Section 1. Product and Company Identification

Product Identification: ICP-MS-TS-5
MSDS Number: ICP-MS-TS-5
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)
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)
Uranium Oxide (U_3O_8)	1344-59-8/215-702-4	0.001 (as U)
Yttrium Oxide (Y_2O_3)	1314-36-9/215-233-5	0.001 (as Y)
Nitric Acid (HNO_3)	7697-37-2/231-714-2	2
Water, deionized	7732-18-5/231-791-2	Balance

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.

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_x 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:

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
Scandium Oxide	Not Available	Not Available
Terbium Oxide	Not Available	Not Available
Uranium Oxide	0.2 mg/m^3	0.05 mg/m^3
Yttrium Oxide	1 mg/m^3	Not Available
Nitric Acid	0.002 mg/m^3	0.002 mg/m^3
Water, deionized	Not Available	Not Available

Section 9. Physical and Chemical Properties

Physical State: Liquid
Color: 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
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.
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. This solution contains natural uranium oxide at 0.001% concentration. Pure 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_3-QU5775000	Bi-EB2600000
In-NL1050000	Li_2CO_3-OJ5800000
U_3O_8-YR3490000	Y_2O_3-ZG3850000

Toxicity Data:

LD_{LO} Oral, Human: (Nitric Acid) 430 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
TD_{50} Unreported Route, Rat: (Uranium Oxode) 750 mg/kg
LD_{LO} Oral, Mouse: (Yttrium Oxide) >6 g/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)
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)

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

ICP-MS-TS-5 contains a limited quantity radioactive material that is exempt from radioactive labeling requirements under 49CFR section 173.421. The massic activity of ICP-MS-TS-5 is less than 500 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.