

Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
 	Corrosive to eyes and skin on contact. CARCINOGEN. MINIMIZE EXPOSURE. Hygroscopic -- keep container tightly sealed. Harmful compound, minimize exposure.	

Section I. Chemical Product and Company Identification

Chemical Name	Diethanolamine		
Catalog Number	I0008	Supplier	TCI America 9211 N. Harborgate St. Portland OR 1-800-423-8616
Synonym	2,2'-Iminodiethanol		
Chemical Formula	NH(CH ₂ CH ₂ OH) ₂		
CAS Number	111-42-2	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
Diethanolamine	111-42-2	Min. 99.0 (GC)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD ₅₀ (oral) 620 uL/kg Rabbit LD ₅₀ (dermal) 7640 uL/kg Mouse LD ₅₀ (oral) 3300 mg/kg Rat LD ₅₀ (intraperitoneal) 120 mg/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. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	<p>CARCINOGENIC EFFECTS : Carcinogen by RTECS Criteria.</p> <p>MUTAGENIC EFFECTS : Not available.</p> <p>TERATOGENIC EFFECTS : Tumorigenic Effects.</p> Mouse TDLo dermal 21 gm/kg/2 years intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Mouse TDLo dermal 28840 mg/kg/103 weeks intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Mouse TDLo dermal 57680 mg/kg/103 weeks intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors <p>DEVELOPMENTAL TOXICITY Reproductive Effects.</p> Rat TDLo Oral 2800 mg/kg, female 6-19 days of pregnancy. TOXIC Effects: Effects on Fertility - Post-implantation mortality Effects on Newborn - Growth statistics Rat TDLo Dermal 15 gm/kg, female 6-15 days of pregnancy. TOXIC Effects: Maternal Effects - Other effects Effects on Newborn - other postnatal measures or effects Rabbit TDLo Dermal 4550 mg/kg, female 6-18 days of pregnancy TOXIC Effects: Maternal Effects - other effects 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.

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.

Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	662°C (1223.6°F)
Flash Points	160°C (320°F).	Flammable Limits	LOWER: 1.6% UPPER: 9.8%
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. Carcinogenic Material. Harmful Material. Hygroscopic Material. 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.
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Section VII. Handling and Storage

Handling and Storage Information	CORROSIVE. CARCINOGEN. HARMFUL. HYGROSCOPIC. 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, 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	Splash goggles. 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 Viscous)	Solubility	Miscible with water, methanol, acetone. Soluble @ 25°C in benzene: 4.2%, in ether: 0.8%, in carbon tetrachloride: <0.1%, in n-heptane: <0.1%.
Specific Gravity	1.09 (water=1)	Partition Coefficient	Not available.
Molecular Weight	105.14	Vapor Pressure	<0.1 kPa (@ 20°C)
Boiling Point	269°C (516.2°F)	Vapor Density	3.65 (Air = 1)
Melting Point	82°C (179.6°F)	Volatility	Not available.
Refractive Index	1.474-1.479	Odor	Mild Ammoniacal.
Critical Temperature	Not available.	Taste	Not available.
Viscosity	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.
Incompatibilities	Reactive with oxidizing agents, metals, acids. Copper and it's alloys, iron metals, and steel. Zinc, carbon dioxide.

Section XI. Toxicological Information

RTECS Number	KL2975000
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LD ₅₀ (oral) 620 uL/kg Rabbit LD ₅₀ (dermal) 7640 uL/kg Mouse LD ₅₀ (oral) 3300 mg/kg Rat LD ₅₀ (intraperitoneal) 120 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Carcinogen by RTECS Criteria. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Mouse TDLo dermal 21 gm/kg/2 years intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Mouse TDLo dermal 28840 mg/kg/103 weeks intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors Mouse TDLo dermal 57680 mg/kg/103 weeks intermittent TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria Liver - Tumors DEVELOPMENTAL TOXICITY Reproductive Effects. Rat TDLo Oral 2800 mg/kg, female 6-19 days of pregnancy. TOXIC Effects: Effects on Fertility - Post-implantation mortality Effects on Newborn - Growth statistics Rat TDLo Dermal 15 gm/kg, female 6-15 days of pregnancy. TOXIC Effects: Maternal Effects - Other effects Effects on Newborn - other postnatal measures or effects Rabbit TDLo Dermal 4550 mg/kg, female 6-18 days of pregnancy TOXIC Effects: Materan Effects - other effects 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. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury 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	Diethanolamine (DEA) may be released to the environment in emissions or effluents from sites of its manufacture or industrial use, from disposal of consumer products which contain this compound, and from application of agricultural chemicals in which this compound is used as a dispersing agent. In soil and water, DEA is expected to biodegrade fairly rapidly following acclimation (half-life on the order of days to weeks). N-Nitrosodiethanolamine is a metabolite of diethanolamine. In soil, DEA should leach. In the atmosphere, diethanolamine is expected to exist almost entirely in the vapor phase. Reaction with photochemically generated hydroxyl radicals is expected to be the dominant removal mechanism (half-life 4 hours). This compound may also be removed from the atmosphere in precipitation. The most probable route of exposure to DEA is dermal contact with personal care products (i.e. soaps, shampoos, cosmetics), detergents and other surfactants containing this compound. Workers may be exposed to DEA by inhalation during the use of lubricating-cooling liquids in various processes in machine building and metallurgy (cutting, die stamping, grinding, extrusion, die casting, etc.)

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
PIN Number	UN3267
Proper Shipping Name	Corrosive liquid, basic, organic, n.o.s.
Packing Group (PG)	III
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)	Not available.
EINECS Number (EEC)	203-868-0
EEC Risk Statements	R20/21/22- Harmful by inhalation, in contact with skin and if swallowed. R34- Causes burns. R45- May cause cancer.
Japanese Regulatory Data	ENCS No. 2-302 ; 2-354

Section XVI. Other Information

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Notice to Reader

TCl laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, household, 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.