

Safety Data Sheet

Section 1. Product and Company Identification

Product Identification: ICP-MS Tuning Solution 7
 MSDS Number: ICP-MS-TS-7
 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 |
|--|-----------------------|-----------------------|
| Barium Nitrate ($\text{Ba}(\text{NO}_3)_2$) | 10022-31-8/233-020-5 | 0.001 (as Ba) |
| Barium Carbonate (BaCO_3) | 513-77-9/208-167-3 | |
| Beryllium Acetate ($\text{Be}_4\text{O}(\text{C}_2\text{H}_3\text{O}_2)_6$) | 19049-40-2/242-785-4 | 0.001 (as Be) |
| Cerium Nitrate ($\text{Ce}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$) | 10294-41-4 | 0.001 (as Ce) |
| Cobalt | 7440-48-4/231-158-0 | 0.001 |
| Copper | 7440-50-8/231-159-6 | 0.001 |
| Indium | 7440-74-6/231-180-0 | 0.001 |
| Lead | 7439-92-1/231-100-4 | 0.001 |
| Magnesium | 7439-95-4/231-104-6 | 0.001 |
| Thallium | 7440-28-0/231-138-1 | 0.001 |
| Thorium Oxide (ThO_2) | 1314-20-1/215-225-1 | 0.001 (as Th) |
| Zinc | 7440-66-6/231-175-3 | 0.001 |
| Nitric Acid | 7697-37-2/ 231-714-2 | 2 |

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| | | |
|------------------|----------------------|---------|
| 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.

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.

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. Keep container tightly sealed. 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.

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

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Exposure Limits:

| Component | ACGIH TLV | OSHA PEL |
|-------------------|-------------------------|-------------------------|
| Barium | 0.5 mg/m ³ | 0.5 mg/m ³ |
| Beryllium Acetate | 0.002 mg/m ³ | 0.002 mg/m ³ |
| Cerium Nitrate | Not Available | Not Available |
| Cobalt | 0.02 mg/m ³ | 0.1 mg/m ³ |
| Indium | 0.05 mg/m ³ | 0.05 mg/m ³ |
| Lead | 0.05 mg/m ³ | 0.05 mg/m ³ |
| Magnesium | Not Available | Not Available |
| Thallium | 0.1 mg/m ³ | 0.1 mg/m ³ |
| Thorium Oxide | Not Available | Not Available |
| Nitric acid | 2 mg/kg | 5 mg/m ³ |

Section 9. Physical and Chemical Properties

Physical State: Liquid
Color: clear, colorless liquid
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 (H₂O = 1): Approximately 1.0
Solubility in H₂O: Complete
Auto ignition temperature: N/A
Decomposition temperature: N/A
Molecular Weight: N/A

Section 10. Stability and Reactivity

Stability Indicator: YES
Conditions to Avoid: Incompatibles
Incompatibles: Strong reducing agents, combustible materials, halogens, metals, chlorine, organic materials, strong alkali, cyanides.
Hazardous Decomposition Products: NO_x compounds including nitric oxide (NO), nitrogen dioxide (NO₂), nitrous oxide (N₂O) and nitric acid mist or vapor.
Hazardous Polymerization: Does not polymerize.

Section 11. Toxicological Information

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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 depleted radioactive thorium oxide and uranium oxide at 0.001% concentration. Both are 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 #:

HNO₃ - QU5775000

BaCO₃ - CQ8600000

Be₄O(C₂H₃O₂)₆ - DS2900000

CeO₂ - FK6310000

Co - GF8750000

In - NL105000

Pb - OF7525000

Mg - OM2100000

Tl - XG3425000

ThO₂ - XO6950000

Ba(NO₃)₂ - CQ9625000

Toxicity Data:

LD_{LO} Oral, Human: (Nitric Acid) 430 mg/kg

LD_{LO} Oral, Human: Ba(NO₃)₂ Oral rat LD50: 355 mg/kg

LD_{LO} Oral, Human: (Barium Carbonate) 17 mg/kg.

TD_{LO} Intratracheal, Rat: (Beryllium Acetate) 13 mg/kg.

LD₅₀, Oral, Rat: (Cerium Nitrate) 4200 mg/kg

LD_{LO} Oral, Rabbit: (Cobalt) 750 mg/kg

LD_{LO} Subcutaneous, Mouse: (Indium) 10mg/kg

TD₅₀ Oral, Woman: (Lead) 450 mg/kg/6 years

TD_{LO} Oral, Man: (Thallium) 5,714 µg/kg

TD_{LO} Intraarterial, Human: (Thorium Oxide) 490 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 disposal.

Section 14. Transport Information

D.O.T. Classification: Hazardous by IATA 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)

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TSCA Status: The 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, R45 Harmful by inhalation, skin contact, or if swallowed; May cause cancer.

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): E: Corrosive

ICP-MS-TS-7 is a limited quantity radioactive material that is exempt from radioactive labeling requirements under 49CFR section 173.421. The massic activity of this solution is less than 30 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 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.