Section 1. Product and Company Identification

Product Identification: CRM-MP
MSDS Number: CRM-MP
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 1B
Serious Eye Damage/ Eye Irritation, Category 1
Labeling:

Symbol:
Signal Word: Danger.
Hazard Statement: Causes severe skin burns and eye damage. Causes serious 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
Aluminum	7429-90-5/231-072-3	<0.001
Arsenic	7440-38-2/231-148-6	<0.001
Ammonium Bromide (NH_4Br)	12124-97-9/235-183-8	<0.001 (as Br)
Calcium Carbonate ($CaCO_3$)	471-34-1/207-439-9	0.013 (as Ca)
Ammonium Choride (NH_4Cl)	12125-02-9/235-186-4	0.01 (as Cl)
Chromium	7440-47-3/231-157-5	<0.001
Cobalt	7440-48-4/231-158-0	<0.001
Copper	7440-50-8/231-159-6	<0.001
Iron	7439-89-6/231-096-4	<0.001
Lead	7439-92-1/231-100-4	<0.001
Magnesium	7439-95-4/231-104-6	0.0012
Manganese	7439-96-5/231-105-1	<0.001

Ammonium Dihydrogen Phosphate ($NH_4H_2PO_4$)	7722-76-1/231-764-5	0.01 (as P)
Potassium Nitrate (KNO_3)	7757-79-1/231-818-8	0.017 (as K)
Rubidium Carbonate (Rb_2CO_3)	584-09-8/209-530-9	<0.001 (as Rb)
Selenium	7782-49-2/231-957-4	<0.001
Sodium Carbonate (Na_2CO_3)	497-19-8/207-838-8	0.005 (as Na)
Sulfuric Acid (H_2SO_4)	7664-93-9/231-639-5	0.0035 (as S)
Zinc	7440-66-6/231-175-3	<0.001
Nitric Acid	7697-37-2/ 231-714-2	4
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.

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. NO_x compounds can be released in event 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
Aluminum	10 mg/m^3	15 mg/m^3
Arsenic	0.01 mg/m^3	10 µg/ m^3
Ammonium Bromide	Not Available	Not Available
Calcium Carbonate	0.5 mg/m^3	0.5 mg/m^3
Ammonium Choride	10 mg/m^3	Not Available
Chromium	0.5 mg/m^3	1 mg/m^3
Cobalt	0.02 mg/m^3	0.1 mg/m^3
Copper	0.2 mg/m^3 (fumes)	0.1 mg/m^3 (fumes)
Iron	10 mg/m^3	5 mg/m^3
Lead	0.05 mg/m^3	0.05 mg/m^3
Magnesium	Not Available	Not Available
Manganese	0.2 mg/m^3	C 5 mg/m^3
Ammonium Dihydrogen Phosphate	Not Available	Not Available
Potassium Nitrate	Not Available	Not Available
Rubidium Carbonate	Not Available	Not Available
Selenium	0.2 mg/m^3	0.2 mg/ m^3
Sodium Carbonate	Not Available	Not Available
Sulfuric Acid	5 mg/m^3	1 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: 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.

RTECS#

HNO_3 - QU5775000	Al - BD0330000	As - CG0525000
NH_4Br – BO9155000	$CaCO_3$ – FF9335000	NH_4Cl - BP4550000
Co - GF8750000	Cr - GB4200000	Cu - GL5325000
Fe – NO4565500	Pb - OF7525000	Mg – FW6475100
Mn - OO9275000	KNO_3 - TT3700000	Rb_2CO_3 – FG0650000
Se - VS7700000	Na_2CO_3 - VZ4050000	H_2SO_4- WS5600000
Zn - ZG8600000		

LD_{LO} Oral, Human: (Nitric Acid) 430 mg/kg
LD_{50} Oral, Rat: (Aluminum) >5000 mg/kg
LD_{50}, Oral, Rat: (Arsenic) 763 mg/kg
LD_{50} Oral, Rat: (Ammonium Bromide) 2700 mg/kg
LD_{50} Oral, Rat: (Calcium Carbonate) 6450 mg/kg
LD_{50} Oral, Rat: (Ammonium Chloride) 1.65 g/kg
LD_{LO} Oral, Rabbit: (Cobalt) 750 mg/kg
LD_{50} Unreported Route, Rat: (Chromium) 27.5 mg/kg
TD_{LO} Oral, Human: (Copper) 120 µg/kg
LD_{50} Oral, Rat: (Iron) 30 g/kg
LD_{50} Oral, Rat: (Potassium Nitrate) 3750 mg/kg
LD_{50} Oral, Rat: (Manganese) 9 g/kg
LD_{50}, Oral, Mouse: (Sodium Carbonate) 6600 mg/kg
LD_{50}, Oral, Rat: (Rubidium Carbonate) 2625 mg/kg
TD_{50} Oral, Woman: (Lead) 450 mg/kg/6 years
LD_{50} Oral, Rat: (Sulfuric Acid) 2140 mg/kg
LC_{50} Inhalation, Rat: (Sulfuric Acid) 510 mg/m^3/2H. No toxic effect noted
LD_{50}, Oral, Rat: (Selenium) 6700 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.

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: No
SARA: Subject to the reporting requirements of Section 313 or SARA Title III and of 40 CFR 372
Risk Phrases: R20/21/22, Harmful by inhalation, skin contact, or if swallowed.
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.