

Material Safety Data Sheets

Section 1. Product and Company Identification

Product Identification: CRDL
 MSDS Number: CRDL
 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
Antimony	7440-36-0/ 231-146-5	0.012	0.5 mg/m ³	0.5 mg/m ³
Arsenic	7440-38-2/ 231-148-6	0.002	0.01 mg/m ³	10 µg/m ³
Beryllium Acetate (Be ₄ O(C ₂ H ₃ O ₂) ₆)	19049-40-2/ 242-785-4	0.001 (as Be)	0.002 mg/m ³	0.002 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	0.002	0.5 mg/m ³	1 mg/m ³
Cobalt	7440-48-4/ 231-158-0	0.01	0.02 mg/m ³	0.1 mg/m ³
Copper	7440-50-8/ 231-159-6	0.005	0.2 mg/m ³ (fumes)	0.1 mg/m ³ (fumes)
Lead	7439-92-1/ 231-100-4	<0.001	0.05 mg/m ³	0.05 mg/m ³
Manganese	7439-96-5/ 231-105-1	0.003	0.2 mg/m ³	C 5 mg/m ³
Nickel	7440-02-0/ 231-111-4	0.008	1.5 mg/m ³	1 mg/m ³
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	0.002	0.1 mg/m ³	Not Available
Thallium	7440-28-0/ 231-138-1	0.002	0.1 mg/m ³	0.1 mg/m ³
Ammonium Metavanadate (NH ₄ VO ₃)	7803-55-6/ 232-261-3	0.01 (as V)	0.05 mg/m ³	Not Available
Zinc	7440-66-6/ 231-175-3	0.004	5 mg/m ³	1 mg/m ³
Nitric Acid	7697-37-2/ 231-714-2	2	2 mg/kg	5 mg/m ³

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Hydrofluoric Acid	7664-39-3/ 231-634-8	0.1	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. May cause cancer. Potential symptoms of overexposure are irritation of the eyes, mucous membranes and skin, dental erosion, bronchitis, pneumonitis, delayed pulmonary edema.

Target Organs: Eyes, skin, respiratory system, immune system, nasal cavities, teeth, blood, bones.

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. Inhalation of high concentrations of nickel may cause irritation of mucous membranes causing sore throat, coughing, and shortness of breath.

Ingestion: May cause nausea, vomiting, and diarrhea. 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. Immediately apply calcium gluconate gel to areas of contact, preferably wearing gloves, until medical assistance is available.

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 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. Hydrofluoric acid may ignite or explode on contact with combustible materials.

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.

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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: No specific controls are needed. Normal room ventilation is adequate.
 Respiratory Protection: Normal room ventilation is adequate.
 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 (H₂O = 1): Approximately 1
 Solubility in H₂O: Complete
 Appearance: Colorless to light gray 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 (NO₂), nitrous oxide (N₂O) and nitric acid mist or vapor.
 Hazardous Polymerization: Will not polymerize.

Section 11. Toxicological Information

Toxicity Data:
 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.

Beryllium, cadmium, and nickel are investigated as a tumorigens.

HNO ₃ - RTECS# QU5775000	HF- RTECS# MW7875000	
Sb-RTECS# CC4025000	As-RTECS# CG0525000	
Be ₄ O(C ₂ H ₃ O ₂) ₆ -RTECS# DS2900000		Cd-RTECS# EU9800000
Cr-RTECS# GB4200000	Co-RTECS# GF8750000	Cu-RTECS# GL5325000
Pb-RTECS# OF7525000	Mn-RTECS# OO9275000	Ni-RTECS# QR5950000
Se-RTECS# VS7700000	Ag-RTECS# VW3500000	Tl-RTECS# XG3425000
NH ₄ VO ₃ -RTECS# YW0875000		Zn-RTECS# ZG8600000

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LD_{LO} Oral, Human: (HNO₃) 430 mg/kg; LC_{LO} Inhalation, Human: (HF) 50 mg/kg/30 min; LD₅₀ Oral, Rat: (Sb) 7g/kg; LD₅₀, Oral, Rat: (As) 763 mg/kg; TD_{LO} Intratracheal, Rat: (Be₄O(C₂H₃O₂)₆) 13 mg/kg; LD_{LO}, LD_{LO} Oral, Human: (Cd) 2330 mg/kg; LD₅₀ Unreported Route, Rat: (Cr) 27.5 mg/kg; LD_{LO} Oral, Rabbit: (Co) 750 mg/kg; TD_{LO} Oral, Human: (Cu) 120 µg/kg; TD₅₀ Oral, Woman: (Pb) 450 mg/kg/6 year; LD₅₀ Oral, Rat: (Mn) 9 g/kg; LD₅₀, Intravenous, Mouse: (Ni) 50 mg/kg; LD₅₀, Oral, Rat: (Se) 6700 mg/kg; TD_{LO} Implant; Mouse: (Ag) 11 g/kg; TD_{LO} Oral, Man: (Ti) 5,714 µg/kg; LD₅₀ Oral, Rat: (NH₄VO₃) 58,100 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. 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

Follow federal, state and local regulations for waste.

Section 14. Transport Information

D.O.T. Classification: Not hazardous by DOT regulations (based on low concentration of acid).

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: 7664-39-3 (Hydrofluoric Acid); 7803-55-6 (Ammonium Metavanadate).

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 or skin contact or if swallowed; May cause cancer.

Safety Phrases: S24, S25, S36/37/39, S53 Avoid contact with the skin. Avoid contact with eyes.

Wear suitable protective clothing, gloves and eye/face protection; Avoid exposure-obtain special instruction before use.

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 rest 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.

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