

## Safety Data Sheet

### Section 1. Product and Company Identification

Product Identification: ICP-MS-E  
 MSDS Number: ICP-MS-E  
 Recommended Use: For Laboratory Use.  
 Company Identification: High-Purity Standards  
 P.O. Box 41727  
 Charleston, SC 29423  
 Telephone: (843) 767-7900  
 FAX: (843) 767-7906

In case of emergency call INFOTRAC: 800-535-5053

### Section 2. Hazard Identification

**Classification:**

Skin Corrosion/Irritation, Category 1

Serious Eye Damage/ Eye Irritation, Category 1

**Labeling:**



**Symbol:**

**Signal Word:** Danger.

**Hazard Statement:** Causes severe skin burns and eye damage.

**Precautionary Statement:** Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling.

### Section 3. Composition

Component	CAS/EINECS Registry #	Percent Concentration
Aluminum	7429-90-5/ 231-072-3	0.001
Arsenic	7440-38-2/ 231-148-6	0.001
Barium Carbonate (BaCO <sub>3</sub> )	513-77-9/ 208-167-3	0.001 (as Ba)
Barium Nitrate (Ba(NO <sub>3</sub> ) <sub>2</sub> )	10022-31-8/233-020-5	
Beryllium Acetate (Be <sub>4</sub> O(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub> )	19049-40-2/ 242-785-4	0.001 (as Be)
Calcium Carbonate (CaCO <sub>3</sub> )	471-34-1/ 207-439-9	0.001 (as Ca)
Cadmium	7440-43-9/ 231-152-8	0.001
Cesium Carbonate (Cs <sub>2</sub> CO <sub>3</sub> )	534-17-8 / 208-591-9	0.001 (as Cs)
Chromium	7440-47-3/ 231-157-5	0.001
Cobalt	7440-48-4/ 231-158-0	0.001
Copper	7440-50-8/ 231-159-6	0.001
Gallium	7440-55-3/ 231-163-8	0.001
Iron	7439-89-6/ 231-096-4	0.001

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Lead	7439-92-1/ 231-100-4	0.001
Lithium Carbonate (Li <sub>2</sub> CO <sub>3</sub> )	554-13-2/ 209-062-5	0.001 (as Li)
Magnesium	7439-95-4/ 231-104-6	0.001
Manganese Acetate Tetrahydrate (Mn(CH <sub>3</sub> CO <sub>2</sub> ) <sub>2</sub> )*4H <sub>2</sub> O	6156-78-1/211-334-3	0.1 (as Mn)
Nickel	7440-02-0/ 231-111-4	0.001
Potassium Nitrate (KNO <sub>3</sub> )	7757-79-1/ 231-818-8	0.001 (as K)
Rubidium Nitrate (RbNO <sub>3</sub> )	13126-12-0/236-060-1	0.001 (as Rb)
Selenium	7782-49-2/ 231-957-4	0.001
Silver	7440-22-4/231-131-3	0.001
Sodium Carbonate (Na <sub>2</sub> CO <sub>3</sub> )	497-19-8/ 207-838-8	0.001 (as Na)
Strontium Nitrate (Sr(NO <sub>3</sub> ) <sub>2</sub> )	10042-76-9/233-131-9	0.001 (as Sr)
Thallium	7440-28-0/ 231-138-1	0.001
Uranium Oxide (U <sub>3</sub> O <sub>8</sub> )	1344-59-8/ 215-702-4	0.001 (as U)
Ammonium Metavanadate (NH <sub>4</sub> VO <sub>3</sub> )	7803-55-6/ 232-261-3	0.001 (as V)
Zinc	7440-66-6/ 231-175-3	0.001
Nitric Acid (HNO <sub>3</sub> )	7697-37-2/231-714-2	2
Water, deionized	7732-18-5/231-791-2	Balance

*\*Note: Barium is derived from either Barium carbonate or Barium Nitrate. For this reason both sources are listed on the SDS. Refer to the product's Certificate of Analysis to determine which source was used in the production of the lot number received.*

#### Section 4. First Aid Measures

**IF ON SKIN (or hair):** Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Call a physician if irritation develops. Liquid may cause burns to skin and eyes.

**IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**IF SWALLOWED:** Rinse mouth. Do NOT induce vomiting. Call a physician. May cause nausea, vomiting, and diarrhea.

**IF INHALED:** Remove to fresh air and keep at rest in a position comfortable for breathing.

**IF exposed or concerned:** Get medical attention.

**Target Organs:** Eyes, skin.

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## Section 5. Fire Fighting Measures

Fire & Explosion hazards: While nitric acid is not combustible, it is a strong oxidizing agent that can react with combustible materials; however, it is present in limited quantities in this solution. NO<sub>x</sub> compounds can be released in case of fire.

Extinguishing Media: Use any extinguishing media that is suitable for the surrounding area. Use a water spray to dilute nitric acid and to absorb liberated nitrogen oxides.

Specific Methods: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

## Section 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Do not allow to enter drainage systems or water ways. Dike area and dilute spill with water and neutralize with soda ash, limestone, etc. Place the neutralized material into containers suitable for eventual disposal, reclamation, or destruction. Always dispose of in accordance with local regulations.

## Section 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Keep out of direct sunlight and away from heat, water, and incompatible materials. When diluting, the acid should always be added slowly to water and in small amounts. Refer to Section 8 for personal handling instructions.

## Section 8. Exposure Controls and Personal Protection

Engineering Controls: Provide exhaust ventilation or other engineering controls to keep any buildup of airborne contaminants below their respective threshold limit value. Ensure the availability of eyewash stations and safety showers.

Respiratory Protection: Provide approved respiratory apparatus for non-routine or emergency use. Use an approved vapor respirator when the vapor or mist concentrations are high. If necessary, refer to the NIOSH document Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84 for selection and use of respirators certified by NIOSH.

Personal Protection: Wear proper gloves, safety glasses with side shields, lab coat/apron.

### Exposure Limits:

<b>Component</b>	<b>ACGIH TLV</b>	<b>OSHA PEL</b>
Aluminum	10 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>
Arsenic	0.01 mg/m <sup>3</sup>	10 µg/ m <sup>3</sup>
Barium	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Beryllium Acetate	0.002 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>
Calcium Carbonate	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Cadmium	0.002 mg/m <sup>3</sup>	0.005 mg/m <sup>3</sup>
	(respirable particulate)	
Cesium Carbonate	Not Available	Not Available
Chromium	0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Cobalt	0.02 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Copper	0.2 mg/m <sup>3</sup> (fumes)	0.1 mg/m <sup>3</sup>
		(fumes)
Gallium	Not Available	Not Available

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Iron	10 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
Lead	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Lithium Carbonate	Not Available	Not Available
Magnesium	Not Available	Not Available
Manganese Acetate Tetrahydrate	0.2 mg/m <sup>3</sup>	C 5 mg/m <sup>3</sup>
Nickel	1.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Potassium Nitrate	Not Available	Not Available
Rubidium Nitrate	Not Available	Not Available
Selenium	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Silver	0.1 mg/m <sup>3</sup>	Not Available
Sodium Carbonate	Not Available	Not Available
Strontium Nitrate	Not Available	Not Available
Thallium	0.1 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Uranium Oxide	0.2 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Ammonium	0.05 mg/m <sup>3</sup>	Not Available
Metavanadate		
Zinc	5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Nitric Acid (HNO <sub>3</sub> )	2 mg/kg	5 mg/m <sup>3</sup>
Water, deionized	Not Available	Not Available

#### Section 9. Physical and Chemical Properties

Physical State: Liquid  
 Color: Clear, colorless to orange  
 Odor: Odorless to a faint pungent odor  
 Odor threshold: None  
 pH: <2  
 Melting point: N/A  
 Freezing Point: N/A  
 Boiling Point: Approximately 100°C  
 Flash point: N/A  
 Evaporation rate: N/A  
 Flammability: N/A  
 Explosion limits: N/A  
 Vapor Pressure (mm): N/A  
 Vapor Density (air+1): N/A  
 Relative density: (H<sub>2</sub>O = 1): Approximately 1.0  
 Solubility in H<sub>2</sub>O: Complete  
 Auto ignition temperature: N/A  
 Decomposition temperature: N/A  
 Molecular Weight: N/A

#### Section 10. Stability and Reactivity

Stability Indicator: Decomposes slowly to release oxygen.  
 Conditions to Avoid: Metals, chlorine, organic materials, strong alkali, cyanides.  
 Incompatibles: Strong reducing agents.

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Hazardous Decomposition Products: NO<sub>x</sub> compounds including nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) and nitric acid mist or vapor.

Hazardous Polymerization: Will not occur.

#### Section 11. Toxicological Information

May affect skin, mucous membranes and eyes. Swallowing may lead to a negative effect on mouth and throat and to the risk of perforation or the corrosion of esophagus and stomach.

This solution contains natural radioactive uranium oxide at 0.001% concentration. Uranium oxide is weakly radioactive and emits alpha particles which are harmful to the body. For the energy range of alpha particles usually encountered, a fraction of a millimeter of any ordinary material is sufficient for absorbance. Thin rubber, acrylic, stout paper, or cardboard will suffice.

#### RTECS#

HNO <sub>3</sub> - QU5775000	Al - BD0330000
As - CG0525000	BaCO <sub>3</sub> - CQ8600000
Be <sub>4</sub> O(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub> -DS2900000	CaCO <sub>3</sub> - FF9335000
Cd - EU9800000	Co - GF8750000
Cr - GB4200000	Cs <sub>2</sub> CO <sub>3</sub> - FK9400000
Cu - GL5325000	Ga - LW8600000
Fe - NO4565500	KNO <sub>3</sub> - TT3700000
Li <sub>2</sub> CO <sub>3</sub> - OJ5800000	Mg - OM2100000
Mn- AI5775000	Na <sub>2</sub> CO <sub>3</sub> - VZ4050000
Ni - QR5950000	Pb - OF7525000
RbNO <sub>3</sub> - QV0900000	Se - VS7700000
Ag-VW3500000	Sr(NO <sub>3</sub> ) <sub>2</sub> - WK9800000
Tl- XG3425000	U <sub>8</sub> O <sub>3</sub> - YR3490000
NH <sub>4</sub> VO <sub>3</sub> -YW0875000	Zn - ZG8600000
Ba(NO <sub>3</sub> ) <sub>2</sub> - CQ9625000	

#### Toxicity Data:

LD<sub>LO</sub> Oral, Human: (Nitric Acid) 430 mg/kg  
LD<sub>50</sub> Oral, Rat: (Aluminum) >5000 mg/kg  
LD<sub>50</sub>, Oral, Rat: (Arsenic) 763 mg/kg  
LD<sub>LO</sub> Oral, Human: (Barium Carbonate) 17 mg/kg  
LD<sub>50</sub> Oral, Rat: (Ba(NO<sub>3</sub>)<sub>2</sub>) 355 mg/kg.  
TD<sub>LO</sub> Intratracheal, Rat: (Beryllium Acetate) 13 mg/kg  
LD<sub>LO</sub> Oral, Human: (Cadmium) 2330 mg/kg  
LD<sub>LO</sub> Oral, Rabbit: (Cobalt) 750 mg/kg  
LD<sub>50</sub> Unreported Route, Rat: (Chromium) 27.5 mg/kg  
TD<sub>LO</sub> Oral, Human: (Copper) 120 µg/kg  
LD<sub>50</sub> Oral, Rat: (Cesium Carbonate) 2333 mg/kg  
LD<sub>50</sub> Oral, Rat: (Potassium Nitrate) 3750 mg/kg  
LD<sub>50</sub> Oral, Rat: (Lithium Carbonate) 525 mg/kg  
LD<sub>50</sub> Oral, Rat: (Manganese) 3730mg/kg  
LD<sub>50</sub>, Oral, Mouse: (Sodium Carbonate) 6600 mg/kg  
LD<sub>50</sub>, Intravenous, Mouse: (Nickel) 50 mg/kg  
TD<sub>50</sub> Oral, Woman: (Lead) 450 mg/kg/6 years

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LD<sub>50</sub> Oral, Rat: (Rubidium Nitrate) 4625 mg/kg  
 LD<sub>50</sub>, Oral, Rat: (Selenium) 6700 mg/kg  
 TD<sub>LO</sub> Implant, Mouse: (Silver) 11 g/kg  
 LD<sub>50</sub> Oral, rat: (Strontium Nitrate) 2750 mg/kg.  
 TD<sub>LO</sub> Oral, Man: (Thallium) 5,714 µg/kg  
 TD<sub>50</sub> Unreported Route, Rat: (Uranium Oxide) 750 mg/kg  
 LD<sub>LO</sub> Oral, Duck: (Zinc) 388 mg/kg

## Section 12. Ecological Information

Ecotoxicological information: Do not allow material to reach ground water, water bodies, or sewage system. Beryllium and its compounds are considered to have high acute and chronic toxicity to aquatic life. Beryllium is more toxic in soft water than in hard water.

## Section 13. Disposal Considerations

General: Follow Federal, state and local regulations for waste.

## Section 14. Transport Information

D.O.T. Classification: Hazardous by IATA and 49CFR regulations (based on concentration of acid).  
 D.O.T. Shipping Name: Corrosive liquid, Acidic, Inorganic, n.o.s. (Nitric Acid Solution)  
 D.O.T. Hazard Class: 8  
 U.N./N.A. Number: 3264  
 Packing Group: II  
 D.O.T. Label: Corrosive (8)

## Section 15. Regulations (Not meant to be all inclusive-selected regulation listed)

TSCA Status: Components of this solution are listed on the TSCA Inventory.  
 RCRA Status: Yes, Ammonium metavanadate (7803-55-6)  
 SARA: Subject to the reporting requirements of Section 313 or SARA Title III and of 40 CFR 372  
 Risk Phrases: R20/21/22, R45 Harmful by inhalation, skin contact, or if swallowed. May cause cancer.  
 Safety Phrases: S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.  
 WHMIS Information (Canada): E: Corrosive

ICP-MS-E contains a limited quantity radioactive material that is exempt from radioactive labeling requirements under 49CFR section 173.421. The massic activity of 100mL ICP-MS-F is less than 28 Bq/g.

## Section 16. Other Information

HPS products are intended for laboratory use only. All products should be handled and used by trained professional personnel only. The responsibility for the safe handling and use of these products rests solely with the buyer and/or user. The SDS was prepared carefully and represents the best data currently available to us; however, HPS does not certify the data on the SDS. Certified values for this material are given only on the Certificate of Analysis.

Theodore C. Rains, Ph.D.