

Safety Data Sheet

Section 1. Product and Company Identification

Product Identification: ICP-MS-68A Solution C
 MSDS Number: ICP-MS-68A Solution C
 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:

Corrosive Category 1

Labeling:



Symbol:

Signal Word: Warning. Danger.

Hazard statement: Causes severe skin burns and eye damage.

Precautionary statement: If on skin: immediately remove all contaminated clothing. Rinse skin with water. 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. If inhaled: Remove to fresh air and keep at rest in a position comfortable for breathing. Use personal protective equipment as required.

Section 3. Composition

Component	CAS/EINECS Registry #	Percent Concentration
Ammonium hexachloroiridate (hydrate) (III) ($(\text{NH}_4)_3\text{IrCl}_6 \cdot x\text{H}_2\text{O}$)	29796-57-4	0.001 (as Ir)
Gold	7440-57-5/231-165-9	0.001
Ammonium hexachloroosmate ($(\text{NH}_4)_2\text{OsCl}_6$)	12125-08-5/ 235-188-5	0.001 (as Os)
Ammonium hexachlororuthenate ($(\text{NH}_4)_2\text{RuCl}_6$)	18746-63-9/242-552-7	0.001 (as Ru)
Palladium	7440-05-3/ 231-115-6	0.001
Platinum	7440-06-4/ 231-116-1	0.001
Rhodium Chloride Trihydrate ($\text{RhCl}_3 \cdot 3\text{H}_2\text{O}$)	10049-07-7/ 233-165-4	0.001 (as Rh)

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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.

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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
Ammonium hexachloroiridate (hydrate) (III)	Not Available	Not Available
Gold	Not Available	Not Available
Ammonium hexachloroosmate	Not Available	Not Available
Ammonium hexachlororuthenate	Not Available	Not Available
Palladium	Not Available	Not Available
Platinum	1 mg/m ³	1 mg/m ³
Rhodium Chloride Trihydrate	0.01 mg(Rh)/ml	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: The standard contains elements which upon exposure to light over time may cause changes in the oxidation state. This can cause the solution to change color. The typical range of colors seen is light golden brown to a deep brown. This does not affect the concentration of the standard.

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 (H₂O = 1): Approximately 1.0

Solubility in H₂O: Complete

Auto ignition temperature: N/A

Decomposition temperature: N/A

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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 (NO₂), nitrous oxide (N₂O) 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#:

HNO₃- QU5900000

HCl- MW4025000

Au- MD5070000

Pd- RT3480500

Pt- TP2160000

RhCl₃- V19275000

Toxicity Data:

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

LD₅₀ Oral, Rabbit: (Hydrochloric Acid) 900 mg/kg; LC_{LO} Inhalation, Human: (Hydrochloric Acid) 3000 ppm/5 minutes

LD₅₀, Oral, Rat: (Palladium Chloride) 2704 mg/kg

LD₅₀ 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)

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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 (hydrates) of items 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 Wear suitable protective clothing, gloves and eye protection

WHMIS Information (Canada): 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.