Section 1. Product and Company Identification

Product Identification:	PE ICP-MS Calibration Standard 3 (Solution A)
SDS Number:	ICP-MSCS-PE3 (Solution A)
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
Silver	7440-22-4/231-131-3	0.001
Aluminum	7429-90-5/231-072-3	0.001
Arsenic	7440-38-2/231-148-6	0.001
Barium Carbonate ($BaCO_3$)	513-77-9/208-167-3	0.001 (as Ba)
Barium Nitrate ($Ba(NO_3)_2$)	10022-31-8/233-020-5	
Beryllium Acetate ($Be_4O(C_2H_3O_2)_6$)	19049-40-2/242-785-4	0.001 (as Be)
Bismuth	7440-69-9/231-177-4	0.001
Calcium Carbonate ($CaCO_3$)	471-34-1/207-439-9	0.001 (as Ca)
Cadmium	7440-43-9/231-152-8	0.001
Cobalt	7440-48-4/231-158-0	0.001
Chromium	7440-47-3/231-157-5	0.001
Cesium Carbonate (Cs_2CO_3)	534-17-8 /208-591-9	0.001 (as Cs)

Copper	7440-50-8/231-159-6	0.001
Iron	7439-89-6/231-096-4	0.001
Gallium	7440-55-3/231-163-8	0.001
Indium	7440-74-6/231-180-0	0.001
Potassium Nitrate (KNO_3)	7757-79-1/231-818-8	0.001 (as K)
Lithium Carbonate (Li_2CO_3)	554-13-2/209-062-5	0.001 (as Li)
Magnesium	7439-95-4/231-104-6	0.001
Manganese Acetate Tetrahydrate ($Mn(CH_3CO_2)_2 *4H_2O$)	6156-78-1/211-334-3	0.001 as (Mn)
Sodium Carbonate (Na_2CO_3)	497-19-8/207-838-8	0.001 (as Na)
Nickel	7440-02-0/ 231-111-4	0.001
Lead	7439-92-1/231-100-4	0.001
Rubidium Nitrate ($RbNO_3$)	13126-12-0/236-060-1	0.001 (as Rb)
Selenium	7782-49-2/231-957-4	0.001
Sodium Carbonate (Na_2CO_3)	497-19-8/207-838-8	0.001 (as Na)
Strontium Nitrate ($Sr(NO_3)_2$)	10042-76-9/233-131-9	0.001 (as Sr)
Thallium	7440-28-0/231-138-1	0.001
Ammonium Metavanadate (NH_4VO_3)	7803-55-6/232-261-3	0.001 (as V)
Uranium Oxide (U_3O_8)	1344-59-8/215-702-4	0.001 (as U)
Zinc	7440-66-6/231-175-3	0.001
Nitric Acid	7697-37-2/ 231-714-2	5
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, respiratory system. Increases risk of lung, liver, kidney, and bladder cancer with prolonged exposure.

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.

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

Exposure Limits:

Component	ACGIH TLV	OSHA PEL
Silver	0.1 mg/m^3	Not Available
Aluminum	10 mg/m^3	15 mg/m^3
Arsenic	0.01 mg/m^3	10 $\mu g/ m^3$
Barium	0.5 mg/m^3	0.5 mg/m^3
Beryllium Acetate	0.002 mg/m^3	0.002 mg/m^3
Bismith	Not Available	Not Available
Calcium Carbonate	0.5 mg/m^3	0.5 mg/m^3

Cadmium	0.002 mg/m^3 (respirable particulate)	0.005 mg/m^3
Cobalt	0.02 mg/m^3	0.1 mg/m^3
Chromium	0.5 mg/m^3	1 mg/m^3
Cesium Carbonate	Not Available	Not Available
Copper	0.2 mg/m^3 (fumes)	0.1 mg/m^3 (fumes)
Iron	10 mg/m^3	5 mg/m^3
Gallium	Not Available	Not Available
Indium	0.05 mg/m^3	0.05 mg/m^3
Potassium Nitrate	Not Available	Not Available
Lithium Carbonate	Not Available	Not Available
Magnesium	Not Available	Not Available
Manganese Acetate Tetrahydrate	0.2 mg/m^3	C 5 mg/m^3
Sodium Carbonate	Not Available	Not Available
Nickel	1.5 mg/m^3	1 mg/m^3
Lead	0.05 mg/m^3	0.05 mg/m^3
Rubidium Nitrate	Not Available	Not Available
Selenium	0.2 mg/m^3	0.2 mg/m^3
Sodium Carbonate	Not Available	Not Available
Strontium Nitrate	Not Available	Not Available
Thallium	0.1 mg/m^3	0.1 mg/m^3
Ammonium Metavanadate	0.05 mg/m^3	Not Available
Uranium Oxide	0.2 mg/m^3	0.05 mg/m^3
Zinc	5 mg/m^3	1 mg/m^3
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: (H_2O = 1): Approximately 1.0
Solubility in H_2O: Complete
Auto ignition temperature: N/A

Decomposition temperature: N/A
Molecular Weight: 107.87 (Ag)

Section 10. Stability and Reactivity

Stability Indicator: Decomposes slowly to release oxygen.
Conditions to Avoid: Metals, chlorine, organic materials, strong alkali, cyanides, excess heat, combustible materials, and light.
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. Irritating and toxic fumes and gases, oxygen, hydrogen gas.
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. Prolonged exposure to Silver (pure) compounds may lead to the discoloration of the skin, mucous membranes, nose, throat, and eyes.

RTECS#

HNO_3; QU5775000
Al: BD0330000
$BaCO_3$; CQ8600000
$Be_4O(C_2H_3O_2)_6$; DS1750000
$CaCO_3$- FF9335000
Co: GF8750000
Cs_2CO_3: FK9400000
Fe;NO4565500
In; NL1050000
Li_2CO_3: OJ5800000
Mn; AI5775000
Ni; QR5950000
$RbNO_3$- QV0900000
Na_2CO_3: VZ4050000
Tl; XG3425000
U_3O_8: YR3490000
Ag; VW3500000
As; CG0525000
$Ba(NO_3)_2$- CQ9625000
Bi: EB2600000
Cd: EU9800000
Cr; GB4200000
Cu; GL5325000
Ga; LW8610000
KNO_3: TT3700000
Mg; OM2100000
Na_2CO_3: VZ4050000
Pb; OF7525000
Se; VS7700000
$Sr(NO_3)_2$– WK9800000
NH_4VO_3- YW0875000
Zn: ZG8600000

Toxicity Data:

LD_{LO} Oral, Human: (Nitric Acid) 430 mg/kg.
LD50 Oral, Rat: (Silver) > 5,000 mg/kg
LD_{50} Oral, Rat: (Aluminum) >5000 mg/kg
LD_{50}, Oral, Rat: (Arsenic) 763 mg/kg.
LD_{LO} Oral, Human: (Barium Carbonate) 17 mg/kg.
LD_{50} Oral, Rat: (Barium Nitrate) 355 mg/kg.
TD_{LO} Intratracheal, Rat: (Beryllium Acetate) 13 mg/kg.
LD_{50} Oral, Rat: (Bismuth) 5 g/kg
LD_{50} Oral, Rat: (Calcium Carbonate) 6450 mg/kg.

LD_{LO} Oral, Human: (Cadmium) 2330 mg/kg.
LD_{LO} Oral, Rabbit: (Cobalt) 750 mg/kg.
LD_{50} Unreported Route, Rat: (Chromium) 27.5 mg/kg
LD_{50} Oral, Rat: (Cesium Carbonate) 2333 mg/kg.
TD_{LO} Oral, Human: (Copper) 120 μg/kg.
LD_{50} Oral, Rat: (Iron) 30gm/kg
LD_{LO} Subcutaneous, Mouse: (Indium) 10mg/kg.
LD_{50} Oral, Rat: (Potassium Nitrate) 3750 mg/kg
LD_{50} Oral, Rat: (Lithium Carbonate) 525 mg/kg.
LD_{50} Oral, Rat: (Manganese) 3730 mg/kg.
LD_{50}, Oral, Mouse: (Sodium Carbonate) 6600 mg/kg.
LD_{50}, Intravenous, Mouse: (Nickel) 50 mg/kg.
TD_{50} Oral, Woman: (Lead) 450 mg/kg/6 years
LD_{50} Oral, Rat: (Rubidium Nitrate) 4625 mg/kg.
LD_{50} Oral, Rat: (Selenium) 6700mg/kg.
LD_{50}, Oral, Mouse: (Sodium Carbonate) 6600 mg/kg.
LD_{50} Oral, rat: (Strontium Nitrate) 2750 mg/kg
TD_{LO} Oral, Man: (Thallium) 5,714 μg/kg.
LD_{50} Oral, Rat: (Ammonium Metavanadate) 58 mg/kg.
TD_{50} Unreported Route, Rat: (Uranium Oxide) 750 mg/kg.
LD_{LO} Oral, Duck: (Zinc) 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

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)

TSCA Status: Components of this solution are listed on the TSCA Inventory.
RCRA Status: Yes, Ammonium metavanadate (P119)
SARA: Subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372
Risk Phrases: R36/38 Irritating to eyes and skin.

Safety Phrases: S36/37/39 Wear suitable protective clothing, gloves and eye/face 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 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.