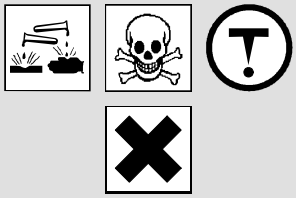
TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	**Corrosive to eyes and skin on contact.** **Highly toxic; do not ingest or inhale. Avoid all contact with this material.** **CARCINOGEN. MINIMIZE EXPOSURE.** **Handle and store under nitrogen.** **This compound is a skin sensitizer.** **May form explosive peroxides on storage.** **May explode when heated.**	

Section I. Chemical Product and Company Identification

Chemical Name: **Hydrazine Carbonate**
(70% in water)

Catalog Number	H0854
Synonym	Hydrazine, Carbonate (2:1) (9 CI)
Chemical Formula	$(NH_2NH_2)_2 \cdot CO_2$
CAS Number	112077-84-6 Water 7732-18-5

Supplier: TCI America
9211 N. Harborgate St.
Portland OR
1-800-423-8616

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 Carbonate (70% in water)	112077-84-6 Water 7732-18-5	Min. 70.0 Min. 30.0	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Hydrazine: Rat LC_{50} (inhalation) 570ppm/4H Rat LD_{50} (oral) 60mg/kg Rabbit LD_{50} (dermal) 91mg/kg

Section III. Hazards Identification

Acute Health 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.

Chronic Health Effects

CARCINOGENIC EFFECTS : Not available.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Tumorigenic Effects: (Hydrazine)
Rat TCLo (Inhalation) 5ppm/6H/1 year, continuous.
Toxic Effects:
Tumorigenic - Carcinogenic by RTECS criteria.
Endochrine - Thyroid tumors.
Mouse TDLo (Intraperitoneal) 400mg/kg/5 weeks, intermittent.
Toxic Effects:
Tumorigenic - Carcinogenic by RTECS criteria.
Blood - Tumors, Leukemia.
Mouse TDLo (Oral) 1951 mg/kg/2 years, continuous.
Toxic Effects:
Tumorigenic - Neoplastic by RTECS criteria.
Lung, Thorax, or Respiration - Tumors.
Blood - Lymphomas including Hodgkin's disease.
DEVELOPMENTAL TOXICITY:Reproductive Effeccts: (Hydrazine)
Rat TCLo (Inhalation) 1mg/m^3/24 hours, female 1-11 days of pregnancy.
Toxic Effects:
Effects on Embryo or Fetus - Fetotoxicity.
Effects on Embryo or Fetus - Fetal death.
Rat TDLo (Intraperitoneal) 30 mg/kg, female 7-9 days of pregnancy.
Toxic Effects:
Specific Developmental Abnormalities - Central nervous system.
Specific Developmental Abnormalities - Musculoskeletal system.
Specific Developmental Abnormalities - Urogenital system.
Hamster TCLo (Inhalation) 1ppm/6 hours, male 1 year prior to mating.
Toxic Effects:
Paternal Effects - Testes, epididymis, sperm duct.
Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Continued on Next Page **Emergency phone number (800) 424-9300**

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. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
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. SEEK IMMEDIATE MEDICAL ATTENTION in case of ingestion of a radioactive material.

Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	Not available.	Flammable Limits	Not available.
Combustion Products	These products are toxic carbon oxides (CO, CO_2), nitrogen oxides (NO, NO_2).		
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	Corrosive material. Highly toxic material. Carcinogenic material. Handle and store material under nitrogen. Sensitizing material. May form explosive peroxides on storage. May explode when heated. 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. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.

Section VII. Handling and Storage

Handling and Storage Information	CORROSIVE. HIGHLY TOXIC. CARCINOGENIC. HANDLE AND STORE UNDER NITROGEN. SENSITIZER. MAY FORM EXPLOSIVE PEROXIDES ON STORAGE. MAY EXPLODE WHEN HEATED. Keep container dry. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. 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.

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. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent. 
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear oily)	Solubility	Not available.
Specific Gravity	Not available.		
Molecular Weight	108.10	Partition Coefficient	Not available.
Boiling Point	Not available.	Vapor Pressure	Not available.
Melting Point	Not available.	Vapor Density	Not available.
Refractive Index	Not available.	Volatility	Not available.
Critical Temperature	Not available.	Odor	Ammonia-like
Viscosity	Not available.	Taste	Not available.

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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.
Incompatibilities	Reactive with oxidizing agents, oxygen, copper, zinc, organic materials.

Section XI. Toxicological Information

RTECS Number	Not available.
Routes of Exposure	Eye Contact. Ingestion. inhalation. Skin contact.
Toxicity Data	Hydrazine: Rat LC_{50} (inhalation) 570ppm/4H Rat LD_{50} (oral) 60mg/kg Rabbit LD_{50} (dermal) 91mg/kg
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Not available. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Tumorigenic Effects: (Hydrazine) Rat TCLo (Inhalation) 5ppm/6H/1 year, continuous. Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria. Endochrine - Thyroid tumors. Mouse TDLo (Intraperitoneal) 400mg/kg/5 weeks, intermittent. Toxic Effects: Tumorigenic - Carcinogenic by RTECS criteria. Blood - Tumors, Leukemia. Mouse TDLo (Oral) 1951 mg/kg/2 years, continuous. Toxic Effects: Tumorigenic - Neoplastic by RTECS criteria. Lung, Thorax, or Respiration - Tumors. Blood - Lymphomas including Hodgkin's disease. **DEVELOPMENTAL TOXICITY**: Reproductive Effeccts: (Hydrazine) Rat TCLo (Inhalation) 1mg/m^3/24 hours, female 1-11 days of pregnancy. Toxic Effects: Effects on Embryo or Fetus - Fetotoxicity. Effects on Embryo or Fetus - Fetal death. Rat TDLo (Intraperitoneal) 30 mg/kg, female 7-9 days of pregnancy. Toxic Effects: Specific Developmental Abnormalities - Central nervous system. Specific Developmental Abnormalities - Musculoskeletal system. Specific Developmental Abnormalities - Urogenital system. Hamster TCLo (Inhalation) 1ppm/6 hours, male 1 year prior to mating. Toxic Effects: Paternal Effects - Testes, epididymis, sperm duct. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.
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	(Hydrazine) Hydrazine's production and use as a chemical intermediate, reducing agent, as rocket fuel and as a boiler water treatment agent may result in its release to the environment through various waste streams. Hydrazine is also naturally produced by Azotobacter agile during nitrogen fixation. If released to the atmosphere, hydrazine will exist solely in the vapor phase in the ambient atmosphere, based on a measured vapor pressure of 14.4 mm Hg at 25 deg C. Vapor-phase hydrazine is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and ozone with estimated half-lives of about 6 and 9 hours, respectively. Release of hydrazine to soil is expected to result in degradation in soils containing a high percentage of organic carbon and in strong adsorption in soils containing high clay content. In other soils, especially sandy soils, hydrazine may have high mobility. Volatilization from moist soil surfaces is not expected based on an estimated Henry's Law constant of 6.1X10-7 atm-cu m/mole. The potential for volatilization of hydrazine from dry soil surfaces may exist based on the vapor pressure of this compound. Biodegradation is not expected to be an important environmental fate process in the presence of a large amount of hydrazine due to its toxicity to microorganisms; it may be important at low hydrazine concentrations. Release of hydrazine to water should result in rapid degradation of hydrazine, especially in water containing high concentrations of organic matter and dissolved oxygen. The estimated half-life of hydrazine in pond water is 8.3 days. Based on soil studies, hydrazine may bind to clay and organic matter found in sediments and particulate material in water; it should not strongly adsorb to other types of particulates. This compound should not volatilize from water surfaces given its estimated Henry's Law constant. A measured BCF value of 316 suggests that bioconcentration in aquatic organisms may be high. Based on the physical properties of this compound, low bioconcentration is predicted. Occupational exposure may occur through inhalation or dermal contact at workplaces where hydrazine is produced or used. The general population may be exposed to hydrazine through inhalation of cigarette smoke or the ingestion of trace residues in processed foods.

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Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissove 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 locl regulations when disposing of the substance.

Section XIV. Transport Information

DOT Classification	CLASS 8: Corrosive material CLASS 6.1: Poisonous material.
PIN Number	UN2030
Proper Shipping Name	Hydrazine, aqueous solution
Packing Group (PG)	II
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This product is **NOT** on the EPA Toxic Substances Control Act (TSCA) inventory. The following notices are required by 40 CFR 720.36 (C) for those products not on the inventory list: (i) These products are supplied solely for use in research and development by or under the supervision of a technically qualified individual as defined in 40 CFR 720.0 et sec. (ii) The health risks of these products have not been fully determined. Any information that is or becomes available will be supplied on an MSDS sheet. This product is subject to SARA section 313 reporting requirements.
WHMIS Classification (Canada)	CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS E: Corrosive liquid.
EINECS Number (EEC)	Not available.
EEC Risk Statements	R5- Heating may cause an explosion. R19- May form explosive peroxides. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R34- Causes burns. R40- Possible risks of irreversible effects. R42/43- May cause sensitization by inhalation and skin contact. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects.
Japanese Regulatory Data	Not available.

Section XVI. Other Information

Version 1.0
Validated on 5/14/2002.
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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.