

## Section 1. Product and Company Identification

Product Identification: CRM-ES  
 MSDS Number: CRM-ES  
 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	0.07
Antimony	7440-36-0/231-146-5	<0.001
Arsenic	7440-38-2/231-148-6	<0.001
Beryllium Acetate (Be <sub>4</sub> O(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub> )	19049-40-2/242-785-4	<0.001 (as Be)
Cadmium	7440-43-9/231-152-8	<0.001
Calcium Carbonate (CaCO <sub>3</sub> )	471-34-1/207-439-9	0.008 (as Ca)
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	0.035
Lead	7439-92-1/231-100-4	<0.001
Magnesium	7439-95-4/231-104-6	0.01

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Manganese	7439-96-5/231-105-1	<0.001
Nickel	7440-02-0/231-111-4	<0.001
Ammonium Dihydrogen Phosphate (NH <sub>4</sub> H <sub>2</sub> PO <sub>4</sub> )	7722-76-1/231-764-5	<0.001 (as P)
Potassium Nitrate (KNO <sub>3</sub> )	7757-79-1/231-818-8	0.015 (as K)
Selenium	7782-49-2/231-957-4	<0.001
Ammonium Hexafluorosilicate ((NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> )	16919-19-0/240-968-3	0.3 (as Si)
Sodium Carbonate (Na <sub>2</sub> CO <sub>3</sub> )	497-19-8/207-838-8	0.02 (as Na)
Thorium Oxide (ThO <sub>2</sub> )	1314-20-1/215-225-1	<0.001 (as Th)
Ammonium Metavanadate (NH <sub>4</sub> VO <sub>3</sub> )	7803-55-6/232-261-3	<0.001 (as V)
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. Gently wash with plenty of soap and water. Rub calcium gluconate gel immediately to skin. Obtain medical assistance. Wash contaminated clothing before reuse.

**IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER doctor/physician.

**IF SWALLOWED:** Rinse mouth. Do NOT induce vomiting.

**IF INHALED:** Remove to fresh air and keep at rest in a position comfortable for breathing.

**Target Organs:** Eyes, skin, respiratory system, teeth, and skeletal system.

#### 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<sub>x</sub> 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

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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:

<b>Component</b>	<b>ACGIH TLV</b>	<b>OSHA PEL</b>
Aluminum	10 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>
Antimony	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Arsenic	0.01 mg/m <sup>3</sup>	10 µg/ m <sup>3</sup>
Beryllium Acetate	0.002 mg/m <sup>3</sup>	0.002 mg/m <sup>3</sup>
Cadmium	0.002 mg/m <sup>3</sup> (respirable particulate)	0.005 mg/m <sup>3</sup>
Calcium Carbonate	0.5 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
Chromium	0.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Cobalt	0.02 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Copper	0.2 mg/m <sup>3</sup> (fumes)	0.1 mg/m <sup>3</sup> (fumes)
Iron	10 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>
Lead	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Magnesium	Not Available	Not Available
Manganese	0.2 mg/m <sup>3</sup>	C 5 mg/m <sup>3</sup>
Nickel	1.5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Ammonium Dihydrogen Phosphate	Not Available	Not Available
Potassium Nitrate	Not Available	Not Available
Selenium	0.2 mg/m <sup>3</sup>	0.2 mg/ m <sup>3</sup>
Ammonium Hexafluorosilicate	Not Available	Not Available
Sodium Carbonate	Not Available	Not Available
Thorium Oxide	Not Available	Not Available
Ammonium Metavanadate	0.05 mg/m <sup>3</sup>	0.05 mg/m <sup>3</sup>
Zinc	5 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
Nitric Acid	2 mg/kg	5 mg/m <sup>3</sup>

### Section 9. Physical and Chemical Properties

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Physical State: Liquid  
Color: Clear, colorless to grey, 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<sub>2</sub>O = 1): Approximately 1.0  
Solubility in H<sub>2</sub>O: 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<sub>x</sub> compounds including nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O) 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 <sub>3</sub> - QU5775000	Al - BD0330000	As - CG0525000
Be <sub>4</sub> O(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>6</sub> - DS2900000	CaCO <sub>3</sub> - FF9335000	Cd - EU9800000
Co - GF8750000	Cr - GB4200000	Cu - GL5325000
Fe - NO4565500	KNO <sub>3</sub> - TT3700000	Mg - FW6475100
Mn - OO9275000	Na <sub>2</sub> CO <sub>3</sub> - VZ4050000	Ni - QR5950000
Pb - OF7525000	Sb - CC4025000	Se - VS7700000
(NH <sub>4</sub> ) <sub>2</sub> SiF <sub>6</sub> -VV7800000	ThO <sub>2</sub> - XO6950000	NH <sub>4</sub> VO <sub>3</sub> - YW0875000
Zn - ZG8600000		

LD<sub>LO</sub> Oral, Human: (Nitric Acid) 430 mg/kg  
LD<sub>50</sub> Oral, Rat: (Aluminum) >5000 mg/kg  
LD<sub>50</sub>, Oral, Rat: (Arsenic) 763 mg/kg  
TD<sub>LO</sub> Intratracheal, Rat: (Beryllium Acetate) 13 mg/kg  
LD<sub>LO</sub> Oral, Rabbit: (Cobalt) 750 mg/kg  
LD<sub>50</sub> Unreported Route, Rat: (Chromium) 27.5 mg/kg  
TD<sub>LO</sub> Oral, Human: (Copper) 120 µg/kg

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LD<sub>50</sub> Oral, Rat: (Potassium Nitrate) 3750 mg/kg  
 LD<sub>50</sub> Oral, Rat: (Manganese) 9 g/kg  
 LD<sub>50</sub>, Oral, Mouse: (Sodium Carbonate) 6600 mg/kg  
 LD<sub>50</sub>, Intravenous, Mouse: (Nickel) 50 mg/kg  
 TD<sub>50</sub> Oral, Woman: (Lead) 450 mg/kg/6 years  
 LD<sub>50</sub> Oral, Rat: (Antimony) 7g/kg  
 LD<sub>50</sub>, Oral, Rat: (Selenium) 6700 mg/kg  
 LD<sub>LO</sub> Oral, Rat: (Ammonium Hexafluorosilicate) 100 mg/kg  
 TD<sub>LO</sub> Intraarterial, Human: (Thorium Oxide) 490 mg/kg  
 LD<sub>50</sub> Oral, Rat: (Ammonium Metavanadate) 58 mg/kg  
 LD<sub>LO</sub> 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: Ammonium Metavanadate (7803-55-6)  
 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 ES is a limited quantity radioactive material that is exempt from radioactive labeling requirements under 49CFR section 173.421. The massic activity for a 1 liter quantity of CRM ES is less than 0.041 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.

Theodore C. Rains, Ph.D.

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