



# AA Single Element

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
- Actual Concentration Analysis
- High Purity Starting Materials and Acids
- 18 megohm de-ionized Water
- 36 Month Shelf Life

## NoHaz Option with Most ICP & AA Single Element Standards



### SAVINGS:

- No Hazardous Shipping Fees
- Lower Shipping Costs (less weight)
- Yields More – 500 mL from 20 mL concentrate
- Includes empty pre-washed, pre-labeled HDPE bottle (250 mL for 10,000 µg/mL; 500 mL for 25,000 µg/mL)

Single Element AAs require a Hazardous Shipping Fee, except the "NoHaz"™ products in the right columns, and except elements marked with an asterisk \*

**Haz Fees**

Single Element AA		NoHaz Size (No Hazardous shipping charge)		
Element Starting Material Matrix	Unit	1000 µg/mL Cat. No.	20 mL (NoHaz) 10,000 µg/mL Cat. No.	20 mL (NoHaz) 25,000 µg/mL Cat. No.
<b>Aluminum</b>	100 mL	AA01N-1	AA01N-10X-20ML	AA01N-25X-20ML
2-5% Nitric acid	500 mL	AA01N-5		
<b>Antimony</b>	100 mL	AA02N-1	AA02W-10X-20ML	----- --
2-5% HNO <sub>3</sub> tr. Tartaric acid	500 mL	AA02N-5		
<b>Arsenic</b>	100 mL	AA03N-1	AA03N-10X-20ML	AA03N-25X-20ML
2-5% Nitric acid	500 mL	AA03N-5		
<b>Barium</b>	100 mL	AA04N-1	AA04N-10X-20ML	AA04N-25X-20ML
2-5% Nitric acid	500 mL	AA04N-5		
<b>Beryllium</b>	100 mL	AA05N-1	AA05N-10X-20ML	----- --
2-5% Nitric acid	500 mL	AA05N-5		
<b>Bismuth</b>	100 mL	AA06N-1	AA06N-10X-20ML	AA06N-25X-20ML
10% Nitric acid	500 mL	AA06N-5		
<b>Boron *</b>	100 mL	AA07W-1	AA07W-10X-20ML	----- --
Water tr. NH <sub>4</sub> OH	500 mL	AA07W-5		
<b>Cadmium</b>	100 mL	AA08N-1	AA08N-10X-20ML	AA08N-25X-20ML
2-5% Nitric acid	500 mL	AA08N-5		
<b>Calcium</b>	100 mL	AA09N-1	AA09N-10X-20ML	AA09N-25X-20ML
2-5% Nitric acid	500 mL	AA09N-5		
<b>Cerium</b>	100 mL	AA11N-1	AA11N-10X-20ML	AA11N-25X-20ML
2-5% Nitric acid	500 mL	AA11N-5		
<b>Cesium</b>	100 mL	AA12N-1	AA12N-10X-20ML	AA12N-25X-20ML
2-5% Nitric acid	500 mL	AA12N-5		
<b>Chromium</b>	100 mL	AA13N-1	AA13N-10X-20ML	AA13N-25X-20ML
2-5% Nitric acid	500 mL	AA13N-5		
<b>Cobalt</b>	100 mL	AA14N-1	AA14N-10X-20ML	AA14N-25X-20ML
2-5% Nitric acid	500 mL	AA14N-5		
<b>Copper</b>	100 mL	AA15N-1	AA15N-10X-20ML	AA15N-25X-20ML
2-5% Nitric acid	500 mL	AA15N-5		
<b>Dysprosium</b>	100 mL	AA16N-1	AA16N-10X-20ML	AA16N-25X-20ML
2-5% Nitric acid	500 mL	AA16N-5		
<b>Erbium</b>	100 mL	AA17N-1	AA17N-10X-20ML	AA17N-25X-20ML
2-5% Nitric acid	500 mL	AA17N-5		
<b>Europium</b>	100 mL	AA18N-1	AA18N-10X-20ML	AA18N-25X-20ML
2-5% Nitric acid	500 mL	AA18N-5		
<b>Gadolinium</b>	100 mL	AA19N-1	AA19N-10X-20ML	AA19N-25X-20ML
2-5% Nitric acid	500 mL	AA19N-5		
<b>Gallium</b>	100 mL	AA20N-1	AA20N-10X-20ML	----- --
2-5% Nitric acid	500 mL	AA20N-5		
<b>Germanium *</b>	100 mL	AA21W-1	AA21W-10X-20ML	----- --
Water tr. HF	500 mL	AA21W-5		





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Haz  
Fees

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Element Starting Material Matrix	Unit	1000 µg/mL Cat. No.	20 mL (NoHaz) 10,000 µg/mL Cat. No.	20 mL (NoHaz) 25,000 µg/mL Cat. No.
<b>Gold</b>	100 mL	AA22H-1	AA22H-10X-20ML	AA22H-25X-20ML
5% HCl (min.)	500 mL	AA22H-5		
<b>Hafnium</b>	100 mL	AA23N-1	AA23N-10X-20ML	AA23N-25X-20ML
2-5% Nitric acid tr. HF	500 mL	AA23N-5		
<b>Holmium</b>	100 mL	AA24N-1	AA24N-10X-20ML	AA24N-25X-20ML
2-5% Nitric acid	500 mL	AA24N-5		
<b>Indium</b>	100 mL	AA25N-1	AA25N-10X-20ML	AA25N-25X-20ML
2-5% Nitric acid	500 mL	AA25N-5		
<b>Iridium</b>	100 mL	AA26H-1	AA26H-10X-20ML	AA26H-25X-20ML
10% HCl (min.)	500 mL	AA26H-5		
<b>Iron</b>	100 mL	AA27N-1	AA27N-10X-20ML	AA27N-25X-20ML
2-5% Nitric acid	500 mL	AA27N-5		
<b>Lanthanum</b>	100 mL	AA28N-1	AA28N-10X-20ML	AA28N-25X-20ML
2-5% Nitric acid	500 mL	AA28N-5		
<b>Lead</b>	100 mL	AA29N-1	AA29N-10X-20ML	AA29N-25X-20ML
2-5% Nitric acid	500 mL	AA29N-5		
<b>Lithium</b>	100 mL	AA30N-1	AA30N-10X-20ML	AA30N-25X-20ML
2-5% Nitric acid	500 mL	AA30N-5		
<b>Lutetium</b>	100 mL	AA31N-1	AA31N-10X-20ML	AA31N-25X-20ML
2-5% Nitric acid	500 mL	AA31N-5		
<b>Magnesium</b>	100 mL	AA32N-1	AA32N-10X-20ML	AA32N-25X-20ML
2-5% Nitric acid	500 mL	AA32N-5		
<b>Manganese</b>	100 mL	AA33N-1	AA33N-10X-20ML	AA33N-25X-20ML
2-5% Nitric acid	500 mL	AA33N-5		
<b>Mercury</b>	100 mL	AA34N-1	AA34N-10X-20ML	AA34N-25X-20ML
2-5% Nitric acid	500 mL	AA34N-5		
<b>Molybdenum</b> *	100 mL	AA35W-1	AA35W-10X-20ML	AA35W-25X-20ML
Water tr. NH <sub>4</sub> OH	500 mL	AA35W-5		
<b>Neodymium</b>	100 mL	AA36N-1	AA36N-10X-20ML	AA36N-25X-20ML
2-5% Nitric acid	500 mL	AA36N-5		
<b>Nickel</b>	100 mL	AA37N-1	AA37N-10X-20ML	AA37N-25X-20ML
2-5% Nitric acid	500 mL	AA37N-5		
<b>Niobium</b> *	100 mL	AA38W-1	AA38W-10X-20ML	AA38W-25X-20ML
Water tr. HF	500 mL	AA38W-5		
<b>Palladium</b>	100 mL	AA40H-1	AA40H-10X-20ML	AA40H-25X-20ML
10% HCl (min.)	500 mL	AA40H-5		
<b>Phosphorus</b> *	100 mL	AA41W-1	AA41W-10X-20ML	----- --
Water	500 mL	AA41W-5		
<b>Platinum</b>	100 mL	AA42H-1	AA42H-10X-20ML	AA42H-25X-20ML
2% HCl (min.)	500 mL	AA42H-5		
<b>Potassium</b>	100 mL	AA43N-1	AA43N-10X-20ML	AA43N-25X-20ML
2-5% Nitric acid	500 mL	AA43N-5		
<b>Praseodymium</b>	100 mL	AA44N-1	AA44N-10X-20ML	AA44N-25X-20ML
2-5% Nitric acid	500 mL	AA44N-5		
<b>Rhenium</b> *	100 mL	AA45W-1	AA45W-10X-20ML	AA45W-25X-20ML
Water	500 mL	AA45W-5		
<b>Rhodium</b>	100 mL	AA46H-1	AA46H-10X-20ML	AA46H-25X-20ML
10% HCl (min.)	500 mL	AA46H-5		
<b>Rubidium</b>	100 mL	AA47N-1	AA47N-10X-20ML	AA47N-25X-20ML
2-5% Nitric acid	500 mL	AA47N-5		
<b>Ruthenium</b>	100 mL	AA48H-1	AA48H-10X-20ML	AA48H-25X-20ML
10% HCl	500 mL	AA48H-5		
<b>Samarium</b>	100 mL	AA49N-1	AA49N-10X-20ML	AA49N-25X-20ML
2-5% Nitric acid	500 mL	AA49N-5		
<b>Scandium</b>	100 mL	AA50N-1	AA50N-10X-20ML	AA50N-25X-20ML
2-5% Nitric acid	500 mL	AA50N-5		



# AA

## Single Element

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- High Purity Starting Materials and Acids
- 18 megohm de-ionized Water
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Element Starting Material Matrix	Unit	1000 µg/mL Cat. No.	20 mL (NoHaz) 10,000 µg/mL Cat. No.	20 mL (NoHaz) 25,000 µg/mL Cat. No.
<b>Selenium</b>	100 mL	AA51N-1	AA51N-10X-20ML	AA51N-25X-20ML
2-5% Nitric acid	500 mL	AA51N-5		
<b>Silicon *</b>	100 mL	AA52W-1	AA52W-10X-20ML	----- --
Water tr. HF	500 mL	AA52W-5		
<b>Silver</b>	100 mL	AA53N-1	AA53N-10X-20ML	AA53N-25X-20ML
2-5% Nitric acid	500 mL	AA53N-5		
<b>Sodium</b>	100 mL	AA54N-1	AA54N-10X-20ML	AA54N-25X-20ML
2-5% Nitric acid	500 mL	AA54N-5		
<b>Strontium</b>	100 mL	AA55N-1	AA55N-10X-20ML	AA55N-25X-20ML
2-5% Nitric acid	500 mL	AA55N-5		
<b>Sulfur *</b>	100 mL	AA56W-1	AA56W-10X-20ML	AA56W-25X-20ML
Water	500 mL	AA56W-5		
<b>Tantalum *</b>	100 mL	AA57W-1	AA57W-10X-20ML	AA57W-25X-20ML
Water tr. HF	500 mL	AA57W-5		
<b>Tellurium</b>	100 mL	AA58H-1	AA58H-10X-20ML	----- --
10% HCl (min.)	500 mL	AA58H-5		
<b>Terbium</b>	100 mL	AA59N-1	AA59N-10X-20ML	AA59N-25X-20ML
2-5% Nitric acid	500 mL	AA59N-5		
<b>Thallium</b>	100 mL	AA60N-1	AA60N-10X-20ML	AA60N-25X-20ML
2-5% Nitric acid	500 mL	AA60N-5		
<b>Thorium</b>	100 mL	AA61N-1	----- --	----- --
2-5% Nitric acid	500 mL	AA61N-5		
<b>Thulium</b>	100 mL	AA62N-1	AA62N-10X-20ML	AA62N-25X-20ML
2-5% Nitric acid	500 mL	AA62N-5		
<b>Tin</b>	100 mL	AA63N-1	AA63N-10X-20ML	AA63N-25X-20ML
2-5% Nitric acid tr. HF	500 mL	AA63N-5		
<b>Titanium *</b>	100 mL	AA64W-1	AA64W-10X-20ML	----- --
Water tr. HF	500 mL	AA64W-5		
<b>Tungsten *</b>	100 mL	AA65W-1	AA65W-10X-20ML	----- --
Water tr. NH <sub>4</sub> OH	500 mL	AA65W-5		
<b>Uranium</b>	100 mL	AA66N-1	----- --	----- --
2-5% Nitric acid	500 mL	AA66N-5		
<b>Vanadium</b>	100 mL	AA67N-1	AA67N-10X-20ML	AA67N-25X-20ML
5-10% Nitric acid	500 mL	AA67N-5		
<b>Ytterbium</b>	100 mL	AA68N-1	AA68N-10X-20ML	AA68N-25X-20ML
2-5% Nitric acid	500 mL	AA68N-5		
<b>Yttrium</b>	100 mL	AA69N-1	AA69N-10X-20ML	AA69N-25X-20ML
2-5% Nitric acid	500 mL	AA69N-5		
<b>Zinc</b>	100 mL	AA70N-1	AA70N-10X-20ML	AA70N-25X-20ML
2-5% Nitric acid	500 mL	AA70N-5		
<b>Zirconium</b>	100 mL	AA71N-1	AA71N-10X-20ML	AA71N-25X-20ML
2-5% Nitric acid	500 mL	AA71N-5		



### 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> 40% in H <sub>2</sub> O	NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub>	50 mL	MOD-02-0.5
		100 mL	MOD-02-1
		500 mL	MOD-02-5
<b>Ammonium nitrate</b> 5% in H <sub>2</sub> O	NH <sub>4</sub> NO <sub>3</sub>	50 mL	MOD-03-0.5
		100 mL	MOD-03-1
		500 mL	MOD-03-5
<b>Calcium nitrate</b> 2% in 5% in HNO <sub>3</sub>	Ca(NO <sub>3</sub> ) <sub>2</sub> • 4H <sub>2</sub> O	50 mL	MOD-04-0.5
		100 mL	MOD-04-1
		500 mL	MOD-04-5
<b>Lanthanum chloride</b> 5% in 5% HCl	LaCl <sub>3</sub>	50 mL	MOD-05-0.5
		100 mL	MOD-05-1
		500 mL	MOD-05-5
<b>Lanthanum nitrate</b> 5% in 5% HNO <sub>3</sub>	LaNO <sub>3</sub>	50 mL	MOD-06-0.5
		100 mL	MOD-06-1
		500 mL	MOD-06-5
<b>Magnesium nitrate</b> 2% in 5% HNO <sub>3</sub>	Mg(NO <sub>3</sub> ) <sub>2</sub>	50 mL	MOD-07-0.5
		100 mL	MOD-07-1
		500 mL	MOD-07-5
<b>Nickel nitrate</b> 5% in 5% HNO <sub>3</sub>	Ni(NO <sub>3</sub> ) <sub>2</sub>	50 mL	MOD-08-0.5
		100 mL	MOD-08-1
		500 mL	MOD-08-5
<b>Palladium nitrate</b> 0.2% in 5% HNO <sub>3</sub>	Pd(NO <sub>3</sub> ) <sub>2</sub>	50 mL	MOD-09A-0.5
		100 mL	MOD-09A-1
		500 mL	MOD-09A-5
<b>Palladium nitrate</b> 0.5% in 5% HNO <sub>3</sub>	Pd(NO <sub>3</sub> ) <sub>2</sub>	50 mL	MOD-09B-0.5
		100 mL	MOD-09B-1
		500 mL	MOD-09B-5
<b>Palladium nitrate</b> 1.0% in 5% HNO <sub>3</sub>	Pd(NO <sub>3</sub> ) <sub>2</sub>	50 mL	MOD-09C-0.5
		100 mL	MOD-09C-1
		500 mL	MOD-09C-5

### Calibration and Matrix Blanks

#### Nitric Acid Blank

CLP-BLN-5 500 mL  
CLP-BLN-L-SET L (2 x 500 mL)

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

#### Hydrochloric Acid Blank

CLP-BLH-5 500 mL  
CLP-BLH-L-SET L (2 x 500 mL)

5% HCl in ASTM Type I Water

#### Water Blank

CLP-BLW-5 \* 500 mL  
CLP-BLW-L-SET \* L (2 x 500 mL)

ASTM Type I Water

#### Mixed Acid Blank

CLP-BLMA-5 500 mL  
CLP-BLMA-L-SET L (2 x 500 mL)

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

### Multi-Element Graphite Furnace AA Calibration & Spiking Standards

#### GFAA Instrument Calibration Standard

CLP-CAL-AA 50 mL  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 6 comps.

Sb (Antimony)	100
As (Arsenic)	50
Cd (Cadmium)	10
Pb (Lead)	50
Se (Selenium)	100
Tl (Thallium)	50

#### GFAA Predigestion Spike Solution

CLP-SP1-AA 50 mL  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 6 comps.

Sb (Antimony)	100
As (Arsenic)	40
Cd (Cadmium)	5
Pb (Lead)	20
Se (Selenium)	10
Tl (Thallium)	50

#### GFAA Initial Calibration Verification

(Meets CLP Second Source Requirements)

CLP-ICV-AA 50 mL  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 6 comps.

Sb (Antimony)	50
As (Arsenic)	25
Cd (Cadmium)	5
Pb (Lead)	25
Se (Selenium)	50
Tl (Thallium)	25

#### GFAA Mercury Standard for Calibration or Spiking

CLP-HG-AA 50 mL  
100 µg/mL in 5% HNO<sub>3</sub>

Hg (Mercury)

#### GFAA Postdigestion Spike Solution

(2 x CRDL except for Lead)  
CLP-SP2-AA 50 mL  
At stated conc. (µg/mL) in 5% HNO<sub>3</sub> 6 comps.

Sb (Antimony)	120
As (Arsenic)	20
Cd (Cadmium)	10
Pb (Lead)	20
Se (Selenium)	10
Tl (Thallium)	20

#### GFAA Set

CLP-AA-SET 5 x 50 mL  
CLP-CAL-AA CLP-HG-AA  
CLP-SPI-AA CLP-SP2-AA  
CLP-ICV-AA

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