

Material Safety Data Sheet

Section 1. Product and Company Identification

Product Identification: CRM-TMDW
 MSDS Number: CRM-TMDW
 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	<0.001	10 mg/m ³	15 mg/m ³
Antimony	7440-36-0/ 231-146-5	<0.001	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	<0.001 (as Ba)	0.5 mg/m ³	0.5 mg/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
Bismuth	7440-69-9/ 231-177-4	<0.001	Not Available	Not Available
Calcium Carbonate (CaCO ₃)	471-34-1/ 207-439-9	0.004 (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	<0.001	0.02 mg/m ³	0.1 mg/m ³
Copper	7440-50-8/ 231-159-6	<0.001	0.2 mg/m ³ (fumes)	0.1 mg/m ³ (fumes)
Iron	7439-89-6/ 231-096-4	<0.001	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
Lithium Carbonate (Li ₂ CO ₃)	554-13-2/ 209-062-5	<0.001 (as Li)	Not Available	Not Available
Magnesium	7439-95-4/ 231-104-6	0.001	Not Available	Not Available
Manganese	7439-96-5/ 231-105-1	<0.001	0.2 mg/m ³	C 5 mg/m ³
Molybdenum	7439-98-7/ 231-107-2	<0.001	5 mg/m ³	5 mg/m ³

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Nickel	7440-02-0/ 231-111-4	<0.001	1.5 mg/m ³	1 mg/m ³
Potassium Nitrate (KNO ₃)	7757-79-1/ 231-818-8	<0.001 (as K)	Not Available	Not Available
Rubidium Carbonate (Rb ₂ CO ₃)	584-09-8/ 209-530-9	0.001 (as Rb)	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 ₂ CO ₃)	497-19-8/ 207-838-8	0.001 (as Na)	Not Available	Not Available
Strontium Carbonate (SrCO ₃)	1633-05-2/ 216-643-7	<0.001 (as Sr)	Not Available	Not Available
Tellurium	13494-80-9/ 236-813-4	<0.001	0.1 mg/m ³	0.1 mg/m ³
Thallium	7440-28-0/ 231-138-1	<0.001	0.1 mg/m ³	0.1 mg/m ³
Ammonium Metavanadate (NH ₄ VO ₃)	7803-55-6/ 232-261-3	<0.001 (as V)	0.05 mg/m ³	Not Available
Uranium Oxide (U ₃ O ₈)	1344-59-8/ 215-702-4	<0.001 (as U)	0.2 mg/m ³	0.05 mg/m ³
Zinc	7440-66-6/ 231-175-3	<0.001	5 mg/m ³	1 mg/m ³
Nitric Acid (HNO ₃)	7697-37-2/ -714-2	2	2 mg/kg	5 mg/m ³
Hydrofluoric Acid (HF)	7664-39-3/ 231-634-8	0.05	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, 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. 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. 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

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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 clothing and wash affected area with copious amounts of water. Immediately apply calcium gluconate gel, preferably wearing gloves, until medical attention 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.

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: ~100°C

Freezing Point: N/A

Vapor Pressure (mm): N/A

Vapor Density (air+1): N/A

Specific Gravity (H₂O = 1): N/A

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Solubility in H₂O: Complete
Appearance: Clear, colorless, 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 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.

Beryllium, Cadmium, and Nickel are investigated as possible tumorigens.

RTECS#:

HNO ₃ - QU5775000	HF - MW7875000	
Al - BD0330000	Sb - CC4025000	As - CG0525000
BaCO ₃ - CQ8600000	Be ₄ O(C ₂ H ₃ O ₂) ₆ - DS29750000	
Bi-EB2600000	HBO ₂ - ED450000	
CaCO ₃ - EV9580000	Cd - EU9800000	Co - GF8750000
Cr - GB4200000	Cu - GL5325000	Pb - OF7525000
Li ₂ CO ₃ - OJ5800000	Mn - OO9275000	Mo - QA4680000
Ni - QR5950000	KNO ₃ - TT3700000	Se - VS7700000
Na ₂ CO ₃ - VZ4050000	NH ₄ SiF ₆ - VV7800000	Ag - VW3500000
Te - WY2625000		
Tl - XG3425000	Sn - XP7320000	U - YR3490000
Zn - ZG8600000		

Toxicity Data:

LD_{LO} Oral, Human: (HNO₃) 430 mg/kg; LC_{LO} Inhalation, Human: (HF) 50 mg/kg/30 min; LD₅₀ Oral, Rat: (Al) >5000 mg/kg; TD_{LO} LD₅₀ Oral, Rat: (Sb) 7g/kg; ; LD₅₀, Oral, Rat: (As) 763 mg/kg; LD_{LO} Oral, Human: (BaCO₃) 17 mg/kg; TD_{LO} Intratracheal, Rat: (Be₄O(C₂H₃O₂)₆) 13 mg/kg; LD₅₀ Oral, Rat: (Bismuth) 5 g/kg; LD₅₀ Oral, Rat: (HBO₂) 2660 mg/kg; LD_{LO} Oral, Human: (Cd) 2330 mg/kg; LD_{LO} Oral, Rabbit: (Co) 750 mg/kg; LD₅₀ Unreported Route, Rat: (Cr) 27.5 mg/kg; TD_{LO} Oral, Human: (Cu) 120 µg/kg; ; TD₅₀ Oral, Woman: (Pb) 450 mg/kg/6 years; LD₅₀ Oral, Rat: (Li₂CO₃) 525 mg/kg; LD₅₀ Oral, Rat: (Mn) 9 g/kg; TD_{LO} Oral, Mouse: (Mo) 448 mg/kg (multigenerations); LD₅₀, Oral, Mouse: (Na₂CO₃) 6600 mg/kg; LD₅₀, Intravenous, Mouse: (Ni) 50 mg/kg; Implant, LD₅₀ Oral, Rat: (KNO₃) 3750 mg/kg; LD₅₀, Oral, Rat: (Se) 6700 mg/kg; LD_{LO} Oral, Rat: (NH₄SiF₆) 100 mg/kg; LD₅₀ Oral, Mouse: (Ag) 11 g/kg; LD₅₀, Oral, Mouse: (Na₂CO₃) 6600 mg/kg; Oral rabbit: (Te) LD₅₀: 67 mg/kg; TD_{LO} Oral, Man: (Tl) 5,714 µg/kg; TD_{LO} Implant, Rat: (Sn) 395 gm/kg; LD_{LO} TD₅₀ Unreported Route, Rat: (Triuranium Octaoxide) 750 mg/kg; LD_{LO} Oral, Duck: (Zn) 388 mg/kg.

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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: Yes (HF 7664-39-3), (NH₄VO₃-7803-55-6)

SARA: Subject to the reporting requirements of Section 313 or SARA Title III and of 40 CFR 372

Risk Phrases: R20. R24/25. R34. R45. R48. Harmful by inhalation. Toxic by skin contact or ingestion. Cause burns. May cause cancer. Danger of serious damage to health by prolonged exposure.

Safety Phrases: S24/25/36/37/39 Avoid contact with the skin. Avoid contact with eyes. Wear suitable protective clothing, gloves and eye/face protection.

WHMIS Information (Canada): E: Corrosive

CRM-TMDW is a limited quantity radioactive material that is exempt from radioactive labeling requirements under 49CFR section 173.421. The massic activity of CRM-TMDW is less than 500 Bq/g.

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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