Section 1. Product and Company Identification

Product Identification:	ICP-MS-IS-1
MSDS Number:	ICP-MS-IS-1
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
Bismuth	7440-69-9/231-177-4	0.001
Holmium Oxide (Ho_2O_3)	12055-62-8/235-015-3	0.001 (as Ho)
Indium	7440-74-6/231-180-0	0.001
Lithium Carbonate ($^6Li_2CO_3$)	554-13-2/209-062-5	0.001 (as ^6Li)
Lutetium Oxide (Lu_2O_3)	12032-20-1/234-764-3	0.001 (as Lu)
Rhodium Trichloride ($RhCl_3$)	10049-07-7/ 233-165-4	0.001 (as Rh)
Scandium Oxide (Sc_2O_3)	12060-08-1/235-042-0	0.001 (as Sc)
Terbium Oxide (Tb_4O_7)	12037-01-3/234-856-3	0.001 (as Tb)
Yttrium Oxide (Y_2O_3)	1314-36-9/215-233-5	0.001 (as Y)
Hydrochloric acid	7647-01-0/231-595-7	<0.5
Nitric Acid	7697-37-2/231-714-2	2
Water, deionized	7732-18-5/231-791-2	Balance

Section 4. First Aid Measures

Target Organs: Eyes, skin, respiratory system, immune system, nasal cavities, teeth, blood, bones, liver, kidneys.

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

Skin/eye Contact: Liquid may cause burns to skin and eyes. 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. Call a physician if irritation develops.

Ingestion: May cause nausea, vomiting, and diarrhea. 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_x 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.

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: Provide general and local (e.g., fume hood) ventilation systems to maintain airborne concentrations below the TLV. 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:

Component	ACGIH TLV	OSHA PEL
Bismuth	Not Available	Not Available
Holmium Oxide	Not Available	Not Available
Indium	0.05 mg/m^3	0.05 mg/m^3
Lithium Carbonate	Not Available	Not Available
Lutetium Oxide	Not Available	Not Available
Rhodium Trichloride	0.01 mg(Rh)/ml	Not Available
Scandium Oxide	Not Available	Not Available
Terbium Oxide	Not Available	Not Available
Yttrium Oxide	1 mg/m^3	Not Available
Hydrochloric acid	C 5ppm C 7.5 mg/m^3	C 5ppm C 7 mg/m^3
Nitric Acid	2 mg/kg	5 mg/m^3

Section 9. Physical and Chemical Properties

Physical state: Liquid
Appearance: Clear, colorless
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_2O = 1): Approximately 1.0
Solubility in H_2O: Complete
Auto ignition temperature: N/A
Decomposition temperature: N/A

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: NO_x compounds including nitric oxide (NO), nitrogen dioxide (NO_2), nitrous oxide (N_2O) 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

Tumorigenic, mutagenic, and reproductive effects have been observed on laboratory animals tested with rhodium chloride.

RTECS#:

HNO_3-QU5775000
HCl- MW4025000
Bi-EB2600000
In-NL1050000
$^6Li_2CO_3$-OJ5800000
Y_2O_3-ZG3850000
$RhCl_3$- V19290000

Toxicity Data:

LD_{LO} Oral, Human: (Nitric Acid) 430 mg/kg
LD_{50} Oral, Rabbit: (Hydrochloric Acid) 900 mg/kg
LD_{50} Oral, Rat: (Bismuth) 5 g/kg
LD_{LO} Subcutaneous, Mouse: (Indium) 10mg/kg
LD_{50} Oral, Rat: (Lithium Carbonate) 525 mg/kg
LD_{LO} Oral, Mouse: (Yttrium Oxide) >6 g/kg
LD_{50} Oral, Rat: (Rhodium Chloride) 1302 mg/kg

Section 12. Ecological Information

Ecotoxicological information: Hydrochloric acid has slight acute and chronic toxicity to aquatic life.

Section 13. Disposal Considerations

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: All components of this solution are listed on the TSCA Inventory or are mixtures
OSHA Status: These items meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.
TSCA Status: Components of this solution are listed on the TSCA Inventory.
RCRA Status: No
SARA: Subject to the reporting requirements of Section 313 or SARA Title III and of 40 CFR 372

Risk Phrases: R20,21,22, R48 Harmful by inhalation, skin contact, or if swallowed. Danger of serious damage to health by prolonged exposure.
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 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.

Theodore C. Rains, Ph.D.