75
Cd (Cadmium)	10	114
C (Carbon)	20	12
Cr (Chromium)	20	52
Cu (Copper)	20	63
Mn (Manganese)	20	55
Ni (Nickel)	20	58
Se (Selenium)	10	80
Ag (Silver)	20	107
V (Vanadium)	20	51
Zn (Zinc)	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.

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

ICP-MS-MEMCHKA2-R1 100 mL  
20 µg/mL In 2% HNO<sub>3</sub>

Most Abundant	
Element	Isotope
Ag (Silver)	107

#### Solution B

ICP-MS-MEMCHKB-R1 ▼ 100 mL  
At stated conc. (µg/mL) in H<sub>2</sub>O 3 comps.

Most Abundant		
Element	µg/mL	Isotope
Cl (Chloride)	7200	35
P (Phosphorous)	1000	31
S (Sulphur)	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.

▼ Hazardous fee not required.

# 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.  
Most Abundant

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

Element	µg/mL	Isotope
Sb (Antimony)	100	121
As (Arsenic)	50	75
Ba (Barium)	250	138
Be (Beryllium)	25	9
Cd (Cadmium)	50	114
Cr (Chromium)	250	52
Co (Cobalt)	100	59
Cu (Copper)	250	63
Pb (Lead)	100	208
Ni (Nickel)	125	58
Se (Selenium)	25	80
Ag (Silver)	25	107
Tl (Thallium)	25	205
V (Vanadium)	150	51
Zn (Zinc)	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-QC-1** 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 9 comps.  
Most Abundant

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

#### Sample 2

**ICP-MS-QC-2** 100 mL  
10 µg/mL each in 5% HNO<sub>3</sub> 25 comps.  
Most Abundant

Element	Isotope
Al (Aluminum)	27
Sb (Antimony)	121
As (Arsenic)	75
Ba (Barium)	138
Be (Beryllium)	9
Cd (Cadmium)	114
Ca (Calcium)	40
Cr (Chromium)	52
Co (Cobalt)	59
Cu (Copper)	63
Fe (Iron)	56
Pb (Lead)	208
Mg (Magnesium)	24
Mn (Manganese)	55
Mo (Molybdenum)	98
Ni (Nickel)	58
K (Potassium)	39
Se (Selenium)	80
Ag (Silver)	107
Na (Sodium)	23
Tl (Thallium)	205
Th (Thorium)	232
U (Uranium)	238
V (Vanadium)	51
Zn (Zinc)	64

#### Sample 3

**ICP-MS-QC-3** 100 mL  
10 µg/mL each in 5% HNO<sub>3</sub> tr. HF 21 comps.  
Most Abundant

Element	Isotope
Sb (Antimony)	121
As (Arsenic)	75
Be (Beryllium)	9
Cd (Cadmium)	114
Ca (Calcium)	40
Cr (Chromium)	52
Co (Cobalt)	59
Cu (Copper)	63
Fe (Iron)	56
Pb (Lead)	208
Li (Lithium)	7
Mg (Magnesium)	24
Mn (Manganese)	55
Mo (Molybdenum)	98
Ni (Nickel)	58
Se (Selenium)	80
Sr (Strontium)	88
Tl (Thallium)	205
Ti (Titanium)	48
V (Vanadium)	51
Zn (Zinc)	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 <b>NEW</b>	ICP-MS-IS-HO-10X-1 <b>NEW</b>
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 <b>NEW</b>	ICP-MS-IS-LU-10X-1 <b>NEW</b>
Lithium-6	2-5% HNO <sub>3</sub>	100 mL	ICP-MS-IS-LI6-1 <b>NEW</b>	ICP-MS-IS-LI6-10X-1 <b>NEW</b>
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-MIX-1-1** 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 7 comps.

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



# ICP/MS

## EPA Method 200.8 & 6020

### 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	Most Abundant Isotope
Al (Aluminum)	27
Sb (Antimony)	121
As (Arsenic)	75
Be (Beryllium)	9
Cd (Cadmium)	114
Cr (Chromium)	52
Co (Cobalt)	59
Cu (Copper)	63
Pb (Lead)	208
Mn (Manganese)	55
Mo (Molybdenum)	98
Ni (Nickel)	58
Se (Selenium)	80
Tl (Thallium)	205
Th (Thorium)	232
U (Uranium)	238
V (Vanadium)	51
Zn (Zinc)	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	Most Abundant Isotope
Ba (Barium)	138
Ag (Silver)	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	Most Abundant Isotope
Al (Aluminum)	10	27
Sb (Antimony)	10	121
As (Arsenic)	10	75
Be (Beryllium)	10	9
Cd (Cadmium)	10	114
Cr (Chromium)	10	52
Co (Cobalt)	10	59
Cu (Copper)	10	63
Pb (Lead)	10	208
Mn (Manganese)	10	55
Mo (Molybdenum)	10	98
Ni (Nickel)	10	58
Se (Selenium)	50	80
Tl (Thallium)	10	205
Th (Thorium)	10	232
U (Uranium)	10	238
V (Vanadium)	10	51
Zn (Zinc)	10	64

##### Calibration Standard #3

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

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

##### Internal Standard #2

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

Element	Most Abundant Isotope
Au (Gold)	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	Most Abundant Isotope
Be (Beryllium)	75
Mg (Magnesium)	24
Co (Cobalt)	59
In (Indium)	115
Pb (Lead)	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	Most Abundant Isotope
Al (Aluminum)	27
Sb (Antimony)	121
As (Arsenic)	75
Ba (Barium)	138
Be (Beryllium)	9
Cd (Cadmium)	114
Ca (Calcium)	40
Cr (Chromium)	52
Co (Cobalt)	59
Cu (Copper)	63
Fe (Iron)	56
Pb (Lead)	208
Mg (Magnesium)	24
Mn (Manganese)	55
Ni (Nickel)	58
K (Potassium)	39
Se (Selenium)	80
Ag (Silver)	107
Na (Sodium)	23
Tl (Thallium)	205
V (Vanadium)	51
Zn (Zinc)	64

##### Calibration Standard

ICP-MS-6020-CAL-1 100 mL  
10 µg/mL each in 2% HNO<sub>3</sub> 15 comps.

Element	Most Abundant Isotope
Al (Aluminum)	27
Sb (Antimony)	121
As (Arsenic)	75
Ba (Barium)	138
Be (Beryllium)	9
Cd (Cadmium)	114
Cr (Chromium)	52
Co (Cobalt)	59
Cu (Copper)	63
Pb (Lead)	208
Mn (Manganese)	55
Ni (Nickel)	58
Ag (Silver)	107
Tl (Thallium)	205
Zn (Zinc)	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	Most Abundant Isotope
Al (Aluminum)	1000	27
Cl (Chloride)	10000	35
Ca (Calcium)	1000	40
C (Carbon)	2000	12
Fe (Iron)	1000	56
Mg (Magnesium)	1000	24
Mo (Molybdenum)	20	98
P (Phosphorous)	1000	31
K (Potassium)	1000	39
Na (Sodium)	1000	23
S (Sulfur)	1000	32
Ti (Titanium)	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	Most Abundant Isotope
As (Arsenic)	75
Cd (Cadmium)	114
Cr (Chromium)	52
Co (Cobalt)	59
Cu (Copper)	63
Mn (Manganese)	55
Ni (Nickel)	58
Ag (Silver)	107
Zn (Zinc)	64

##### Tuning Standard

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

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