TCI AMERICA

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	**TOXIC BY INHALATION.** **Highly toxic; do not ingest or inhale.** **Combustible material; avoid heat and sources of ignition.** **Environmental hazard.** **This material is toxic to aquatic organisms and may cause long term adverse effects to the aquatic environment.** **CARCINOGEN. MINIMIZE EXPOSURE.** **MUTAGEN. MINIMIZE EXPOSURE.** **May react violently and/or evolve heat upon exposure to heat, shock, and friction.**	

Section I. Chemical Product and Company Identification

Chemical Name **N-Nitrosodimethylamine**

Catalog Number	D0761
Synonym	Dimethylnitrosamine
Chemical Formula	$C_2H_6N_2O$
CAS Number	62-75-9

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
N-Nitrosodimethylamine	62-75-9	Min. 99.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.	Rat LD_{50} (oral) 26 mg/kg Rat LD_{50} (inhalation) 78 ppm/4H Mouse LD_{50} (inhalation) 57 ppm/4H

Section III. Hazards Identification

Acute Health Effects

Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Chronic Health Effects

CARCINOGENIC EFFECTS : Carcinogenic by RTECS criteria.
MUTAGENIC EFFECTS : Not available.
TERATOGENIC EFFECTS : Tumorigenic effects.
Rat TCLo Inhalation 200 µg/m^3 for 45 weeks continuous
TOXIC EFFECTS:
Tumorigenic - Carcinogenic by RTECS criteria
Liver - Tumors
Kidney, Ureter, and Bladder - Kidney tumors
Rat TDLo Intramuscular 18 mg/kg
TOXIC EFFECTS:
Tumorigenic - Equivocal tumorigenic agent by RTECS criteria
Kidney, Ureter, and Bladder - Kidney tumors
Rat TDLo Oral 30 mg/kg (21 days of pregnancy)
TOXIC EFFECTS:
Tumorigenic - Equivocal tumorigenic agent by RTECS criteria
Tumorigenic Effects - Transplacental tumorigenesis
Kidney, Ureter, and Bladder - Kidney tumors
DEVELOPMENTAL TOXICITY: Reproductive effects.
Rat TDLo Intraplacental 500 µg/kg, female 13 days of pregnancy
TOXIC EFFECTS:
Effects on Embryo or Fetus - Fetal death
Rat TDLo Oral 30 mg/kg, female 10 days of pregnancy
TOXIC EFFECTS:
Effects on Embryo or Fetus - Fetal death
Rat TDLo Oral 35 mg/kg, female 8-14 days of pregnancy
TOXIC EFFECTS:
Effects on Fertility - Post-implanation mortality
Effects on Embryo or Fetus - Fetal death
Specific Developmental Abnormalities - Other developmental abnormalities
Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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 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	INDUCE VOMITING by sticking finger in throat. Lower the head so that the vomit will not reenter the mouth and throat. 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	61°C (141.8°F)	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	Toxic by inhalation material. Highly toxic material. Combustible material. Environmentally hazardous material. Carcinogenic material. Mutagenic material. Heat and shock sensitive material. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. DO NOT get water inside container. DO NOT touch spilled material. 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.

Section VII. Handling and Storage

Handling and Storage Information	TOXIC BY INHALATION. HIGHLY TOXIC. COMBUSTIBLE. ENVIRONMENTAL HAZARD. CARCINOGEN. MUTAGEN. HEAT/SHOCK SENSITIVE. Keep locked up. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. 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, alkalis (bases).

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	Splash goggles. 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 mutagen. There is no acceptable exposure limit for a mutagen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Clear, yellow.)	Solubility	Very soluble in water, alcohol, ether.
Specific Gravity	1.01 (water=1)		
Molecular Weight	74.08	Partition Coefficient	LOG P_{ow}: -0.57
Boiling Point	153°C (307.4°F)	Vapor Pressure	0.36 kPa (@ 20°C)
Melting Point	Not available.	Vapor Density	2.56 (Air = 1)
Refractive Index	1.44	Volatility	Not available.
Critical Temperature	Not available.	Odor	Faint characteristic.
Viscosity	Not available.	Taste	Not available.

Continued on Next Page

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 material.
Incompatibilities	Reactive with oxidizing agents, alkalis (bases).

Section XI. Toxicological Information

RTECS Number	IQ0525000
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD_{50} (oral) 26 mg/kg Rat LD_{50} (inhalation) 78 ppm/4H Mouse LD_{50} (inhalation) 57 ppm/4H
Chronic Toxic Effects	**CARCINOGENIC EFFECTS** : Carcinogenic by RTECS criteria. **MUTAGENIC EFFECTS** : Not available. **TERATOGENIC EFFECTS** : Tumorigenic effects. Rat TCLo Inhalation 200 µg/m^3 for 45 weeks continuous TOXIC EFFECTS: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Kidney, Ureter, and Bladder - Kidney tumors Rat TDLo Intramuscular 18 mg/kg TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Kidney, Ureter, and Bladder - Kidney tumors Rat TDLo Oral 30 mg/kg (21 days of pregnancy) TOXIC EFFECTS: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria Tumorigenic Effects - Transplacental tumorigenesis Kidney, Ureter, and Bladder - Kidney tumors **DEVELOPMENTAL TOXICITY**: Reproductive effects. Rat TDLo Intraplacental 500 µg/kg, female 13 days of pregnancy TOXIC EFFECTS: Effects on Embryo or Fetus - Fetal death Rat TDLo Oral 30 mg/kg, female 10 days of pregnancy TOXIC EFFECTS: Effects on Embryo or Fetus - Fetal death Rat TDLo Oral 35 mg/kg, female 8-14 days of pregnancy TOXIC EFFECTS: Effects on Fertility - Post-implanation mortality Effects on Embryo or Fetus - Fetal death Specific Developmental Abnormalities - Other developmental abnormalities Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	No evidence was found that N-nitrosodimethylamine is currently used, except for research purposes and may be released to the environment with laboratory waste. N-Nitrosodimethylamine's former production and use in the production of rocket fuels; antioxidant; additive for lubricants; and as a softener of copolymers may have resulted in its release to the environment through various waste streams. If released to air, a measured vapor pressure of 2.7 mm Hg at 20 deg C indicates N-nitrosodimethylamine is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase N-nitrosodimethylamine will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals with an estimated half-life of 6.3 days. N-Nitrosodimethylamine absorbs light in the environmental spectrum indicating a potential for direct photolysis. If released to soil, an estimated Koc of 12 indicates this compound is expected to have very high mobility. Volatilization from wet soil surfaces may be an important fate process based upon a measured Henry's Law constant of 1.82X10-6 atm-cu m/mole at 37 deg C. Under laboratory conditions, greater than 70% of N-nitrosodimethylamine applied to the surface of a moist, warm soil (12% moisture content, 22 deg C) volatilized in 10 hours. N-Nitrosodimethylamine may potentially volatilize from dry soil surfaces based upon its measured vapor pressure. A half-life of about three weeks was reported for N-nitrosodimethylamine in aerobic soil under laboratory conditions; the primary removal processes were volatilization and biodegradation. If released into water, N-nitrosodimethylamine is not expected to adsorb to suspended solids and sediment in the water column based upon its estimated Koc. The potential for bioconcentration in aquatic organisms is low based upon an estimated BCF of 0.22. This compound's measured Henry's Law constant indicates that volatilization from water surfaces is expected to occur. Estimated volatilization half-lives from a model river and a model lake are 17 and 130 days, respectively. Hydrolysis is not expected to be an important process. A photodegradation half-life of 79 hours was measured in distilled water exposed to fluorescent light through a pyrex filter (wavelength >280 nm). No biodegradation of N-nitrosodimethylamine was observed in lake water samples during an observation period of 3.5 months. Occupational exposure to N-nitrosodimethylamine may occur through inhalation of air at workplaces involved in rubber processing or tire manufacturing or where metal-working fluids are used. The general population may be exposed to N-nitrosodimethylamine via inhalation of ambient air and cigarette smoke and ingestion of contaminated food and drinking water.

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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 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.

Section XIV. Transport Information

DOT Classification	DOT CLASS 6.1: Toxic material
PIN Number	UN3382
Proper Shipping Name	Toxic by inhalation liquid, n.o.s.
Packing Group (PG)	I **ZONE B** **RQ = 10 (4.54)**
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-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC). On NDSL.
EINECS Number (EEC)	200-549-8
EEC Risk Statements	R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects. R51- Toxic to aquatic organisms. R53- May cause long-term adverse effects in the aquatic environment.
Japanese Regulatory Data	ENCS No. 2-195

Section XVI. Other Information

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Notice to Reader