Material Safety Data Sheet

Section 1. Product and Company Identification

Product Identification: ICP-MS-Method 6020 CLP-M
MSDS Number: ICP-MS-Method 6020 CLP-M
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. Chemical Composition

Component	CAS/EINECS Registry #	Percent Concentration	ACGIH TLV	OSHA PEL
Aluminum	7429-90-5/ 231-072-3	0.02	10 mg/m^3	15 mg/m^3
Antimony	7440-36-0/ 231-146-5	0.006	0.5 mg/m^3	0.5 mg/m^3
Arsenic	7440-38-2/ 231-148-6	0.001	0.01 mg/m^3	10 µg/ m^3
Barium Carbonate ($BaCO_3$)	513-77-9/ 208-167-3	0.02 (as Ba)	0.5 mg/m^3	0.5 mg/m^3
Beryllium Acetate ($Be_4O(C_2H_3O_2)_6$)	19049-40-2/ 242-785-4	<0.001 (as Be)	0.002 mg/m^3	0.002 mg/m^3
Calcium Carbonate ($CaCO_3$)	471-34-1/ 207-439-9	0.5 (as Ca)	0.5 mg/m^3	0.5 mg/m^3
Cadmium	7440-43-9/ 231-152-8	<0.001	0.002 mg/m^3 (respirable particulate)	0.005 mg/m^3
Chromium	7440-47-3/ 231-157-5	0.001	0.5 mg/m^3	1 mg/m^3
Cobalt	7440-48-4/ 231-158-0	0.005	0.02 mg/m^3	0.1 mg/m^3
Copper	7440-50-8/ 231-159-6	0.003	0.2 mg/m^3 (fumes)	0.1 mg/m^3 (fumes)
Iron	7439-89-6/ 231-096-4	0.01	10 mg/m^3	5 mg/m^3
Lead	7439-92-1/ 231-100-4	<0.001	0.05 mg/m^3	0.05 mg/m^3
Magnesium	7439-95-4/ 231-104-6	0.5	Not Available	Not Available
Manganese	7439-96-5/ 231-105-1	0.002	0.2 mg/m^3	C 5 mg/m^3
Nickel	7440-02-0/ 231-111-4	0.004	1.5 mg/m^3	1 mg/m^3
Potassium Nitrate (KNO_3)	7757-79-1/ 231-818-8	0.5 (as K)	Not Available	Not Available

Selenium	7782-49-2/ 231-957-4	<0.001	0.2 mg/m^3	0.2 mg/ m^3
Silver	7440-22-4/ 231-131-3	0.001	0.1 mg/m^3	Not Available
Sodium Carbonate (Na_2CO_3)	497-19-8/ 207-838-8	0.5 (as Na)	Not Available	Not Available
Thallium	7440-28-0/ 231-138-1	0.001	0.1 mg/m^3	0.1 mg/m^3
Ammonium Metavanadate (NH_4VO_3)	7803-55-6/ 232-261-3	0.005 (as V)	0.05 mg/m^3	Not Available
Zinc	7440-66-6/ 231-175-3	0.002	5 mg/m^3	1 mg/m^3
Nitric Acid (HNO_3)	7697-37-2/ 231-714-2	4	2 mg/kg	5 mg/m^3
Hydrofluoric Acid (HF)	7664-39-3/ 231-634-8	<0.005	C: 3 mg/ml	2.5 mg/m^3 STEL: 6 mg/ml
Water, deionized	7732-18-5/ 231-791-2	Balance	Not Available	Not Available

Section 3. Hazard Identification

Emergency Overview: Mildly corrosive. May cause irritation to areas of contact. Wash areas of contact with water for at least 15 minutes. If ingested, do not induce vomiting. Dilute with water and call a physician. Arsenic, beryllium, cadmium, cobalt, lead, and nickel may cause cancer.

Target Organs: Eyes, skin, respiratory system, immune system, nasal cavities, teeth, blood, bones. Arsenic increases risk of lung, liver, kidney, and bladder cancer with prolonged exposure.

Skin/eye Contact: Liquid may cause burns to skin and eyes. Hydrogen fluoride will penetrate the skin and attack the underlying tissue and bone.

Inhalation: May cause irritation.

Ingestion: May cause nausea, vomiting, and diarrhea. Ingestion of arsenic compounds may be poisonous, leading to death. Cadmium is a poison that accumulates in the liver and kidneys. Animal studies indicate that prolonged ingestion of some soluble nickel compounds may affect the blood, bone marrow, thymus, spleen, kidneys, and immune system.

Section 4. First Aid Measures

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

Skin/eye Contact: 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. Hydrogen fluoride will penetrate the skin and attack the underlying tissue and bone. Call a physician if irritation develops.

Ingestion: 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 and sulfuric acid are 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. These risks are reduced due to the dilute concentration of the acids.

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.

Section 9. Physical and Chemical Properties

Molecular Weight: N/A
Boiling Point: Approximately 100°C
Freezing Point: N/A
Vapor Pressure (mm): N/A
Vapor Density (air+1): N/A
Specific Gravity (H_2O = 1): Approximately 1.0
Solubility in H_2O: Complete
Appearance: Clear, colorless to grey, liquid

Odor: Odorless to a faint pungent odor
pH: <1

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: HF, and 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 polymerize.

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.

Arsenic, beryllium, cadmium, cobalt, lead and Nickel are investigated as possible tumorigens.

RTECS #:

HNO_3 - QU5775000	HF - MW7875000	Ag - VW3500000	Al - BD0330000
As - CG0525000	$BaCO_3$ - CQ8600000	$Be_4O(C_2H_3O_2)_6$ ÐS29750000	
$CaCO_3$ - EV9580000	Cd - EU9800000	Co - GF8750000	Cr - GB420000
Cu - GL5325000	Mn - OO9275000	KNO_3 - TT3700000	Na_2CO_3 - VZ4050000
Ni - QR5950000	Sb - CC4025000	Se - VS7700000	Tl- XG3425000
Zn - ZG8600000			

Toxicity Data:
LD_{LO} Oral, Human: (HNO_3) 430 mg/kg; LC_{LO} Inhalation, Human: (HF) 50 mg/kg/30 min; Mouse: (Ag) 11 g/kg; LD_{50} Oral, Rat: (Al) >5000 mg/kg; LD_{50}, Oral, Rat: (As) 763 mg/kg; LD_{LO} Oral, Human: ($BaCO_3$) 17 mg/kg; TD_{LO} Intratracheal, Rat: ($Be_4O(C_2H_3O_2)_6$) 13 mg/kg; LD_{LO} Oral, Human: (Cd) 2330 mg/kg; LD_{LO} Oral, Rabbit: (Co) 750 mg/kg; LD_{50} Unreported Route, Rat: (Cr) 27.5 mg/kg; TD_{LO} Oral, Human: (Cu) 120 µg/kg; LD_{50} Oral, Rat: (Mn) 9 g/kg; LD_{50}, Intravenous, Mouse: (Ni) 50 mg/kg; LD_{50}, Oral, Mouse: (Na_2CO_3) 6600 mg/kg; LD_{50} Oral, Rat: (Sb) 7g/kg; LD_{50}, Oral, Rat: (Se) 6700 mg/kg; TD_{LO} Oral, Man: (Tl) 5,714 µg/kg; LD_{LO} Oral, Duck: (Zn) 388 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

Follow federal, state and local regulations for acid waste.

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)

D.O.T. Hazard Class: 8
U.N./N.A. Number: 3264
Packing Group: III
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 (HF 7664-39-3)
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/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 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.