

## Material Safety Data Sheet

### Section 1. Product and Company Identification

Product Identification: ICP-SSWS-M  
 MSDS Number: ICP-SSWS-M  
 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. Chemical Composition

Component	CAS/EINECS Registry #	Percent Concentration	ACGIH TLV	OSHA PEL
Aluminum	7429-90-5/ 231-072-3	0.02	10 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>
Antimony	7440-36-0/ 231-146-5	0.005	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Arsenic	7440-38-2/ 231-148-6	<0.001	0.01 mg/m <sup>3</sup>	10 µg/m <sup>3</sup>
Barium Carbonate (BaCO <sub>3</sub> )	513-77-9/ 208-167-3	0.02 (as Ba)	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
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)	0.002 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>
Cadmium	7440-43-9/ 231-152-8	<0.001	0.002 mg/m <sup>3</sup> (respirable particulate)	0.005 mg/m <sup>3</sup>
Chromium	7440-47-3/ 231-157-5	0.002	0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Cobalt	7440-48-4/ 231-158-0	0.005	0.02 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Copper	7440-50-8/ 231-159-6	0.0025	0.2 mg/m <sup>3</sup> (fumes)	0.1 mg/m <sup>3</sup> (fumes)
Iron	7439-89-6/ 231-096-4	0.01	10 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
Lead	7439-92-1/ 231-100-4	<0.001	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Manganese	7439-96-5/ 231-105-1	0.005	0.2 mg/m <sup>3</sup>	C 5 mg/m <sup>3</sup>
Nickel	7440-02-0/ 231-111-4	0.005	1.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Selenium	7782-49-2/ 231-957-4	<0.001	0.2 mg/m <sup>3</sup>	0.2 mg/m <sup>3</sup>
Silver	7440-22-4/ 231-131-3	<0.001	0.1 mg/m <sup>3</sup>	Not Available
Thallium	7440-28-0/ 231-138-1	<0.001	0.1 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Ammonium Metavanadate (NH <sub>4</sub> VO <sub>3</sub> )	7803-55-6/ 232-261-3	0.005 (as V)	0.05 mg/m <sup>3</sup>	Not Available

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Zinc	7440-66-6/ 231-175-3	0.005	5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Nitric Acid	7697-37-2/ 231-714-2	2	2 mg/kg	5 mg/m <sup>3</sup>
Hydrofluoric Acid	7664-39-3/ 231-634-8	<0.001	C: 3 mg/ml	2.5 mg/m <sup>3</sup> STEL: 6 mg/ml
Water, deionized	7732-18-5/ 231-791-2	Balance	Not Available	Not Available

### Section 3. Hazard Identification

**Emergency Overview:** Mildly corrosive. May cause irritation to areas of contact. Wash areas of contact with water for at least 15 minutes. If ingested, do not induce vomiting. Dilute with water and call a physician. May cause cancer. Potential symptoms of overexposure are irritation of the eyes, mucous membranes and skin, dental erosion, bronchitis, pneumonitis, delayed pulmonary edema.

**Target Organs:** Eyes, skin, respiratory system, immune system, nasal cavities, teeth, blood, bones. Increases risk of lung, liver, kidney, and bladder cancer with prolonged exposure.

**Skin/eye Contact:** Liquid may cause burns to skin and eyes. Hydrogen fluoride will penetrate the skin and attack the underlying tissue and bone.

**Inhalation:** May cause irritation. May cause severe irritation/burns to respiratory system and difficulty in breathing.

**Ingestion:** May cause nausea, vomiting, and diarrhea. Ingestion of arsenic compounds may be poisonous, leading to death. Animal studies indicate that prolonged ingestion of some soluble nickel compounds may affect the blood, bone marrow, thymus, spleen, kidneys, and immune system.

### Section 4. First Aid Measures

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. If breathing is difficult, give oxygen.

**Skin/eye Contact:** Flush eyes with plenty of water for at least 15 minutes. Remove contaminated shoes and clothing. Rinse affected area with large amount of water followed by washing the area with soap and water. Immediately apply calcium gluconate gel to areas of contact, preferably wearing gloves, until medical assistance is available.

**Ingestion:** CALL A PHYSICIAN. If swallowed rinse mouth. Do NOT induce vomiting. If conscious give large quantities of water or milk.

### 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. NO<sub>x</sub> compounds can be released in event of fire. Hydrofluoric acid may ignite or explode on contact with combustible materials.

**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.

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#### Section 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Cover the spill with sodium bicarbonate or a soda ash-slaked lime mixture (50:50) to neutralize the acid. 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. Wash exposed skin area thoroughly after handling.

#### Section 8. Exposure Controls and Personal Protection

Engineering Controls: No specific controls are needed. Normal room ventilation is adequate.  
 Respiratory Protection: Normal room ventilation is adequate.  
 Personal Protection: Wear proper gloves, safety glasses with side shields, lab coat/apron.

#### Section 9. Physical and Chemical Properties

Molecular Weight: N/A  
 Boiling Point: Approximately 100°C  
 Freezing Point: N/A  
 Vapor Pressure (mm): N/A  
 Vapor Density (air+1): N/A  
 Specific Gravity (H<sub>2</sub>O = 1): Approximately 1.0  
 Solubility in H<sub>2</sub>O: Complete  
 Appearance: Colorless to light gray liquid  
 Odor: Odorless to a faint pungent odor  
 pH: <1

#### Section 10. Stability and Reactivity

Stability Indicator: YES  
 Conditions to Avoid: Metals, chlorine, organic materials, strong alkali, cyanides.  
 Incompatibles: Strong reducing agents.  
 Hazardous Decomposition Products: HF and 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.

Beryllium, cadmium, nickel, and lead are investigated as a tumorigens.

RTECS#:  
 HNO<sub>3</sub>- QU5775000

HF- MW7875000

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Al- BD0330000	Sb- CC4025000	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		Cd- EU9800000	Cr- GB4200000
Co- GF8750000	Cu- GL5325000	Fe- NO4565500	Pb- OF7525000
Mn- OO9275000	Ni- QR5950000	Se- VS7700000	Ag- VW3500000
Tl- XG3425000	(NH <sub>4</sub> VO <sub>3</sub> )- YW0875000		Zn- ZG8600000

**Toxicity Data:**

LD<sub>LO</sub> Oral, Human: (HNO<sub>3</sub>) 430 mg/kg; LC<sub>LO</sub> Inhalation, Human: (HF) 50 mg/kg/30 min; LD<sub>50</sub> Oral, Rat: (Al) >5000 mg/kg; LD<sub>50</sub> Oral, Rat: (Sb) 7g/kg; LD<sub>50</sub>, Oral, Rat: (As) 763 mg/kg; LD<sub>LO</sub> Oral, Human: (BaCO<sub>3</sub>) 17 mg/kg; TD<sub>LO</sub> Intratracheal, Rat: (Be<sub>4</sub>O(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>6</sub>)13 mg/kg; LD<sub>LO</sub> Oral, Human: (Cd) 2330 mg/kg; LD<sub>50</sub> Unreported Route, Rat: (Cr) 27.5 mg/kg; LD<sub>LO</sub> Oral, Rabbit: (Co) 750 mg/kg; TD<sub>LO</sub> Oral, Human: (Cu) 120 µg/kg; TD<sub>50</sub> Oral, Woman: (Pb) 450 mg/kg/6 year; LD<sub>50</sub> Oral, Rat: (Mn) 9 g/kg; LD<sub>50</sub>, Intravenous; Mouse: (Ni) 50 mg/kg; LD<sub>50</sub>, Oral, Rat: (Se) 6700 mg/kg; Mouse: (Ag) 11 g/kg; TD<sub>LO</sub> Oral, Man: (Tl) 5,714 µg/kg; LD<sub>50</sub> Oral, Rat: (NH<sub>4</sub>VO<sub>3</sub>) 58,100 µg/kg; LD<sub>LO</sub> Oral, Duck: (Zn) 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**

Follow federal, state and local regulations for waste.

**Section 14. Transport Information**

D.O.T. Classification: Not hazardous by DOT regulations (based on low concentration of acid).

**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: 7664-39-3 (Hydrofluoric Acid); 7803-55-6 (Ammonium Vanadate)

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): Not Applicable (based on low concentration of components.)

**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 rest solely with the buyer and/or user. The MSDS was prepared carefully and represents the best data currently available to us; however, HPS does not certify the data on the MSDS. Certified values for this material are given only on the Certificate of Analysis.

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