

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p>Combustible material; avoid heat and sources of ignition. May react violently and/or evolve heat upon exposure to heat, shock, and friction.</p> <p>Corrosive to eyes and skin on contact.</p> <p>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</p> <p>This compound is a skin sensitizer.</p> <p>CARCINOGEN. MINIMIZE EXPOSURE.</p> <p>POSSIBLE MUTAGEN. MINIMIZE EXPOSURE.</p> <p>Environmental hazard. This material is very toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.</p>	

Section I. Chemical Product and Company Identification

Chemical Name	Hydrazine Monohydrate		
Catalog Number	H0172	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	$H_4N_2 \cdot H_2O$		
CAS Number	7803-57-8	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Hydrazine Monohydrate	7803-57-8	Min. 98.0 (T)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.	Rat LD ₅₀ (oral) 129 mg/kg Mouse LD ₅₀ (oral) 83 mg/kg Mouse LD ₅₀ (intraperitoneal) 156 mg/kg

Section III. Hazards Identification

Acute Health Effects	<p>Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested.</p> <p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Tumorigenic effects.</p> <p>Mouse TDLo Skin 80 gm/kg for 43 weeks intermittent</p> <p>Toxic Effects:</p> <p>Tumorigenic - Carcinogenic by RTECS criteria Lung, Thorax, or Respiration - Tumors</p> <p>DEVELOPMENTAL TOXICITY: Reproductive effects.</p> <p>Rat TCLO Inhalation 10 µg/m³/5H, male 8 weeks prior to mating</p> <p>Toxic Effects:</p> <p>Paternal Effects - Spermatogenesis</p> <p>Rat TDLo Oral 3240 µg/kg, female 24 weeks prior to mating</p> <p>Toxic Effects:</p> <p>Effects on Fertility - Pre-implantation mortality Effects on Fertility - Post-implantation mortality</p> <p>Hamster TDLo Intramuscular 150 mg/kg, female 12 days of pregnancy</p> <p>Toxic Effects:</p> <p>Effects on Newborn - Biochemical and metabolic</p>

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data

Flammability	Combustible.	Auto-Ignition	Not available.
Flash Points	75°C (167°F)	Flammable Limits	LOWER: 3.5% UPPER: 99.99%
Combustion Products	These products include toxic nitrogen oxides (NO _x).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		

Section VI. Accidental Release Measures

Spill Cleanup Instructions	Combustible material. Heat and shock sensitive material. Corrosive material. Toxic material. This material is a skin sensitizer. Carcinogenic material. Possibly mutagenic material. Environmentally hazardous material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.
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Section VII. Handling and Storage

Handling and Storage Information	COMBUSTIBLE. HEAT AND SHOCK SENSITIVE. CORROSIVE. TOXIC. SENSITIZER. CARCINOGEN. POSSIBLE MUTAGEN. ENVIRONMENTAL HAZARD. Keep locked up. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, organic materials, metals, acids.
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Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a possible mutagen. There is no acceptable exposure limit for a mutagen.

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Miscible with water, alcohol. Insoluble in ether, chloroform.
Specific Gravity	1.03 (water=1)		
Molecular Weight	32.05 (Anh.)	Partition Coefficient	LOG P _{ow} : -3.1
Boiling Point	119°C (246.2°F)	Vapor Pressure	0.7 kPa (@ 25°C)
Melting Point	-52°C (-61.6°F)	Vapor Density	>1 (Air = 1)
Refractive Index	1.43	Volatility	Not available.
Critical Temperature	Not available.	Odor	Slight ammoniacal.
Viscosity	Not available.	Taste	Not available.

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light. Heat and shock sensitive.
Incompatibilities	Reactive with oxidizing agents, organic materials, metals, acids, oxygen, halogens, glass, rubber, cork.

Section XI. Toxicological Information

RTECS Number	MV8050000
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LD ₅₀ (oral) 129 mg/kg Mouse LD ₅₀ (oral) 83 mg/kg Mouse LD ₅₀ (intraperitoneal) 156 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic effects. Mouse TDLo Skin 80 gm/kg for 43 weeks intermittent Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria Lung, Thorax, or Respiration - Tumors DEVELOPMENTAL TOXICITY : Reproductive effects. Rat TCLo Inhalation 10 µg/m ³ /5H, male 8 weeks prior to mating Toxic Effects: Paternal Effects - Spermatogenesis Rat TDLo Oral 3240 µg/kg, female 24 weeks prior to mating Toxic Effects: Effects on Fertility - Pre-implantation mortality Effects on Fertility - Post-implantation mortality Hamster TDLo Intramuscular 150 mg/kg, female 12 days of pregnancy Toxic Effects: Effects on Newborn - Biochemical and metabolic
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Skin contact may result in sensitization. Always cover all exposed skin with an impermeable layer and use proper eye protection. A OSHA/MSHA approved dust and vapor respirator is required when working with this material. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	Not available.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
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Section XIV. Transport Information

DOT Classification	DOT CLASS 8: Corrosive material DOT CLASS 6.1: Toxic material
PIN Number	UN2030
Proper Shipping Name	Hydrazine, aqueous solution
Packing Group (PG)	II RQ = 1 (0.454)
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC). CLASS E: Corrosive liquid. On DSL.
EINECS Number (EEC)	206-114-9
EEC Risk Statements	R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R34- Causes burns. R43- May cause sensitization by skin contact. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects. R50- Very toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. 1-374

Section XVI. Other Information

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Notice to Reader

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.