

Section 1. Product and Company Identification

Product Identification: CRM-RS-A
 MSDS Number: CRM-RS-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. 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	0.03
Antimony	7440-36-0/231-146-5	<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	
Cadmium	7440-43-9/231-152-8	<0.001
Calcium Carbonate (CaCO ₃)	471-34-1/207-439-9	0.03 (as Ca)
Chromium	7440-47-3/231-157-5	0.03
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	0.12
Lead	7439-92-1/231-100-4	0.001
Magnesium	7439-95-4/231-104-6	0.007

Safety Data Sheet No. CRM-RS-A	Date: October 26, 2011	
CRM-RS-A	Revision: New	Page 2 of 6

Manganese	7439-96-5/231-105-1	0.001
Nickel	7440-02-0/231-111-4	<0.001
Potassium Nitrate (KNO ₃)	7757-79-1/231-818-8	0.02 (as K)
Selenium	7782-49-2/231-957-4	<0.001
Sodium Carbonate (Na ₂ CO ₃)	497-19-8/207-838-8	0.005 (as Na)
Thallium	7440-28-0/231-138-1	<0.001
Thorium Oxide (ThO ₂)	1314-20-1/215-225-1	<0.001 (as Th)
Uranium Oxide (U ₃ O ₈)	1344-59-8/215-702-4	<0.001 (as U)
Ammonium Metavanadate (NH ₄ VO ₃)	7803-55-6/232-261-3	<0.001 (as V)
Zinc	7440-66-6/231-175-3	0.002
Nitric Acid	7697-37-2/ 231-714-2	4
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

Safety Data Sheet No. CRM-RS-A	Date: October 26, 2011	
CRM-RS-A	Revision: New	Page 3 of 6

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
Antimony	0.5 mg/m ³	0.5 mg/m ³
Arsenic	0.01 mg/m ³	10 µg/m ³
Barium	0.5 mg/m ³	0.5 mg/m ³
Cadmium	0.002 mg/m ³ (respirable particulate)	0.005 mg/m ³
Calcium Carbonate	0.5 mg/m ³	0.5 mg/m ³
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
Nickel	1.5 mg/m ³	1 mg/m ³
Potassium Nitrate	Not Available	Not Available
Selenium	0.2 mg/m ³	0.2 mg/m ³
Sodium Carbonate	Not Available	Not Available
Thallium	0.1 mg/m ³	0.1 mg/m ³
Thorium Oxide	Not Available	Not Available
Uranium Oxide	0.2 mg/m ³	0.05 mg/m ³
Ammonium Metavanadate	0.05 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 to grey, liquid

Odor: Odorless to a faint pungent odor

Odor threshold: None

pH: <2

Safety Data Sheet No. CRM-RS-A	Date: October 26, 2011	
CRM-RS-A	Revision: New	Page 4 of 6

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: 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 (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.
This solution contains natural 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#

HNO ₃ - QU5775000	Al - BD0330000	As - CG0525000
BaCO ₃ - CQ8600000	CaCO ₃ - EV9580000	Cd - EU9800000
Co - GF8750000	Cr - GB4200000	Cu - GL5325000
Fe - NO4565500	KNO ₃ - TT3700000	Mg - OM2100000
Mn - OO9275000	Na ₂ CO ₃ - VZ4050000	Ni - QR5950000
Pb - OF7525000	Sb - CC4025000	Se - VS7700000
ThO ₂ - XO6950000	Tl- XG3425000	U ₃ O ₈ - YR3490000
NH ₄ VO ₃ - YW0875000	Zn - ZG8600000	Ba(NO ₃) ₂ - CQ9625000

LD_{LO} Oral, Human: (Nitric Acid) 430 mg/kg
LD₅₀ Oral, Rat: (Aluminum) >5000 mg/kg
LD₅₀, Oral, Rat: (Arsenic) 763 mg/kg
LD_{LO} Oral, Human: (Barium Carbonate) 17 mg/kg
LD₅₀ Oral, Rat: (Ba(NO₃)₂) 355 mg/kg.
LD_{LO} Oral, Rabbit: (Cobalt) 750 mg/kg
LD₅₀ Unreported Route, Rat: (Chromium) 27.5 mg/kg
TD_{LO} Oral, Human: (Copper) 120 µg/kg

Safety Data Sheet No. CRM-RS-A	Date: October 26, 2011	
CRM-RS-A	Revision: New	Page 5 of 6

LD₅₀ Oral, Rat: (Potassium Nitrate) 3750 mg/kg
LD₅₀ Oral, Rat: (Manganese) 9 g/kg
LD₅₀, Oral, Mouse: (Sodium Carbonate) 6600 mg/kg
LD₅₀, Intravenous, Mouse: (Nickel) 50 mg/kg
TD₅₀ Oral, Woman: (Lead) 450 mg/kg/6 years
LD₅₀ Oral, Rat: (Antimony) 7g/kg
LD₅₀, Oral, Rat: (Selenium) 6700 mg/kg
TD_{LO} Intra-arterial, Human: (Thorium Oxide) 490 mg/kg
TD_{LO} Oral, Man: (Thallium) 5,714 µg/kg
TD₅₀ Unreported Route, Rat: (Uranium Oxide) 750 mg/kg
LD₅₀ Oral, Rat: (Ammonium Metavanadate) 58 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)

OSHA Status: These items meet the OSHA Hazard Communication Standard (29 CFR 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 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
CRM-RS-A is a limited quantity radioactive material that is exempt from radioactive labeling requirements under 49CFR section 173.421. The massic activity of CRM-RS-A is less than 0.3 kBq

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.

Safety Data Sheet No. CRM-RS-A	Date: October 26, 2011	
CRM-RS-A	Revision: New	Page 6 of 6

Theodore C. Rains, Ph.D.