

## Safety Data Sheet

### Section 1. Product and Company Identification

Product Identification: ICP-MS-ICS-2 Solution B  
 MSDS Number: ICP-MS-ICS-2 Solution B  
 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
Arsenic	7440-38-2/231-148-6	0.001
Cadmium	7440-43-9/231-152-8	0.001
Chromium	7440-47-3/231-157-5	0.002
Cobalt	7440-48-4/231-158-0	0.002
Copper	7440-50-8/231-159-6	0.002
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	0.002
Selenium	7782-49-2/231-957-4	0.001
Silver	7440-22-4/231-131-3	0.0005
Ammonium Metavanadate (NH <sub>4</sub> VO <sub>3</sub> )	7803-55-6/232-261-3	0.002 (as V)
Zinc	7440-66-6/231-175-3	0.001
Nitric Acid (HNO <sub>3</sub> )	7697-37-2/231-714-2	2

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Water, deionized	7732-18-5/231-791-2	Balance
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#### 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. Cadmium is a poison that accumulates in the liver and kidneys. Ingestion of arsenic compounds may be poisonous, leading to death.

**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.

#### 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

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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>
Arsenic	0.01 mg/m <sup>3</sup>	10 µg/ m <sup>3</sup>
Cadmium	0.002 mg/m <sup>3</sup> (respirable particulate)	0.005 mg/m <sup>3</sup>
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)
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>
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
Ammonium Metavanadate	0.05 mg/m <sup>3</sup>	Not Available
Zinc	5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Nitric Acid	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 to light greyish

Odor: Odorless to a faint pungent odor

Odor threshold: None

pH: <1

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

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Stability Indicator: Decomposes slowly to release oxygen.

Conditions to Avoid: Metals, chlorine, organic materials, strong alkali, cyanides.

Incompatibles: Strong reducing agents.

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.

Arsenic, Cadmium, and Nickel are known or investigated as possible carcinogenic substances.

#### RTECS#

HNO <sub>3</sub> -QU5775000	As-CG0525000
Cd-EU9800000	Cr-GB4200000
Co-GF8750000	Cu-GL5325000
Mn-AI5775000	Ni-QR5950000
Se-VS7700000	Ag-VW3500000
NH <sub>4</sub> VO <sub>3</sub> -YW0875000	Zn-ZG8600000

#### Toxicity Data:

LD<sub>LO</sub> Oral, Human: (Nitric Acid) 430 mg/kg

LD<sub>50</sub>, Oral, Rat: (Arsenic) 763 mg/kg

LD<sub>LO</sub> Oral, Human: (Cadmium) 2330 mg/kg

LD<sub>50</sub> Unreported Route, Rat: (Chromium) 27.5 mg/kg

LD<sub>LO</sub> Oral, Rabbit: (Cobalt) 750 mg/kg

TD<sub>LO</sub> Oral, Human: (Copper) 120 µg/kg

LD<sub>50</sub> Oral, Rat: (Manganese) 3730mg/kg

LD<sub>50</sub>, Intravenous, Mouse: (Nickel) 50 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: (Ammonium Metavanadate) 58,100 µg/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.

#### 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)

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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 (NH<sub>4</sub>VO<sub>3</sub>-7803-55-6).  
SARA: Subject to the reporting requirements of Section 313 or SARA Title III and of 40 CFR 372  
Risk Phrases: R20. R24/25. R45. R48. R35. Harmful by inhalation. Toxic in contact with the skin and if swallowed; May cause cancer; Danger of serious damage to health by prolonged exposure; Danger of cumulative effects.  
Safety Phrases: S36/37/39, S53 Wear suitable protective clothing, gloves and eye/face protection; Avoid exposure- obtain special instruction before use.  
WHMIS Information (Canada): D2B: Poisonous/Carcinogen  
E: Corrosive

#### 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.