

Section 1. Product and Company Identification

Product Identification: WAVECAL
MSDS Number: WAVECAL
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
Arsenic	7440-38-2/231-148-6	0.002	0.01 mg/m ³	10 µg/ m ³
Lanthanum Oxide (La ₂ O ₃)	1312-81-8/215-200-5	0.002 (as La)	Not Available	Not Available
Lithium Carbonate (Li ₂ CO ₃)	554-13-2/209-062-5	0.002 (as Li)	Not Available	Not Available
Manganese	7439-96-5/231-105-1	0.002	0.2 mg/m ³	C 5 mg/m ³
Molybdenum	7439-98-7/231-107-2	0.002	5 mg/m ³	5 mg/m ³
Nickel	7440-02-0/231-111-4	0.002	1.5 mg/m ³	1 mg/m ³
Ammonium Dihydrogen Phosphate (NH ₄ H ₂ PO ₄)	7722-76-1/231-764-5	0.01 (as P)	Not Available	Not Available
Potassium Nitrate (KNO ₃)	7757-79-1/231-818-8	0.01 (as K)	Not Available	Not Available
Scandium Oxide (Sc ₂ O ₃)	12060-08-1/235-042-0	0.002 (as Sc)	Not Available	Not Available
Sodium Carbonate (Na ₂ CO ₃)	497-19-8/207-838-8	0.002 (as Na)	Not Available	Not Available
Sulfuric Acid	7664-93-9/321-639-5	0.01 (as S)	5 mg/m ³	1 mg/m ³
Hydrochloric Acid	7647-01-0/231-595-7	2	C 5ppm C 7.5 mg/m ³	C 5ppm C 7 mg/m ³

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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 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.

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. 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. Call a physician if irritation develops.

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: Hydrochloric acid is a negligible fire hazard when exposed to heat and/or flames. Hydrochloric acid may react with the evolution of heat on contact with water; the acid may release toxic, corrosive, flammable, or explosive gases. Although sulfuric acid is a negligible fire hazard, it is an oxidizer and may explode on contact with combustible materials. However, the risk is reduced due to the weaker concentration of Sulfuric Acid.

Extinguishing Media: Use regular dry chemical, carbon dioxide, water, or regular foam.

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.

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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
 Solubility in H₂O: Complete
 Appearance: Clear, colorless to grey, liquid
 Odor: Acrid, hydrochloric acid
 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: HCl.
 Hazardous Polymerization: NO

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.

Nickel is investigated as a possible tumorigen.

RTECS #:

HCl-RTECS# MW4025000

As - CG0525000	KNO ₃ - TT3700000	La ₂ O ₃ - OE5330000
Li ₂ CO ₃ - OJ5800000	Mn - OO9275000	Mo-QA4680000
Na ₂ CO ₃ - VZ4050000	Ni - QR5950000	H ₂ SO ₄ -WS5600000

Toxicity Data:

LD₅₀ Oral, Rabbit: (Hydrochloric Acid) 900 mg/kg, LC_{LO}, inhalation, human: (Hydrochloric Acid) 3000 ppm/5 minutes: No toxic effects noted; LD₅₀, Oral, Rat: (As) 763 mg/kg; LD₅₀ Oral, Rat: (KNO₃) 3750 mg/kg; LD₅₀ Oral, Rat: (La₂O₃) >9968 mg/kg; LD₅₀ Oral, Rat: (Li₂CO₃) 525 mg/kg; LD₅₀ Oral, Rat: (Mn) 9 g/kg; TD_{LO} Oral, Mouse: (Molybdenum) 448 mg/kg (multigenerations); LD₅₀, Oral, Mouse: (Na₂CO₃) 6600 mg/kg; LD₅₀, Intravenous, Mouse: (Ni) 50 mg/kg; LD₅₀ Oral, Rat: (Sulfuric Acid) 2140 mg/kg; LC₅₀ Inhalation, Rat: (Sulfuric Acid) 510 mg/m³/2H, No toxic effect noted.

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Section 12. Ecological Information

Ecotoxicological information: Do not allow material to reach ground water, water bodies, or sewage system. Hydrogen Chloride has slight acute and chronic toxicity to aquatic life. Concentrated Sulfuric Acid has moderate acute and chronic effects to aquatic life; however, the concentration in this product is dilute.

Section 13. Disposal Considerations

Follow federal, state and local regulations for acid waste.

Section 14. Transport Information

D.O.T. Classification: Not Hazardous by DOT regulations (based on 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: No

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

Risk Phrases: R20, R21, R22 Harmful by inhalation, skin contact, or if ingested.

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 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.

Theodore C. Rains, Ph.D.